Price Benchmarks of Drugs Selected for Medicare Price Negotiation and Their Therapeutic Alternatives

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Short Title: Price Benchmarks for Medicare Price Negotiation

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Plain Language Summary

The Inflation Reduction Act authorizes Medicare to negotiate drug prices with pharmaceutical companies. In this paper, we report key prices that Medicare will use to negotiate the first 10 selected drugs, including the prices that health plans are currently paying for drugs after discounts. Our results show that the ability of Medicare to achieve savings through negotiation varies greatly across drug products.

Implications for Managed Care Pharmacy

Our analyses inform managed care professionals on the key elements that will be involved in the derivation of the initial price offer for each product selected for the Medicare Drug Price Negotiation Program. Our results suggest that the ability to achieve savings varies greatly across drugs based on existing rebates and the statutorily defined ceiling price. Our analyses help improve transparency in the Medicare negotiation process.

Abstract

Background

The Centers for Medicare and Medicaid Services (CMS) is currently negotiating prices with pharmaceutical manufacturers for the first ten Part D drugs selected for Medicare drug price negotiation. Non publicly available data, including net prices of selected drugs and their therapeutic alternatives, will play a central role in the determination of the maximum fair prices (MFPs).

Objective

To estimate price benchmarks involved in the derivation of the starting point of CMS initial price offer for the ten drugs selected for Medicare price negotiation.

Methods

For the ten drugs selected for negotiation, we reported (1) the list price, (2) the net price after manufacturer discounts, (3) the maximum negotiated price based on the minimum statutory

discount, and (4) the ceiling of the MFP, estimated as the lowest of the latter two. We also estimated net prices for therapeutic alternatives to the selected drugs. Net prices were estimated using peer-reviewed methodology that isolates commercial discounts negotiated between payers and manufacturers from mandatory discounts under government programs. All price benchmarks were estimated at the product level, for 30-day equivalent dosing, using 2021 data.

Results

Six products (apixaban, rivaroxaban, empagliflozin, sacubitril/valsartan, etanercept, and insulin aspart) had therapeutic alternatives with lower net prices, which will be integrated with clinical benefit data in the derivation of initial price offers. The other four products (ustekinumab, ibrutinib, sitagliptin, and dapagliflozin) had therapeutic alternatives with higher net prices than the drugs selected for negotiation. For ibrutinib and ustekinumab, prices based on minimum discounts were considerably lower than the estimated net prices and will likely set the starting point of the initial price offer. For dapagliflozin and sitagliptin, the starting point of the initial price offer will likely resemble their existing net prices.

Conclusions

Our analyses identify different negotiation scenarios for the first ten drugs selected for Medicare price negotiation, based on key elements involved in the derivation of the initial price offer. Our analyses can help improve transparency in the negotiation process, as CMS is not required to reveal information used in the derivation of price offers.

Introduction

The Centers for Medicare and Medicaid Services (CMS) are currently negotiating prices for the first ten drugs selected for Medicare price negotiation; the list of ten drugs was published in August 2023.[1,2] Net prices of drug products after discounts will play a central role in the determination of the maximum fair price for two reasons. First, the statute sets a ceiling for the maximum fair price, which is the lower of (1) the net price paid by Part D plans in 2022 or (2) the non-federal average manufacturer price with a discount applied based on how long the product has been on the market. Second, in deriving the initial price offer, CMS will integrate data on net prices and comparative clinical benefit of therapeutic alternatives to the drugs selected for negotiation.[1]

In recent work, we developed a method that estimates rebates negotiated between payers and manufacturers.[2–4] We apply this method to estimate net prices for the ten drugs selected for negotiation and a peer-reviewed list of therapeutic alternatives.[5] We compare net prices with statutory price benchmarks to identify different negotiation scenarios, based on key elements involved in the derivation of the starting point of the initial price offers. According to CMS guidance, net prices of therapeutic alternatives will serve as the starting point of the initial price offer and will be adjusted based on comparative clinical benefit data. For drugs with no therapeutic alternatives, or with therapeutic alternatives with net prices above the ceiling of the negotiated price, CMS will use the lower of the ceiling or the Big Four/Veterans Affairs prices as starting point of the initial price offer. Our analyses can help improve transparency in the negotiation process, as CMS is not required to reveal information on the selection of therapeutic alternatives, the net prices of drugs selected for negotiation or their alternatives, or the integration of net pricing and clinical evidence in the derivation of price offers.

Methods

Outcomes

For each of the first ten drugs selected for negotiation,[6] we report the list price,[7] the maximum negotiated price based on the minimum statutory discount, the estimated net price, and the ceiling of the maximum fair price (the lower of the last two). We also report 50% of the net price, as the Congressional Budget office projected 50% reduction in net prices in their estimation of savings associated with negotiation.[8] The minimum statutorily defined discount was estimated as the product of the non-federal average manufacturer price and the minimum discount based on years since FDA approval. The non-federal average manufacturer price was estimated using a previously published method.[9] In brief, we subtracted 340B sales from the sales figures reported in the IQVIA National Sales Perspective database, which is net of up-front discounts. We amortized the remaining amount based on the total number of units not subject to 340B discounts sold in 2021.

We used a published list of therapeutic alternatives for each of the ten drugs selected.[5] For brand-name therapeutic alternatives, we estimated net prices following the method described above. For generic therapeutic alternatives, we did not estimate net prices as generic drugs are not generally subject to rebates. Instead, we estimated the average gross price reimbursed for a 30-day supply based on 2021 Medicare Part D claims.

All price benchmarks were estimated using 2021 data, the most recent year with complete data, and reported per 30-day supply, apart from insulin products, which were presented per 100 insulin units or ml. Price benchmarks for Novolog/Fiasp were estimated as the weighted average of the two as both products are considered a single, unique drug for negotiation. Finally, we display the Four/Veterans Affairs prices.

Estimation of Net Prices

We estimated total discounts for each product as the difference between gross sales and net sales. Gross sales were estimated as the product between the list price of a drug in 2021 and the number of units sold in 2021, obtained from the IQVIA National Sales Perspective database.[7] Net sales were sourced from SSR Health, a firm that compiles data from reports from manufacturers to investors and regulatory bodies.[10]

From this difference, we subtracted discounts to the Medicare Part D coverage gap, the Medicaid program, and the 340B pricing program. Medicare Part D coverage gap discounts were estimated using 2021 claims data from a 5% random sample of Part D beneficiaries. Discounts to the Medicaid program were estimated as the product of the Medicaid discount per unit and the number of units reimbursed by Medicaid, obtained from Medicaid state drug utilization data.[11] The Medicaid discount per unit was estimated using a previously reported method that accounts for the Best Price provision and the Medicaid rebate cap.[2–4] Discounts to the 340B drug pricing program were calculated as the product of the Medicaid discount per unit, estimated as described above, and the number of units subject to 340B discounts. The number of units subject to 340B discounts was estimated by extrapolating the proportion of drug units subject to 340B discounts in a 5% random sample of Medicare data to the entire market. Our method for identifying drug units subject to 340B discounts in Medicare Part D has been previously described,[12] and relies on address matching of Health Resources and Services Administration lists of 340B covered entities and pharmacies to the national provider identifiers of prescribers and dispensing pharmacies observed in claims.

After subtracting discounts to Medicare Part D coverage gap, Medicaid, and 340B from the gross-to-net sales difference, the remaining amount was attributed to commercial discounts negotiated between payers and manufacturers. Drug-specific adjustments based on differences in formulation and the reporting of net sales data including authorized generics and combination products are reported in the Supplemental Material.

Estimation of Number of Units in 30-Day Equivalent

The number of units of product needed for a 30-day treatment course was estimated for each indication of each drug selected for negotiation following the FDA package insert. This was used to report price benchmarks per 30-day equivalents. For injections or infusions with weight-based dosing, a standard patient weight of 75 kg was used. For drugs with an initiation and maintenance schedule, the maintenance dosing schedule was used. Warfarin has an individualized dosing schedule, and therefore it was not possible to calculate the 30-day dose equivalent. As a result, we used Medicare claims data in 2021 to estimate the average gross drug cost per 30-day supply prescription.

Results

The net price of apixaban ($309.00, a 39.5% discount off the list price) was lower than the price set by the minimum statutory discount, and therefore set the ceiling of the negotiated price (**Table 1**, **Figure 1**). Therapeutic alternatives included rivaroxaban (also selected for negotiation), dabigatran, and warfarin (**Table 1**). Net pricing data for dabigatran (Pradaxa) was not possible to estimate as its manufacturer (Boehringer Ingelheim) is not publicly traded and therefore does not report net sales data. For rivaroxaban, the ceiling of the negotiated price was also set by the net price (**Figure 2**).

Net prices also set the ceiling of the maximum fair price for empagliflozin (**Figure 3**) and dapagliflozin (**Figure 4**). Empagliflozin and dapagliflozin were considered therapeutic alternatives to each other. Canagliflozin and ertugliflozin completed the list of therapeutic alternatives, but it was not possible to estimate the net price of ertugliflozin as the manufacturer did not report sales data in 2021. The net price of canagliflozin was similar to that of empagliflozin.

The net price of sitagliptin (61.3% discount off the list price) was slightly above the price set by the minimum statutory discount (**Figure 5**). Therapeutic alternatives included other DPP4 inhibitors, SGLT2 inhibitors, and GLP1 agonists. Apart from dapagliflozin, all comparators had net prices above the ceiling. It was not possible to estimate the net prices of ertugliflozin, alogliptin, and lixisenatide due to the lack of net sales data.

Ustekinumab pricing was presented by indication due to large differences in dosing and pricing, although these differences did not affect relative differences with comparators. Independent of indication, the net price of ustekinumab was above the price derived from the minimum statutory discount, which set the ceiling (**Figure 6** and **Supplemental Figure 1**). The net price of risankizumab, the only therapeutic alternative identified for ustekinumab, was considerably higher than the ceiling maximum fair price.

Ibrutinib had a net price of $11,571.30 per 30-day supply, which is equivalent to a 9.6% discount off list price (**Figure 7**). This net price was considerably higher than the price set by the minimum statutory discount, which set the ceiling for the maximum fair price. The net prices of therapeutic comparator acalabrutinib considerably exceeded the ceiling.

The net price of sacubitril/valsartan ($458.40, or 23.3% discount off the list price) was slightly higher than the price set by the minimum statutory discount, which therefore set the ceiling (**Figure 8**). All therapeutic alternatives identified were available in generic version, with their list prices ranging from $3.80 to $59.44.

The net price of etanercept ($3,751.61, or 44.5% discount off the list price) was higher than the price set by the minimum statutory discount, which set the ceiling for the maximum fair price (**Figure 9**). The TNF inhibitor infliximab, which is not self-administered, was the only therapeutic alternative with a net price below the ceiling.

The weighted average net price of the insulin aspart products Fiasp and Novolog, which were considered a single drug for negotiation, was lower than the price set by the minimum statutory discount and therefore set the ceiling (**Figure 10**). The net price of the therapeutic alternative insulin lispro (Humalog) was below the ceiling price. It was not possible to estimate the net price of the follow-on insulin lispro product Admelog because 2021 net sales data were not reported.

Discussion

Our analyses identify key pricing benchmarks that will be involved in the derivation of the starting point of the initial price offers for the first ten drugs selected for Medicare price negotiation. Our findings illustrate different scenarios for the drug negotiation process. Six products (apixaban, rivaroxaban, empagliflozin, sacubitril/valsartan, etanercept, and insulin aspart) had therapeutic alternatives with lower net prices, which will likely guide the starting point of the initial price offer. The remaining four products (ustekinumab, ibrutinib, sitagliptin, and dapagliflozin) only had therapeutic alternatives with higher net prices than the drugs selected for negotiation. For ibrutinib and ustekinumab, the prices set by minimum discounts are considerably lower than the estimated net prices, and will likely set the starting point of the initial price offer. For dapagliflozin and sitagliptin, the starting point of the initial price offer should closely resemble their net price.

CMS will likely use the net prices of therapeutic alternatives as the starting point for the initial price offer when negotiating apixaban, rivaroxaban, empagliflozin, sacubitril/valsartan, etanercept, and insulin aspart. This starting point will be adjusted based on the integration of relative clinical benefit data. It should be noted that, while the CMS guidance specifies that the net price of therapeutic alternatives will serve as the starting point, the net prices of therapeutic alternatives will not necessarily serve as a price floor for negotiation. CMS guidance specifies the consideration of manufacturer specific data beyond clinical effectiveness, including research and development costs, prior federal support, costs of production and distribution, or unmet

therapeutic need in the derivation of the initial price offers. As a result, it is plausible that final negotiated prices may fall below the net price of the comparator. However, for drugs with therapeutic alternatives within class, our data suggest that the ranges of net prices are far from the Congressional Budget Office projections, which estimated final negotiated prices at a 50% reduction off the net price. In other words, even if CMS is able to negotiate prices below the lowest priced therapeutic alternative, it will be difficult to reach the levels of savings projected by the Congressional Budget Office, unless (1) CMS explicitly considers as therapeutic alternatives older products that are outside the therapeutic class and available in generic form or (2) CMS heavily weights other factors such as production costs or research and development investments. The reason we often only observed alternatives with prices above or around the ceiling may be partially due to the criteria used in the earlier paper to identify therapeutic alternatives, which primarily focused on alternatives within class.[5] This approach is consistent with CMS guidance, which explicitly prioritizes drugs within the same therapeutic class for drugs with a large number of therapeutic alternatives. However, CMS may adopt a more flexible approach in the selection of therapeutic alternatives, including comparators outside of class, which are more likely to have generic versions available, such as methotrexate for etanercept or warfarin for apixaban and rivaroxaban.[13]

We believe our analyses improve transparency in the price negotiation process. The price benchmarks described herein will serve a critical role in informing the initial price offers and final maximum fair prices according to CMS guidance, yet they are confidential and will remain unpublished. Publishing estimates is therefore critical for improving transparency in the negotiation process and for estimating associated savings after the expected publication of final maximum fair prices by September 2024.

Beyond improving transparency, our findings can orient stakeholders on the expected magnitude of savings to be achieved across drug products, which are dependent on the pre-

negotiation rebate context. CMS will achieve savings of 41% for ustekinumab and 34% for etanercept and ibrutinib from the direct application of statutory discounts. These three drugs belong to protected drug classes, where Medicare Part D plans are required to cover all approved agents in the class, limiting negotiating power with manufacturers, and subsequently, the magnitude of discounts. It should be noted, however, that ustekinumab had higher discounts than non-protected product sacubitril/valsartan, which likely reflects differences in branded competition for two products.[2] For products in competitive and non-protected classes, discounts negotiated between manufacturers and payers well exceed the minimum statutory discounts under IRA, and thus savings will be dependent on the ability of CMS to negotiate discounts below the ceiling.

These dynamics demonstrate the dependence of the IRA, as currently designed, on market factors, and particularly the ability of Part D plans to negotiate discounts with manufacturers in the early years after drug entry, before drugs are eligible for negotiation. This approach is different to that followed by Medicare to establish inpatient, outpatient, and provider payment systems, where rates paid by Medicare are not indexed to the market. The dependency of the negotiation process on market factors has two immediate implications. First, it is likely that the ability of CMS to extract savings increases as Part B drugs become eligible to be selected for negotiation, since traditionally they have had lower rebates than Part D drugs. Second, the critical role that pre-negotiation net prices play in the negotiation process opens the door for manufacturers and payers to adopt alternative pricing and discounting dynamics in the early years after drug entry, particularly for products anticipated to be selected for negotiation in the future.

Limitations

Our approach only captured the elements involved in the establishment of the starting point of the initial price offer. As a result, our estimates did not reflect the integration of evidence on the

net health benefits of the selected drugs versus the comparators. Future work aiming to orient the negotiation process can build on these estimates for the further integration of other sources of data to be considered by CMS. For instance, future research could use comparative evidence on the prevention of stroke and thromboembolic events and the risk of bleeding of apixaban compared to therapeutic alternatives rivaroxaban, dabigatran and warfarin to derive plausible ranges for the initial price offer. Similarly, our analyses did not incorporate other elements that CMS may consider in the adjustment of the starting point, such as production and distribution costs, research and development expenses, or degree of unmet need. Finally, our estimates were based on 2021 data, the most recent available to us for analyses. CMS will incorporate data from 2022 in the estimation of initial price offers.

Conclusion

Our analyses identified different negotiation scenarios for the first ten drugs selected for Medicare price negotiation, based on key price benchmarks involved in the derivation of the initial price offer. Our analyses can help improving transparency in the negotiation process and can help stakeholders interpret the final negotiated prices and associated savings.

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Table 1. 2021 Price Benchmarks for Drugs Selected for Negotiation.

		Per 30-Day Supply						
Brand Name	**Generic Name**	**List Price**	**Rebate as % List price [a]**	**Net Price [b]**	**Big Four Price [c]**	**Non-FAMP [d]**	**Ceiling Price Set by Minimum Statutory Discount [e]**	**Ceiling of Maximum Fair Price [f]**
Eliquis	Apixaban	$510.51	39.5%	$309.00	$90.45	$498.00	$373.50	$309.00
Xarelto	Rivaroxaban	$491.97	46.9%	$261.30	$328.89	$466.20	$349.65	$261.30
Jardiance	Empagliflozin	$558.41	54.9%	$251.70	$326.40	$532.20	$399.15	$251.70
Farxiga	Dapagliflozin	$545.57	64.5%	$193.80	$361.80	$545.70	$409.28	$193.80
Januvia	Sitagliptin	$505.79	61.3%	$195.60	$328.50	$471.30	$188.52	$188.52
Entresto	Sacubitril/valsartan	$597.78	23.3%	$458.40	$369.00	$590.40	$442.80	$442.80
Enbrel	Etanercept	$6,435.88	44.5%	$3,571.61	$3,254.66	$5,887.95	$2,352.65	$2,352.65
Stelara (Psoriasis & psoriatic arthritis)	Ustekinumab	$4,910.31	36.0%	$3,143.95	$2,510.83	$4,605.97	$1,842.39	$1,842.39
Stelara (Crohn's & ulcerative colitis)	Ustekinumab	$12,275.78	36.0%	$7,859.88	$6,277.09	$11,514.94	$4,605.97	$4,605.97
Imbruvica	Ibrutinib	$12,806.39	9.6%	$11,571.30	$6,775.20	$10,236.24	$7,677.18	$7,677.18
		Per ml (100 Insulin Units)						
Novolog/Fiasp	Insulin aspart	$35.98	66.6%	$ 12.02	$ 3.00	$33.55	$13.42	$12.02

[a] Published method [2–4] that subtracts discounts to Medicaid, 340B and the Medicare Part D coverage drug program from the difference between gross and net sales, thus isolating commercial discounts negotiated between manufacturers and payers.

[b] Represents average prices faced by payers after discounts.

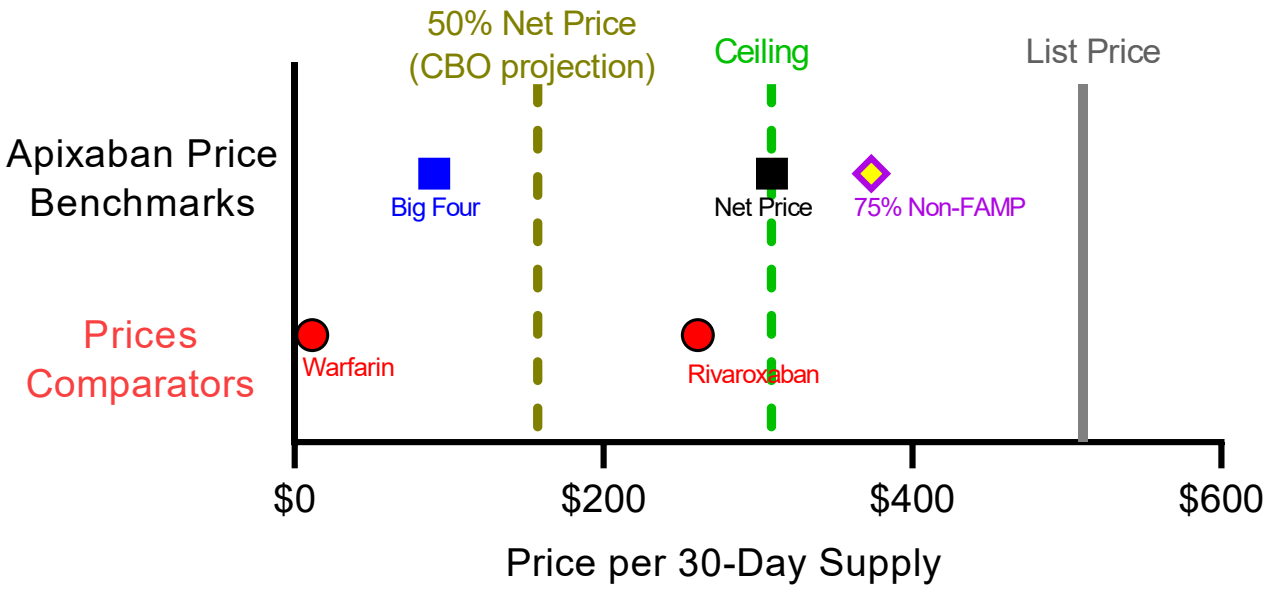
[c] Extracted from the US Department of Veterans Affairs Office of Procurement, Acquisition and Logistics.

[d] Estimated following a published method that subtracts 340B sales from gross sales net of up-front discounts and amortizes the remaining amount among non-340B units.[9]

[e] Estimated as the product of the non-federal average manufacturer price and the minimum discount based on drug's age (until 2030, 25% for drugs marketed 9-16 years and 60% for drugs marketed more than 16 years).

[f] The lower of the net price or the ceiling price set by the minimum statutory discount.

Figure 1. Price Benchmarks for Apixaban.



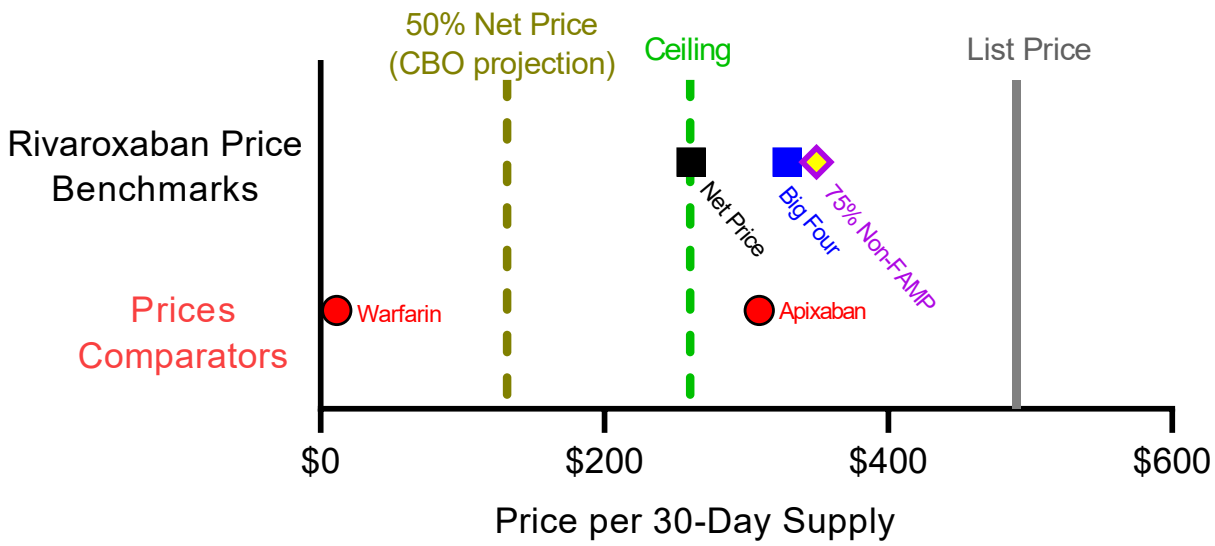
Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount.

Net pricing data for dabigatran (Pradaxa) was not possible to estimate as its manufacturer (Boehringer Ingelheim) is not publicly traded and therefore does not report net sales data.

The lower side of each panel presents prices of therapeutic alternatives identified by a peer-reviewed study.[5] For brand name products, prices represent net prices. For warfarin, prices represent gross prices. All price benchmarks are estimated using 2021 data.

Figure 2. Price Benchmarks for Rivaroxaban.



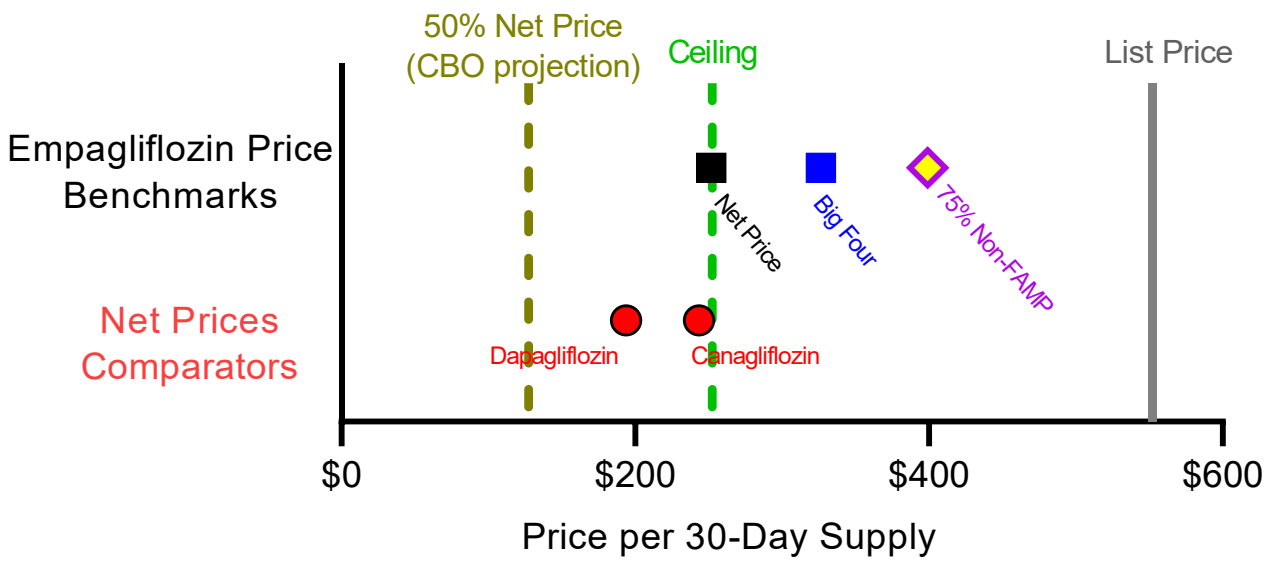
Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount.

Net pricing data for dabigatran (Pradaxa) was not possible to estimate as its manufacturer (Boehringer Ingelheim) is not publicly traded and therefore does not report net sales data.

The lower side of each panel presents prices of therapeutic alternatives identified by a peer-reviewed study.[5] For brand name products, prices represent net prices. For generic products, prices represent gross prices. All price benchmarks are estimated using 2021 data.

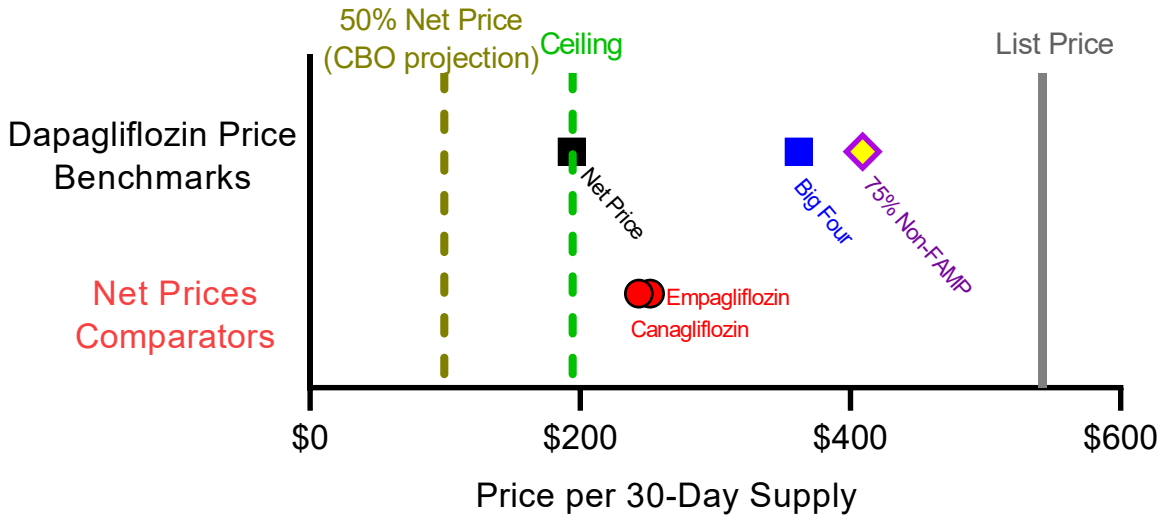
Figure 3. Price Benchmarks for Empagliflozin.



Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount. The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

Figure 4. Price Benchmarks for Dapagliflozin.



Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount.

The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

Figure 5. Price Benchmarks for Sitagliptin.

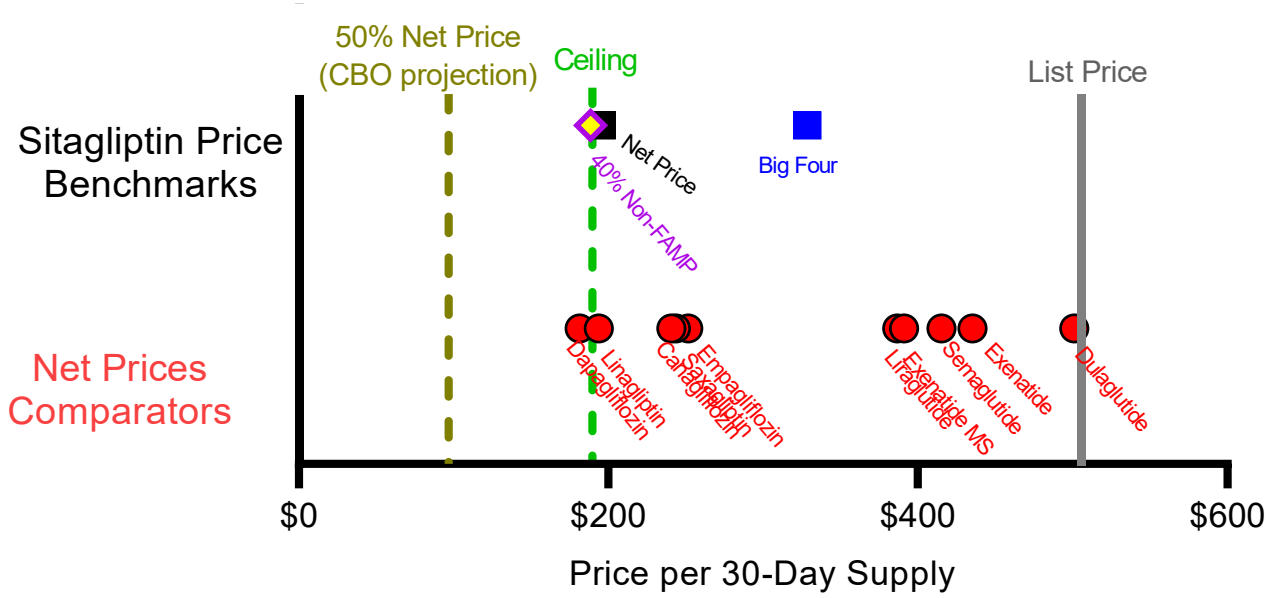


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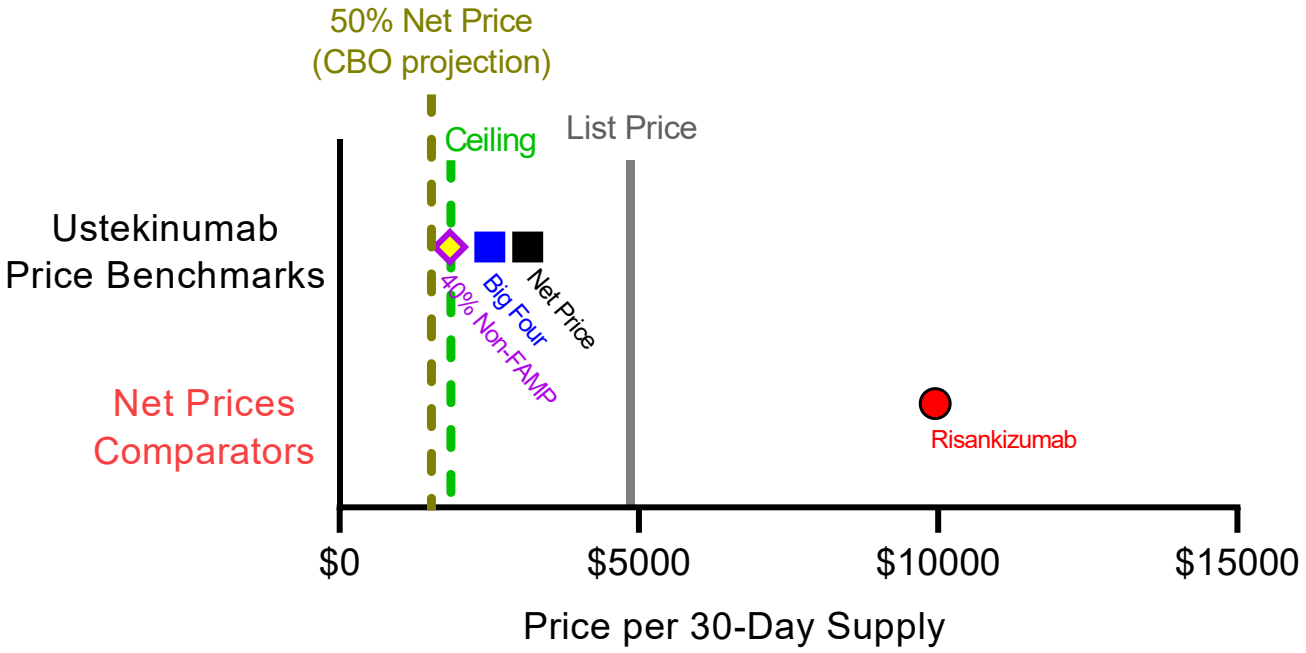
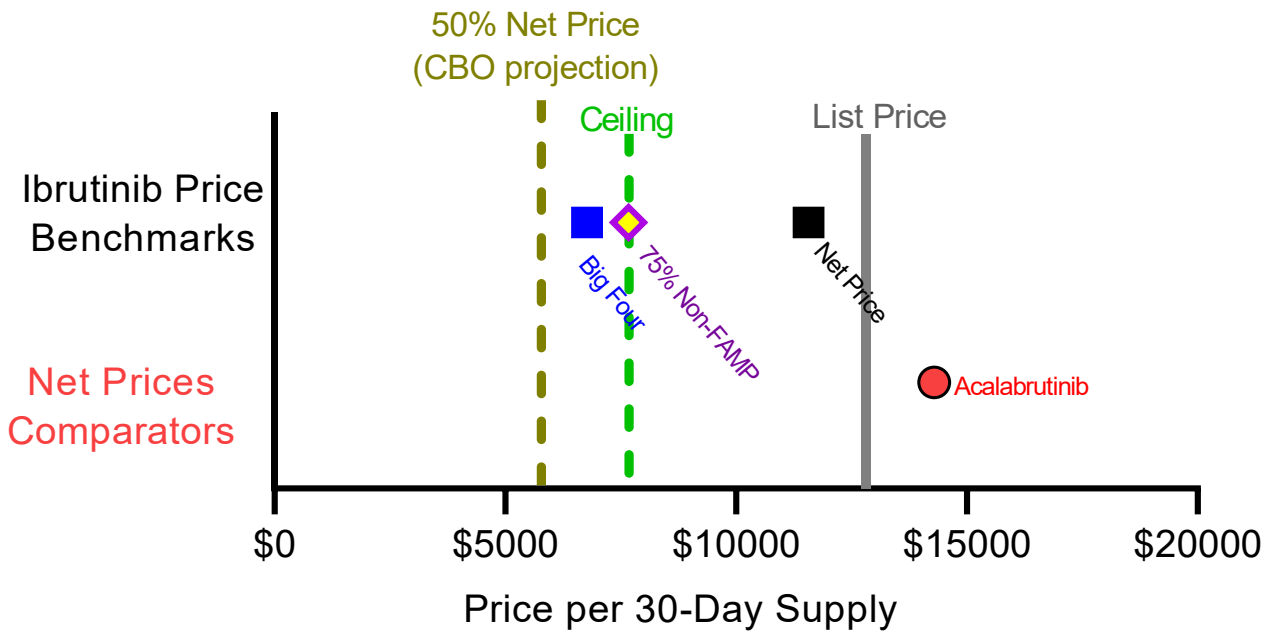
Figure 6. Price Benchmarks for Ustekinumab (Psoriasis and Psoriatic Arthritis).



Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount. The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

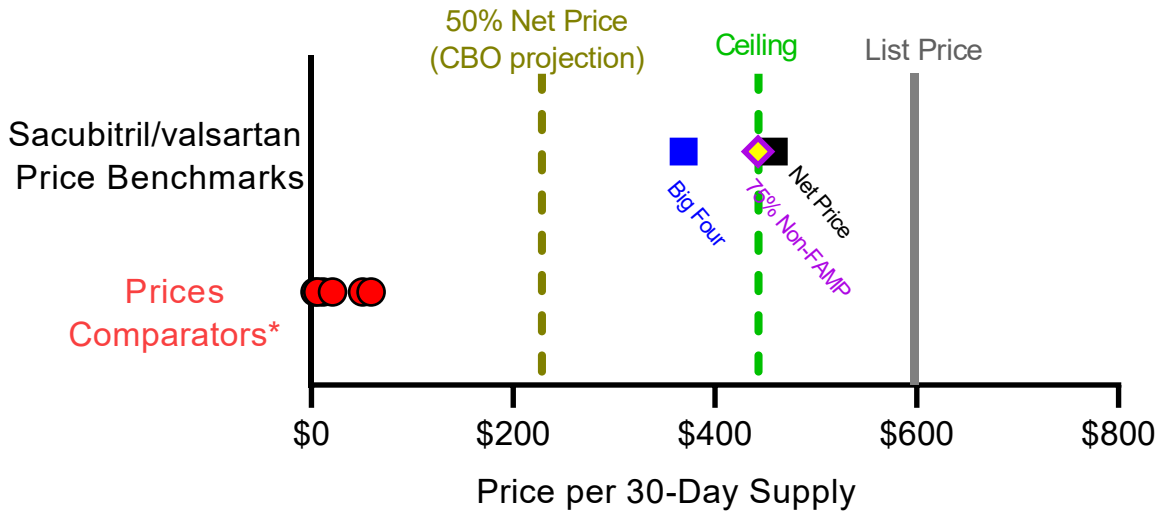
Figure 7. Price Benchmarks for Ibrutinib.



Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount. The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

Figure 8. Price Benchmarks for Sacubitril/valsartan.



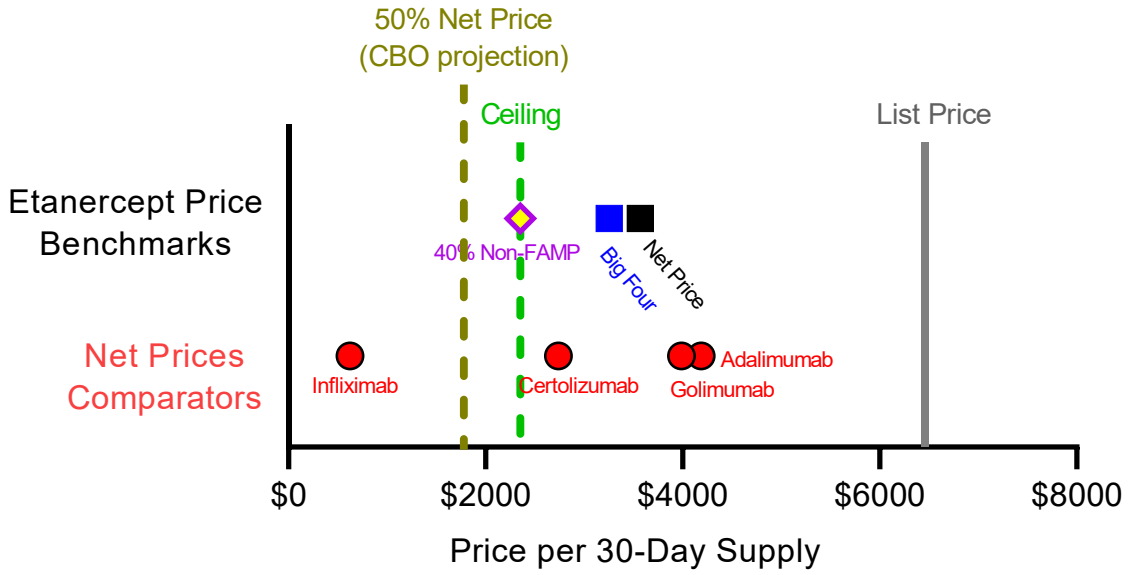
Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

* Comparators for sacubitril/valsartan include candesartan, losartan, valsartan, enalapril, lisinopril, captopril, and Ramipril. Comparators are not labeled due to space constraint, specific prices of each comparator are show in Appendix Exhibit 1.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount.

The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] For brand name products, prices represent net prices. For generic products, prices represent gross prices estimated with the average reimbursement for a 30-day supply in 2021 Medicare claims data. All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

Figure 9. Price Benchmarks for Etanercept.

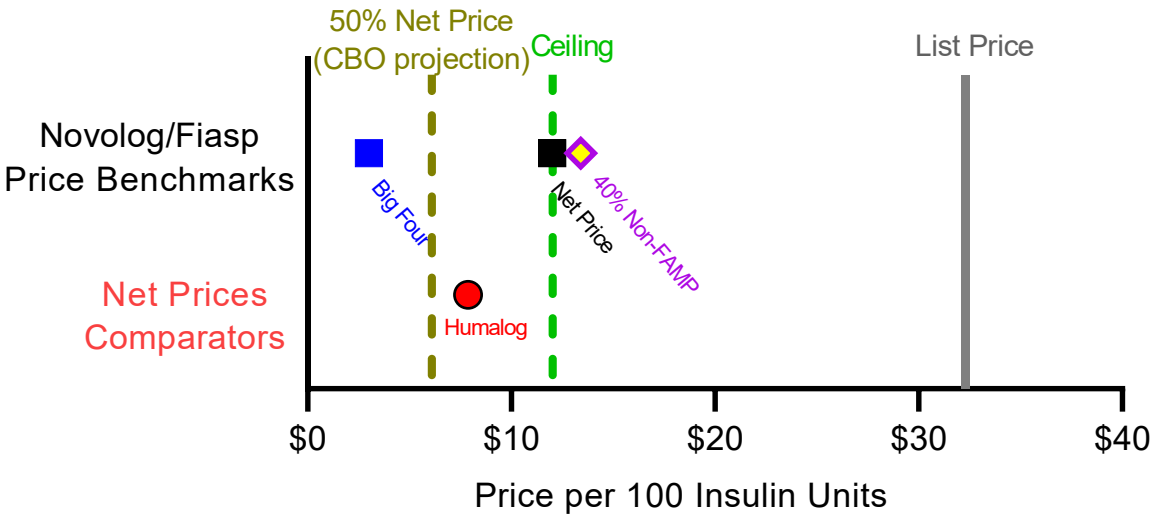


Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

Price benchmarks for the drugs selected for negotiation are shown in the upper side of each panel and include list price, net price, Big Four/VA price, and the maximum price based on the minimum statutory discount applied to the non-federal average manufacturer price. The ceiling of the maximum fair price is represented by a dashed green line and represents the lower of the net price or the maximum price based on the minimum statutory discount.

The lower side of each panel presents net prices of therapeutic alternatives identified by a peer-reviewed study.[5] For brand name products, prices represent net prices. For generic products, prices represent gross prices estimated with the average reimbursement for a 30-day supply in 2021 Medicare claims data. All price benchmarks are estimated using 2021 data and represent a 30-day supply equivalent.

Figure 10. Price Benchmarks for Insulin Aspart.



Abbreviations: Non-FAMP=Non-Federal Average Manufacturer Price.

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Supplemental Material

Hernandez I, Cousin EM, Wouters OJ, Gabriel N, Cameron T, Sullivan SD. Estimating Net Prices of Drugs Selected for Medicare Price Negotiation and Therapeutic Alternatives.

Contents

Supplemental Methods

Drug-Specific Adjustments

Several drugs had to undergo specific adjustments due to the nature of the reported net price information. First, list prices of ustekinumab vary widely across formulation. Specifically, the vial formulation for intravenous infusion, which is predominantly used in Medicare Part B, has a substantially lower list price than the formulations for self-injection and only accounts for 1.3% of gross sales according to its relative units and list price. To avoid estimating a weighted average that may not be representative, we reported price benchmarks for formulations for self-administration. Second, the insulin lispro product Humalog has an authorized generic product. Eli Lilly bundles the branded version and the authorized generic in the reporting of net sales data. We subtracted net sales for the authorized generic from the combined net sale figure, as previously done,(1,2) to accurately estimate discounts for the branded product. Third, Janssen reported combined net sales of canagliflozin (Invokana) and the combination of canagliflozin and metformin (Invokamet). We followed the same procedure, reverse estimating the expected net sales for Invokamet from the bundled figure, to estimate commercial discounts per unit for Invokana.

Supplemental Table 1. 2021 Prices of Therapeutic Alternatives.

		Per 30-day Supply	
Drug Selected for Negotiation	Comparator	Net Price (if Brand)	List Price (if Generic)
Apixaban (Eliquis)			
	Rivaroxaban	$261.30	
	Dabigatran		--
	Warfarin		$11.43
Rivaroxaban (Xarelto)			
	Apixaban	$309.00	
	Dabigatran		--
	Warfarin		$11.43
Empagliflozin (Jardiance)			
	Canagliflozin	$243.60	
	Dapagliflozin	$193.80	
Dapagliflozin (Farxiga)			
	Canagliflozin	$243.60	
	Empagliflozin	$251.70	
Sitagliptin (Januvia)			
	Empagliflozin	$251.70	
	Dapagliflozin	$193.80	
	Canagliflozin	$243.60	
	Ertugliflozin	--	
	Saxagliptin	$240.60	
	Linagliptin	$193.80	
	Alogliptin	--	
	Exenatide	$435.41	
	Exenatide Microspheres	$386.71	
	Lixisenatide	--	
	Dulaglutide	$501.12	
	Liraglutide	$391.14	
	Semaglutide	$415.20	
Sacubitril/Valsartan (Entresto)			
	Captopril		$59.44
	Enalapril		$11.60
	Lisinopril		$3.80
	Ramipril		$6.25
	Candesartan		$50.92
	Losartan		$6.30
	Valsartan		$21.25
Etanercept (Enbrel)			
	Adalimumab	$4,188.72	
	Certolizumab	$2,738.55	
	Infliximab	$624.29	
	Golimumab	$3,989.21	

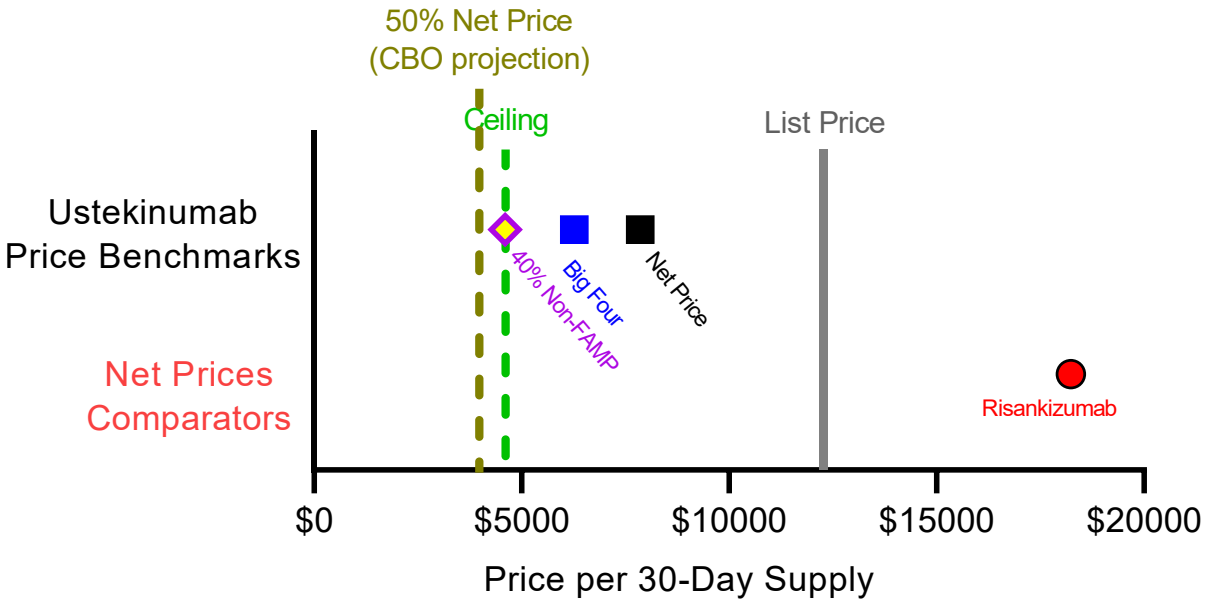
Supplemental Table 1 cont.

		Per 30-day Supply	
Drug Selected for Negotiation	Comparator	Net Price (if Brand)	List Price (if Generic)
Ustekinumab (Stelara), Psoriasis & psoriatic arthritis			
	Risankizumab	$9,950.28	
Ustekinumab (Stelara), Crohn's & ulcerative colitis			
	Risankizumab	$18,242.18	
Ibrutinib (Imbruvica)			
	Acalabrutinib	$14,299.20	
	Zanubrutinib	--	
		Per ml (100 Insulin Units)	
Insulin aspart (Novolog/Fiasp)			
	Insulin Lispro (Humalog)	$7.69	
	Insulin Lispro (Admelog)	--	

For brand name products, prices represent net prices. For generic products, prices represent gross prices. All price benchmarks are estimated using 2021 data.

It was not possible to estimate the net prices of dabigatran, ertugliflozin, alogliptin, lixisenatide, zanubrutinib, and insulin lispro (Admelog) due to the lack of reporting of net sales data.

Supplemental Figure 1. Price Benchmarks for Ustekinumab (Chron's and Ulcerative Colitis).



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Supplemental References

1. Dickson S, Gabriel N, Gellad WF, Hernandez I. Assessment of Voluntary and Mandatory Discounts in the Gross-to-Net Bubble for Leading Insulin Products, 2012-2019. JAMA Netw Open. 6(6):e2318145.

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3. Hernandez I, Cousin E, Wouters OJ, Gabriel N, Cameron T, Sullivan SD. Medicare Drug Price Negotiation: The Complexities of Selecting Therapeutic Alternatives for Estimating Comparative Effectiveness. J Manag Care Spec Pharm [Internet]. Available from: http://dx.doi.org/10.18553/jmcp.2023.23277