

National trends in prescription drug expenditures and projections for 2021



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Purpose. To report historical patterns of pharmaceutical expenditures, to identify factors that may influence future spending, and to predict growth in drug spending in 2021 in the United States, with a focus on the nonfederal hospital and clinic sectors.

Methods. Historical patterns were assessed by examining data on drug purchases from manufacturers using the IQVIA National Sales Perspectives database. Factors that may influence drug spending in hospitals and clinics in 2021 were reviewed—including new drug approvals, patent expirations, and potential new policies or legislation. Focused analyses were conducted for biosimilars, cancer drugs, generics, coronavirus disease 2019 (COVID-19) pandemic influence, and specialty drugs. For nonfederal hospitals, clinics, and overall (all sectors), estimates of growth of pharmaceutical expenditures in 2021 were based on a combination of quantitative analyses and expert opinion.

Results. In 2020, overall pharmaceutical expenditures in the United States grew 4.9% compared to 2019, for a total of \$535.3 billion. Utilization (a 2.9% increase) and new drugs (a 1.8% increase) drove this increase, with price changes having minimal influence (a 0.3% increase). Adalimumab was the top drug in 2020, followed by apixaban and insulin glargine. Drug expenditures were \$35.3 billion (a 4.6% decrease) and \$98.4 billion (an 8.1% increase) in nonfederal hospitals and clinics, respectively. In clinics, growth was driven by new products and increased utilization, whereas in hospitals the decrease in expenditures was driven by reduced utilization. Several new drugs that will influence spending are expected to be approved in 2021. Specialty and cancer drugs will continue to drive expenditures along with the evolution of the COVID-19 pandemic.

Conclusion. For 2021, we expect overall prescription drug spending to rise by 4% to 6%, whereas in clinics and hospitals we anticipate increases of 7% to 9% and 3% to 5%, respectively, compared to 2020. These national estimates of future pharmaceutical expenditure growth may not be representative of any particular health system because of the myriad of local factors that influence actual spending.

Keywords: clinics, hospitals, prescription expenditures

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In the calm before the pandemic storm of 2020, US healthcare spending in 2019 recorded another year of moderate growth, with an increase of 4.6% totaling \$3.8 trillion, making healthcare spending 17.7% of the overall economy.¹ The healthcare segments with the greatest growth in spending in 2019 were hospital care, physician and clinical services, and retail prescription drugs. In 2019,

retail prescription drug expenditures grew 5.7%, compared to increases of 3.8% and 2.2% in 2018 and 2017, respectively, and continue to constitute 9.2% of total healthcare expenditures. Drug purchases in the nonfederal hospital, clinic, and other sectors of healthcare contribute an additional \$156 billion, making sector-wide drug spending 13.3% of overall healthcare expenditures.²

Drug expenditures and their rate of growth continue to generate significant public and political interest. While minimal legislative action that will influence prescription drug expenditures occurred in 2020, the Trump administration submitted a number of executive orders and rule changes intended to reduce prescription drug costs in the United States. However, these policies were finalized late in President Trump's term and most are unlikely to be retained by the current administration.³

Innovative new therapies can often drive increases in drug expenditures. The COVID-19 pandemic put great attention on the Food and Drug Administration (FDA) as it used emergency use authorization authority for diagnostic tests, therapeutics, and vaccines. However, new drugs continued to be approved at a high pace, with 53 in 2020 being the second largest all-time annual number of new molecular entity approvals.⁴ This achievement is remarkable given disruption created by the COVID-19 pandemic that had the potential to slow clinical trials and the FDA approval process.

In this paper, we describe relevant data, public policy direction, and trends in the pharmaceutical marketplace to support healthcare leaders planning for drug expenses for their organizations. The goal of this article is to guide healthcare leaders, especially in health-system pharmacy, in understanding and budgeting for drug expenditures. We review historical trends in pharmaceutical expenses with an emphasis on nonfederal hospitals and clinics, and we identify factors that may influence future pharmaceutical spending, including new drugs and newly available biosimilar or generic products. We also forecast drug expenditure growth for 2021—for nonfederal hospitals clinics and overall—at the national level.

Methods

The methods used for the analysis are described in detail in the document "Methods and Limitations of the Annual AJHP Paper on National Trends

KEY POINTS

- Overall, pharmaceutical expenditures in the United States grew 4.9% in 2020, for a total of \$535.3 billion.
- Nonfederal hospitals accounted for \$35.4 billion in prescription expenditures in 2020, a historic 4.6% decrease compared to 2019, whereas in clinics spending grew 8.1% to \$98.4 billion.
- For 2021 we expect overall prescription drug spending to rise by 4% and 6%, whereas in clinics and hospitals we anticipate increases of 7% to 9% and 3% to 5%, respectively.

and Projections of Pharmaceutical Expenditures," which is provided as supplementary material online (available at www.ajhp.org). Data for spending in 2020 and prior years come from the IQVIA National Sales Perspective (NSP) database, which tracks purchases of medications by hospitals, clinics, retail pharmacies, mail-service pharmacies, home health facilities, long-term care outlets, and other healthcare entities. The NSP data used here were inclusive through December 31, 2020. Data for pipeline drugs were obtained from the clinical pipeline database provided by IPD Analytics (available at www.ipdanalytics.com) to identify drugs and biologics anticipated to be approved by FDA in 2021. More information on this is provided in the supplementary material.

As in previous papers in this series, we conducted several focused analyses of drug categories of special interest to drug spending in hospitals or clinics. These included (1) biosimilars, (2) cancer drugs, (3) influence of COVID-19, and (4) specialty drugs. We defined biosimilar drugs in the same manner as FDA and examined their expenditures in clinics and nonfederal hospitals.⁵

For the COVID-19 analysis, drug spending for COVID-19 drugs (defined below), in aggregate for the total market, by week, was evaluated in clinics and nonfederal hospitals to compare spending in 2019 and 2020. We then separately assessed expenditure trends in nonfederal hospitals and clinics for individual treatments commonly used in patients with COVID-19. COVID-19 drugs included azithromycin, dexamethasone, hydroxychloroquine, remdesivir, tocilizumab, and zinc sulfate. Remdesivir data were available only after FDA approval on October 22, 2020.⁶ Albuterol metered dose inhalers (MDIs) were also included because of the importance of respiratory support in the management of patients with COVID-19 and concern of COVID-19 transmission with the use of nebulized medications. Expenditures and standardized units for COVID-19 drugs are presented by week, starting the week of January 25, 2019, through the week of December 25, 2020. Standardized units are defined as the number of tablets, capsules, milliliters, or ounces. MDI doses are defined as 1 standardized unit dose.

Specialty drugs were defined by IQVIA as those used to treat specific, rare, and/or complex chronic diseases that meet 4 or more of the following criteria: (1) initiated and maintained by a specialist; (2) generally injectable and/or not self-administered; (3) require an additional level of care in their chain of custody; (4) annual cost of therapy of \$6,000 or more; (5) unique distribution; (6) require extensive or in-depth monitoring/patient counseling; and (7) require reimbursement assistance.⁷ We identified the top specialty drugs by expenditures and examined specialty drug expenditures by setting, with a focus on clinics and nonfederal hospitals.

Results

Historical trends in prescription expenditures. Spending on prescription drugs grew 4.9% in 2020, to \$535.3 billion. This increase was similar to that in 2019 (5.5%), consistent with

projections, and occurred despite the COVID-19 pandemic and ensuing economic decline.² As usual, the sectors with the highest spending on prescription drugs in 2020 were retail pharmacies (42.6% of the total, or \$228.1 billion), the mail-order sector (27.1% of the total, or \$145.3 billion), and clinics (18.4%, or \$98.4 billion), followed by nonfederal hospitals (6.6%), long-term care (2.7%), and home health care (1.4%). The remaining sectors together accounted for just over 10% of total expenditures, as shown in [Table 1](#).

Home health care, mail-order pharmacies, and clinics were the sectors that experienced the largest increases in prescription expenditures in 2020, growing 13.0%, 9.4%, and 8.1%, respectively, compared to 2019. Retail pharmacy prescription spending grew 3.4% to \$228.1 billion in 2020 and continued to represent the largest sector.

Drug expenditures in nonfederal hospitals dropped by a record 4.6% (a decline of \$1.5 billion) in 2020. Long-term care drug expenditures also dropped, by 7.7%. The reduced spending in hospitals and long-term care facilities likely reflects the lockdowns and avoidance of these facilities secondary to the pandemic.

Factors driving growth. The 4.9% increase in drug spending overall in 2020 was the product of 2.9% growth in spending due to increased utilization, a 1.8% increase in spending resulting from the use of new drugs, and a 0.3% change in prices (note that these figures do not sum to 4.9% because of rounding). In fact, across all sectors it was changes in volume of utilization (increases or decreases) that primarily drove the positive or negative growth in prescription spending in 2020. This is shown specifically for clinics and nonfederal hospitals

in [Table 2](#). For clinics, the 8.1% increase in spending was the result of 7.3% growth due to changes in volume, 2.3% growth in spending on new products, and 1.5% negative growth (reduced spending) due to price changes. The majority of spending in clinics in 2020 (79.7%; data not shown in table) was on injectables, most of which were branded products, but the largest increases in spending were for noninjectables (10.9%), which were driven by volume increases.

In nonfederal hospitals, the -4.6% change in pharmaceutical spending in 2020 compared to 2019 was the result of a drop in volume (-9.7%) balanced by an increase (4.6%) in spending on new products. Injectable products accounted for 76.6% of spending in nonfederal hospitals, and branded injectables were the category with the largest reduction in spending on a dollar basis.

Trends in overall drug spending. The percent change (increase or decrease) in prescription drug spending in the United States for each year compared to the previous year, from 2000 to 2020 in clinics, nonfederal hospitals, and overall (all sectors in [Table 1](#) combined), is shown in [Figure 1](#). Time trends are apparent, with an overall slowing of growth over the past 2 years. This is most noticeable in the nonfederal hospital sector, in which spending actually dropped 4.6% in 2020 compared to 2019. Since 2000, this is only the third time expenditures declined, and it is the largest instance since this report has been published. Total drug expenditures and clinic drug expenditure growth in 2020 were within or near the ranges anticipated, whereas nonfederal hospital drug expenditures were much lower.² While not precisely meeting the definition of a “black swan event,” since thought leaders from multiple sectors have been warning for decades about the probability of a global pandemic, the COVID-19 pandemic certainly qualifies as a profound disruption, especially as it relates to hospitals.^{8,9}

Top drugs overall. The top 25 drugs by expenditures for the overall US market in 2020 are shown in [Table 3](#). Adalimumab (\$24.9 billion), apixiban (\$12.8 billion),

Table 1. Prescription Drug Expenditures and Growth by Sector in 2020

Sector ^a	2020 Expenditures (\$ Millions)	Percent of Total Expenditures	Percent Change from 2019
Retail pharmacies	228,121	42.6	3.4
Mail-order pharmacies	145,313	27.1	9.4
Clinics	98,426	18.4	8.1
Nonfederal hospitals	35,353	6.6	-4.6
Long-term care	14,525	2.7	-7.7
Home health care	7,413	1.4	13.0
Federal facilities	2,644	0.5	-8.7
Staff-model HMOs	2,258	0.4	7.5
Other	1,224	0.2	-7.2
Total	535,276	100.0	4.9

Abbreviation: HMO, health maintenance organization.

^aRetail pharmacies include standalone chain and independent stores, as well as mass merchandisers and food and convenience stores with a licensed pharmacy. Mail-order pharmacies include licensed mail service pharmacies, including both private-sector and federal facilities. Clinics include physician offices and outpatient clinics, including general and family medicine clinics, specialty clinics covering oncology, nephrology, dialysis, family planning, and orthopedics, as well as urgent care centers. Nonfederal hospitals include all non-federally owned facilities licensed as hospitals, including inpatient treatment and rehabilitation facilities, in addition to general and specialty acute care institutions. Long-term care includes nursing homes and residential care facilities. Staff-model HMOs include closed-panel HMO pharmacies and hospitals, union clinics and pharmacies, and workers' compensation clinics. Home healthcare includes licensed home health organizations and visiting nurse entities. Federal facilities include Public Health Service and other federal hospitals, and US ships at sea (Veteran's Health Administration facilities were previously included in the federal facility sector, but data on these expenditures were not available after December 31, 2013). “Other” covers a variety of otherwise unclassified government accounts, as well as entities such as jails, prisons, and veterinary hospitals and clinics.

Table 2. Factors Driving Growth of Pharmaceutical Expenditures in Clinics and Nonfederal Hospitals in 2020, by Product Category^a

Product Category	Clinics				Nonfederal Hospitals			
	Total Percent Growth	Percent Growth Due to Factor			Total Percent Growth	Percent Growth Due to Factor		
		New Products	Price	Volume and Mix		New Products	Price	Volume and Mix
All products	8.1	2.3	-1.5	7.3	-4.6	4.6	0.5	-9.7
Injectables	7.6	2.8	-1.6	6.4	-4.9	5.7	0.9	-11.5
Branded	8.4	2.8	-1.7	7.3	-6.0	7.2	1.3	-14.5
Generic	-2.7	4.0	-4.2	-2.5	-5.0	2.4	-3.8	-3.6
Branded generic	-0.1	0.5	1.4	-2.0	2.5	0.2	3.9	-1.6
Noninjectables	10.9	0.9	-1.1	11.1	-3.7	1.0	-0.9	-3.8
Branded	13.9	0.5	-0.1	13.5	0.6	0.2	0.2	0.2
Generic	-5.8	4.4	-10.8	0.6	-5.1	3.7	-3.3	-5.5
Branded generic	5.3	0.2	2.8	2.3	-12.6	0.1	-1.4	-11.3

^aTotal growth comprised growth attributable to 3 factors: (1) new products (products that were not on the market in the previous year), primarily newly approved and marketed agents; (2) price (changes in the unit cost of drugs that were on the market in the previous year); and (3) volume and mix (changes in volume of utilization of existing products or changes in utilization patterns [eg, a shift from one product to another, as when prescribing moves from branded to generic products]).

Figure 1. Annual growth in US drug expenditures compared to previous year, 2000 through 2020.

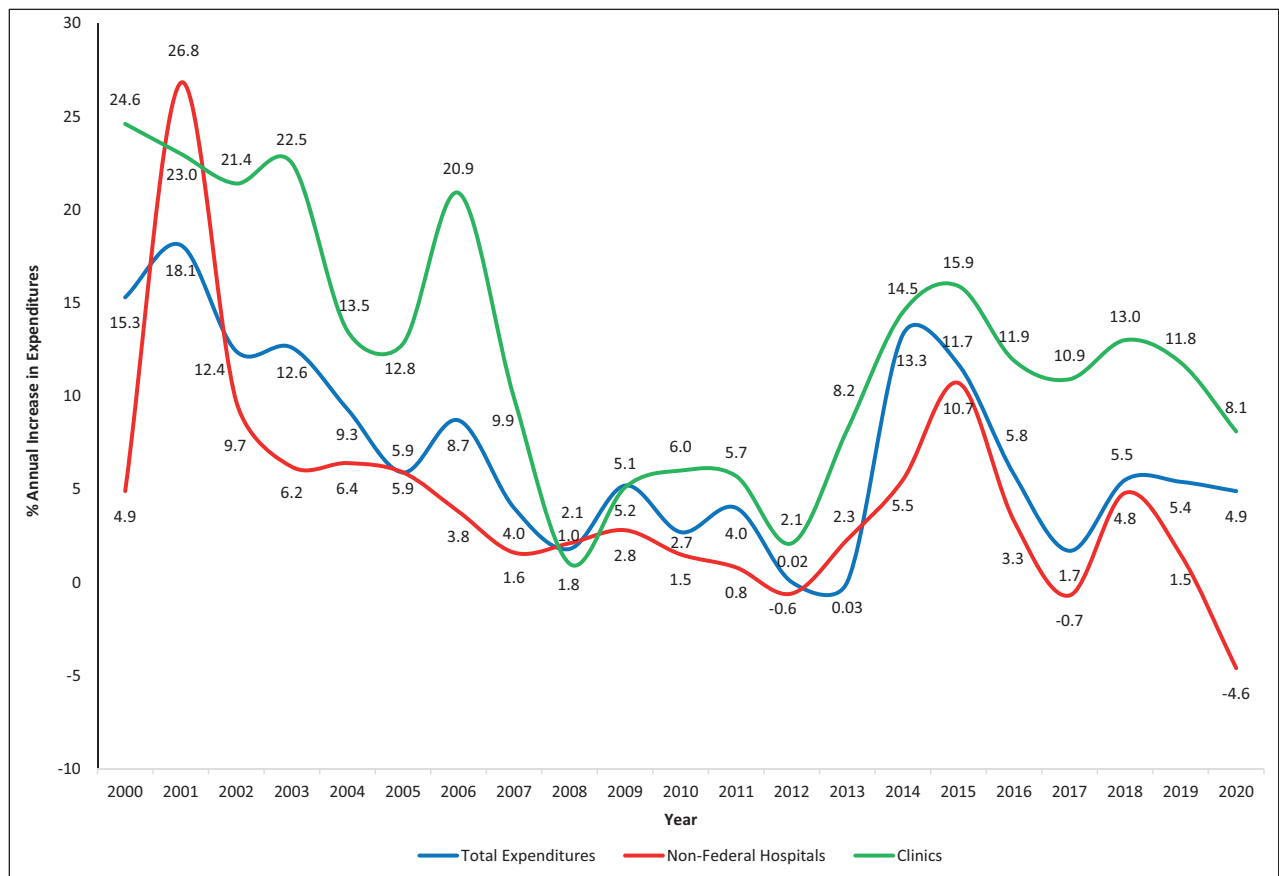


Table 3. Top 25 Drugs by Expenditures Overall in 2020

Drug ^a	2020 Expenditures (\$ Thousands)	Percent Change From 2019
Adalimumab	24,856,877	11.5
Apixaban	12,805,307	29.9
Insulin glargine	9,702,808	2.1
Dulaglutide	8,692,911	34.1
Ustekinumab	8,320,398	25.3
Pembrolizumab	8,295,581	26.6
Bictegravir/emtricitabine/tenofovir alafenamide	8,006,918	56.3
Etanercept	7,768,483	-3.5
Rivaroxaban	6,628,084	10.2
Sitagliptin	6,247,191	3.5
Insulin aspart	5,914,825	-2.0
Empagliflozin	5,688,217	46.8
Semaglutide	5,631,358	132.0
Insulin lispro	5,548,970	-4.0
Immune globulin	4,996,557	6.1
Liraglutide	4,714,827	-5.7
Secukinumab	4,440,378	18.6
Infliximab	4,180,420	-16.9
Budesonide/formoterol	4,145,219	6.7
Inactivated influenza virus	3,993,728	23.6
Nivolumab	3,945,153	-9.9
Rituximab	3,900,350	-12.1
Ibrutinib	3,855,095	10.3
Epinephrine	3,848,533	-1.4
Palbociclib	3,784,139	6.4

^aFor each drug listed, the expenditures shown are the total for branded and generic products (including biosimilars) and of various dosage forms.

and insulin glargine (\$9.7 billion) repeat from 2019 as the top 3 drugs by expenditures in 2020. Adalimumab (11.5%) and apixaban (29.9%) each continue to have double-digit growth, whereas spending on insulin glargine (2.1%) has remained consistently on a plateau. Strong growth was observed for dulaglutide (34.1%), ustekinumab (25.3%), pembrolizumab (26.6%), the combination human immunodeficiency virus (HIV) product bictegravir/emtricitabine/tenofovir alafenamide (56.3%), empagliflozin

(46.8%), semaglutide (132.0%), and inactivated influenza vaccine (23.6%). Decreased spending was observed for infliximab (-16.9%), rituximab (-12.1%), nivolumab (-9.9%), liraglutide (-5.7%), insulin lispro (-4.0%), etanercept (-3.5%), insulin aspart (-2.0%) and epinephrine (-1.4%).

Top drugs in clinics. The top 25 drugs by expenditures in the clinic setting in 2020 are shown in Table 4. These demonstrated significant volatility compared to previous years. While

pembrolizumab (\$7.1 billion) continued to be the top drug by expenditure, the next 4 drugs, nivolumab (\$3.3 billion, -8.4%), pegfilgrastim (\$3.1 billion, -6.4%), infliximab (\$2.8 billion, -19.4%) and rituximab (\$2.7 billion, -8.4%) each experienced reductions in expenditures. These decreases are likely a result of competition from biosimilars, as there were also decreases in expenditures for trastuzumab (-19.1%), erythropoietin alpha (-8.0%), and bevacizumab (-3.6%). Afibercept (\$2.3 billion) leapt into the top 10 after its first full year of availability in the US market. The combination HIV product bictegravir/emtricitabine/tenofovir alafenamide (46.1%), atezolizumab (40.1%), ibrutinib (29.5%), and vedolizumab (26.8%) each experienced a significant increase in expenditures in 2020.

Top drugs in nonfederal hospitals. The top 25 drugs by expenditures in nonfederal hospitals in 2020 are listed in Table 5; there were expansive changes to this list, in both positive and negative directions, from the previous year's list.² The newly approved antiviral remdesivir (\$1.1 billion) was the top agent by 2020 expenditures, despite having only 3 months of sales reported. The next 4 drugs—all of which saw decreased expenditures in this sector—were pembrolizumab (-10.8%), immune globulin (-17.6%), rituximab (-29.7%), and alteplase (-7.2%). Interestingly, 18 of the top 25 drugs showed negative growth in nonfederal hospitals in 2020. Three medications commonly used in the management of critically ill patients with COVID-19 showed substantial expenditure growth. These were tocilizumab (263.3%), dexmedetomidine (103.3%) and vasopressin (56.1%).

Table 6 displays the top 25 therapeutic drug categories based on drug expenditures in nonfederal hospitals, and these categories accounted for 95.8% of drug spending in nonfederal hospitals in 2020. Antineoplastics continued as the top drug by expenditure by a wide margin despite a significant decrease (-15.7%) in 2020, followed by hemostatic modifiers, immunologic agents, and antiviral drugs. The

Table 4. Top 25 Drugs by Expenditures in Clinics in 2020

Drug ^a	2020 Expenditures (\$ Thousands)	Percent Change From 2019
Pembrolizumab	7,130,200	34.5
Nivolumab	3,327,182	-8.4
Pegfilgrastim	3,100,689	-6.4
Infliximab	2,788,271	-19.4
Rituximab	2,697,158	-8.4
Denosumab	2,531,554	1.1
Bevacizumab	2,442,623	-3.6
Ocrelizumab	2,373,185	15.4
Aflibercept	2,292,236	7,745.6
Trastuzumab	1,952,649	-19.1
Vedolizumab	1,851,387	26.8
Ranibizumab	1,712,420	-13.3
Immune globulin	1,652,048	3.9
Erythropoietin alfa	1,602,118	-8.0
Daratumumab	1,494,808	11.1
Atezolizumab	1,366,641	40.1
Pertuzumab	1,321,437	2.3
Inactivated influenza virus	1,300,966	3.6
Ibrutinib	1,250,472	29.5
Abatacept	1,145,161	10.2
Pemetrexed	1,046,214	4.1
Durvalumab	1,040,264	16.0
Ipilimumab	947,036	12.4
Vaccine, pneumococcal conjugate ^b	930,678	-13.2
Bictegravir/emtricitabine/tenofovir alafenamide	924,009	46.1

^aFor each drug listed, the expenditures shown are the total for branded and generic products (including biosimilars) and of various dosage forms unless otherwise stated.

^bIncludes both Prevnar (Pfizer Inc) and Pneumovax-23 (Merck & Co, Inc).

largest increases in expenditures were observed with antiviral drugs (78.3%), hormones (16.7%), diabetes therapies (11.5%) and anesthetics (11.4%). The largest decreases in expenditures occurred with neurological disorder drugs (-26.2%), systematic anti-infectives (-15.9%) blood factors (-15.7%) and vascular agents (-15.0%).

Trends in specialty drugs. Specialty drug expenditures by sector in the United States in 2020 are shown in eTable 1. Spending on specialty drugs in

2020 for all sectors combined was \$265.3 billion, which was 49.6% of total prescription expenditures.

Specialty drug expenditures increased 8.4% in 2020 compared to 2019. Three sectors accounted for 88.7% of spending on specialty drugs. These were mail-order pharmacies (accounting for \$116.6 billion, or 44.0% of all specialty drug spending); clinics, including physician offices and outpatient clinics (\$79.9 billion, or 30.1% of all specialty drug spending); and retail

pharmacies (\$38.7 billion, or 14.6% of all specialty drug spending). The top 5 specialty drugs in mail-order pharmacies (adalimumab, ustekinumab, etanercept, secukinumab and dimethyl fumarate) were oral and self-injectable drugs, whereas the top 5 specialty drugs in clinics were pembrolizumab, nivolumab, pegfilgrastim, infliximab, and rituximab, which reflects infusion-based specialty pharmacy practice in clinics.

The fastest-growing sector for specialty drugs was home healthcare, in which spending increased by 16.3% from \$5.6 billion in 2019 to \$6.5 billion in 2020. The top 5 specialty drugs in home healthcare in 2020 were immune globulin, vedolizumab, infliximab, ocrelizumab, and emicizumab. Drug expenditures for specialty drugs in the clinic sector rose 11.0% in 2020 compared to 2019, an increase greater than that for all sectors combined (8.4%). Nearly all of the top 25 drugs in clinics were specialty drugs, as shown in Table 4.

Nonfederal hospitals spent \$17.1 billion on specialty drugs in 2020, a decrease of over 10% compared to 2019. The top 5 specialty drugs in nonfederal hospitals were pembrolizumab, immune globulin, rituximab, natalizumab, and nivolumab. Nonfederal hospital spending on specialty drugs grew slower than the overall specialty drug market growth rate in previous years as care shifted from this sector to the clinic and home care settings.

Trends in biosimilars. As of the end of 2020, 29 biosimilars had been approved in the United States and 20 had entered the market. Eight biosimilars were launched in 2020, compared to 6 in the previous year. Rituximab faced biosimilar competition for the first time in 2020. Biosimilar expenditures in clinics and nonfederal hospitals in 2020, as well as the corresponding percent changes from 2019, are shown in Table 7. In clinics, biosimilar expenditures increased substantially, rising to \$3.4 billion in 2020 from \$1.2 billion in 2019. The 3 most recently launched biosimilar products (biosimilars for bevacizumab,

Table 5. Top 25 Drugs by Expenditures in Nonfederal Hospitals in 2020

Drug ^a	2020 Expenditures (\$ Thousands)	Percent Change from 2019
Remdesivir	1,092,461	. . . ^b
Pembrolizumab	1,022,965	-10.8
Immune globulin	903,660	-17.6
Rituximab	840,406	-29.7
Alteplase	825,047	-7.2
Inactivated influenza virus	626,382	14.2
Natalizumab	625,286	-1.0
Vasopressin	596,384	56.1
Nivolumab	545,079	-18.0
Ocrelizumab	493,569	-10.1
Infliximab	480,869	-20.5
Pegfilgrastim	452,634	-24.5
Bevacizumab	401,216	-32.5
Bictegravir/emtricitabine/tenofovir alafenamide	382,589	31.7
Immunoglobulin, antithymocyte	353,817	-0.3
Sugammadex	335,253	12.1
Denosumab	330,417	-11.3
Albumin	329,680	-5.1
Piperacillin/tazobactam	319,488	-16.5
Trastuzumab	317,718	-42.6
Iohexol	309,429	-5.6
Tocilizumab	308,793	263.3
Vedolizumab	292,253	-9.7
Bupivacaine	281,547	-5.3
Dexmedetomidine	270,626	103.3

^aFor each drug listed, the expenditures shown are the total of brand and generic products (including biosimilars) and of various dosage forms.

^bNot applicable; drug approved for use in United States in October 2020.

trastuzumab, and rituximab) achieved significant uptake in the clinic sector in 2020. Market share shifts were observed with bevacizumab biosimilars (35.6%), trastuzumab biosimilars (35.7%), pegfilgrastim biosimilars (23.8%), and rituximab biosimilars (18.3%).

In nonfederal hospitals similar trends were observed. Biosimilar expenditures increased to \$0.8 billion in 2020, compared to \$0.4 billion in 2019. Historic market share increases were

observed for bevacizumab biosimilars (29.5%) and rituximab biosimilars (16.5%). Trastuzumab biosimilars had one of the largest percent changes from 2019 but still captured only a 3.9% nonfederal hospital market share.

Recent and anticipated drug approvals. The use of new drugs is typically a major contributor to the growth of pharmaceutical expenditures. Below we review important new drugs approved in 2020. We also

identify drugs that are anticipated to be approved in 2021 that may impact drug expenditures.

Drugs approved in 2020. FDA's momentum in drug approval was not affected by the COVID-19 pandemic. In 2020 FDA approved nearly as many drugs and biologics as it had when it set the all-time record in 2018. In perhaps the most challenging year in healthcare, FDA approved 53 new molecular entities compared to 48 in 2019, with 40% (21 of the 53 novel drugs) being first-in-class agents.⁴ In addition, 58% (31 of 53 novel drugs) were approved to treat orphan diseases that affect 200,000 or fewer Americans. Eight therapies received authorization for emergency use for combatting COVID-19. In addition, some approvals resulted in modified dosing or routes of administration that may reduce the frequency or need for visits to infusion centers. These changes included increased dosing intervals, such as that for pembrolizumab (which was extended from 3 weeks to 6 weeks), and approvals of oral or subcutaneous formulations of already marketed drugs. New formulations approved in 2020 included the first oral tablet combining decitabine plus cedazuridine, the first oral androgen-deprivation therapy, a subcutaneous version of daratumumab (daratumumab plus hyaluronidase-fihj), and a subcutaneous fixed-dose combination of pertuzumab/trastuzumab. Both subcutaneous combinations can be administered in the outpatient setting or the patient's home by healthcare professionals.

FDA approved 18 oncolytic therapies that were launched in 2020. These showcase the biologic technology evolution and include fragment crystallizable (Fc)-engineered monoclonal antibody therapies (tafasitamab-cxix for refractory diffuse large cell lymphoma and margetuximab-cmkb for HER2-positive metastatic breast cancer), 2 antibody drug conjugates (belantamab mafodotin-blmf for multiple myeloma and sacituzumab govitecan-hziy for metastatic triple negative breast cancer), and a third chimeric antigen receptor T-cell therapy

Table 6. Top 25 Therapeutic Drug Category by Expenditures in Nonfederal Hospitals in 2020

Drug Category	2020 Expenditures (\$ Thousands)	Percent of Total 2020 Expenditures	Percent Change from 2019
Antineoplastic agents	6,679,358	19.6	-15.7
Hemostatic modifiers	2,772,502	8.1	-5.1
Immunologic agents	2,652,874	7.8	6.7
Antiviral drugs	2,430,234	7.1	78.3
Biologicals	2,087,790	6.1	-8.7
Antiinfectives, systemic ^a	1,555,780	4.6	-15.9
Miscellaneous	1,437,613	4.2	-1.1
Hospital solutions	1,430,023	4.2	-14.4
Blood factors	1,390,327	4.1	-15.7
Anesthetics	1,228,846	3.6	11.4
Hormones	1,208,486	3.5	16.7
Diagnostic aids	1,184,344	3.5	-11.5
Respiratory therapy agents	1,068,329	3.1	-1.7
Gastrointestinal agents	1,041,044	3.1	-15.4
Antiarthritics	813,810	2.4	8.7
Musculoskeletal agents	719,980	2.1	8.1
Neurological disorder drugs	704,557	2.1	-26.2
Psychotherapeutics	686,276	2.0	0.9
Analgesics	620,160	1.8	-13.3
Diabetes therapies	520,603	1.5	11.5
Cardiac agents	418,946	1.2	-7.8
Vascular agents	414,665	1.2	-15.0
Antifungal agents	347,311	1.0	-8.3
Enzymes	343,941	1.0	-3.0
Ophthalmic agents	327,178	1.0	-5.5

^aIncludes mostly antibacterials along with some antiparasitic agents, with the latter having minimal impact in terms of expenditures.

(brexucabtagene autoleucel for mantle cell lymphoma).

Non-small cell lung cancer (NSCLC) dominated the gene-targeted drug approvals, which included capatinib, selprecatinib, and pralsetinib. Other gene-targeted drug approvals included pemigatinib for cholangiocarcinoma, avapritinib and ripretinib for gastrointestinal tumors, tucatinib for HER2-positive metastatic breast cancer, and tazemetostat for relapsed/refractory follicular lymphoma.

Anticipated and approved new drugs in 2021. Selected novel agents that may receive or have received FDA approval for marketing by the end of this year are shown in Table 8. The drugs shown in the table are anticipated to have significant clinical and/or financial impact in hospitals and clinics and were selected from 54 novel drugs expected to be considered for approval in 2021, as reported in the IPD Analytics pipeline database (see Methods section in online supplemental material for more details).¹⁰

Prescription Drug User Fee Act (PDUFA) dates are listed as an indicator of the expected approval dates.

According to a news article published by *The Lancet Oncology*, the number of new clinical trials for cancer drugs and biologics decreased by 60% during the COVID-19 pandemic.¹¹ Although this may influence expected approvals in the future, new oncology drugs made up the largest portion of the drug pipeline in 2021, as highlighted in Table 8. At the time this paper was finalized, 4 agents for cancer had already received FDA approval. These were capatinib for MET-positive NSCLC, umbralisib (an oral dual inhibitor of PI3K-delta and CK1-epsilon) for relapsed follicular/marginal cell lymphoma, triaciclib (a first-in-class agent for the treatment of patients with extensive-stage small cell lung cancer to reduce chemotherapy-induced bone marrow suppression), and melphalan flufenamide (a peptide-drug conjugate) for multiple myeloma.

The pipeline for oncology drug approvals will continue to expand the portfolio for the management of NSCLC with the anticipated approval of amivantamab and sotorasib. Amivantamab is a novel, fully human anti-EGFR/MET bispecific antibody whose mechanism of action can target both EGFR- and MET-driven disease and has shown monotherapy activity in patients with diverse EGFR-mutant disease. Sotorasib is an oral KRAS G12C inhibitor (first in class) for the management of patients with NSCLC who harbor KRAS G12C mutations. KRAS G12C is one of the most common driver mutations in NSCLC, and there is a high unmet need for and poor outcomes in the second-line treatment of KRAS G12C-driven NSCLC.¹² The wave of antibody-drug conjugate approvals continues, with anticipation that an anti-CD19 monoclonal antibody-drug conjugate for relapsed/refractory diffuse large B-cell lymphoma will be approved. Loncastuximab received FDA priority review based on a single-arm phase 2 study demonstrating encouraging outcomes in heavily pretreated patients.¹³

Table 7. Biosimilar Expenditures by US Clinics and Nonfederal Hospitals in 2020

Setting and Originator Drug	2020 Expenditures (\$ Thousands)	Percent Change From 2019
Clinics		
Pegfilgrastim	738,660	30.20
Infliximab	343,110	39.30
Filgrastim	121,195	-5.54
Bevacizumab	868,589	966.98
Epoetin alfa	155,572	94.17
Trastuzumab	696,991	808.97
Rituximab	492,592	... ^a
Nonfederal hospitals		
Pegfilgrastim	135,418	-3.78
Filgrastim	94,127	-3.23
Infliximab	89,694	8.30
Epoetin alfa	137,903	78.59
Bevacizumab	118,329	1,053.74
Trastuzumab	91,230	830.30
Rituximab	138,683	... ^a

^aNegligible sales in 2019.

Another continued trend in 2021 is the development of new treatments for rare diseases. Casimersen was approved for Duchenne muscular dystrophy following last year's approval of viltolarsen. Molybdenum cofactor deficiency type A is a rare neurological disorder. Fosdenopterin is the first treatment option for babies with this condition. Arimoclomol may become one of the treatment options for a rare progressive genetic disorder, Niemann-Pick disease type C. Avalglucosidase alfa is an enzyme replacement therapy for patients with Pompe disease, another rare genetic disorder with limited treatment options. Odevixibat is also awaiting FDA approval as an agent to treat rare pediatric cholestatic liver diseases. Avacopan is an investigational oral drug for treatment of antineutrophil cytoplasmic antibody-associated vasculitis, an autoimmune disease characterized by destruction and inflammation of small vessels.

In addition to new drugs for rare diseases, several specialty drugs are in the pipeline. There may soon be several new treatment options for chronic inflammatory skin disease. Abrocitinib, an oral Janus kinase 1 inhibitor for atopic dermatitis, is in the pipeline. Another atopic dermatitis treatment, tralokinumab, an interleukin-13 inhibitor, is also awaiting approval. Bimekizumab will, if approved, be a treatment option for plaque psoriasis. Several next-generation drugs for Alzheimer's disease are currently being developed. Aducanumab could be the first disease-modifying treatment for Alzheimer's disease, and several novel drugs will likely be approved for chronic pain, prevention of type 1 diabetes, chronic graft-versus-host disease and necrotizing soft tissue infections. Lastly, there are several oral antiviral drugs for coronavirus in phase 2 clinical trials. Molnupiravir could become the first oral antiviral therapy for COVID-19; preliminary results of trials

are being released. If approved, it may significantly influence drug expenditures for the overall market and health systems.

Generic drug trends and patent expiration. FDA continues to facilitate the increasing availability of generic medications, with full or tentative approval of 909 agents in 2020—a high approval rate, albeit lower (by 22.3%) than the rate in 2019. While there were fewer abbreviated new drug applications in 2020, there were 107 first-time generics (a 39% increase from 2019).^{14,15} In 2020, expenditures on generic products (including branded generics) in the United States totaled \$99.6 billion, a 0.5% increase from \$99.2 billion in 2019.² Generics accounted for 18.7% of total pharmaceutical expenditures in 2020, which continues the trend since 2015 of a decreasing percentage of the total drug spend being attributable to generics. Injectable generics accounted for 12.9% of total expenditures in 2020, which was an increase of 6.8% compared to 2019. Noninjectable generic expenditures declined at a lower rate in 2020 than in 2019 (-1.9% vs -2.8%).

Generics drug trends in clinics and nonfederal hospitals. Table 2 provides information on the expenditures for branded and generic drugs in clinics and nonfederal hospitals in 2020, including factors that influenced increases and decreases in those expenditures. In clinics, there was an overall decrease of 2.8% in spending on generics (including branded generics) in 2020 compared to 2019. Injectable generic expenditures in clinics experienced a 2.7% decrease in 2020 compared to 2019, which was driven by new price and volume of utilization, with an increase in expenditures on newly available products. Meanwhile, there was a 10.9% increase in clinic noninjectable generic expenditures in 2020 compared to 2019, which was also driven by volume.

In nonfederal hospitals, generic drug spending experienced a decrease of 4.6% in 2020 compared to 2019. This was driven by a 4.9% decrease in injectable and 3.7% decrease in noninjectable

Table 8. Selected Drugs and Biologicals That Have Already or May Receive FDA Labeling Approval in 2021^a

Drug or Biological	Manufacturer(s)	Indication(s)	Route	Type of Application	PDUFA Date (Month or Quarter) ^b
Umbralisib	TG Therapeutics	Relapsed or refractory marginal zone lymphoma and follicular lymphoma	Oral	NDA	Approved (Feb)
Trilaciclib	G1 Therapeutics	Decrease incidence of chemotherapy-induced myelosuppression	IV	NDA	Approved (Feb)
Casimersen	Sarepta Therapeutics	Duchenne muscular dystrophy	IV	NDA	Approved (Feb)
Melphalan Flufenamide	Oncopeptides	Multiple myeloma	IV	NDA	Approved (Feb)
Fosdenopterin	BridgeBio	Molybdenum cofactor deficiency type A	IV	NDA	Approved (Feb)
Arimoclomol	Orphazyme	Niemann-Pick disease type C	Oral	NDA	Q1
Aducanumab	Biogen, Eisai	Alzheimer's disease	IV	BLA	Q1
Roxadustat	FibroGen, AstraZeneca	Anemia due to kidney disease	Oral	NDA	Q1
Idecabtagene Vicleucel	bluebird bio, Bristol-Myers Squibb	Multiple myeloma	IV	BLA	Q1
Abrocitinib	Pfizer	Atopic dermatitis	Oral	NDA	Q2
Pegcetacoplan	Apellis	Paroxysmal nocturnal hemoglobinuria	IVI	NDA	Q2
Avalglucosidase Alfa	Sanofi	Pompe disease	IV	BLA	Q2
Loncastuximab Tesirine	ADC Therapeutics	Relapsed or refractory diffuse large B-cell lymphoma	IV	BLA	Q2
Belumosudil	Kadmon	Chronic graft-vs-host disease	Oral	NDA	Q2
Ibrexafungerp	Scynexis	Vulvovaginal candidiasis	Oral	NDA	Q2
Tanezumab	Pfizer, Eli Lilly	Chronic pain due to moderate to severe osteoarthritis	SC	BLA	Q2
Tralokinumab	AstraZeneca, LEO Pharma	Atopic dermatitis	SC	BLA	Q2
Teplizumab	Provention Bio	Delay or prevention of type 1 diabetes in at-risk individuals	IV	BLA	Q3
Avacopan	ChemoCentryx	Antineutrophil cytoplasmic antibody-associated vasculitis	Oral	NDA	Q3
Bimekizumab	UCB	Plaque psoriasis	SC	BLA	Q3
Reltecimod	Atox Bio	Necrotizing soft tissue infections	IV	NDA	Q3
Amivantamab	Janssen	Metastatic non-small cell lung cancer	IV	BLA	Q4
Odevixibat	Albireo	Pediatric cholestatic liver diseases	Oral	NDA	Q4
Sotorasib	Amgen	Metastatic non-small cell lung cancer	Oral	NDA	Q4
Narsoplimab	Omeros	Hematopoietic stem cell transplant-associated thrombotic microangiopathy	SC	BLA	Q4

Abbreviations: FDA, Food and Drug Administration; BLA, biologics license application; IV, intravenous; IVI, intravitreal injection; NDA, new drug application; PDUFA, Prescription Drug User Fee Act; Q, quarter; SC, subcutaneous.

^aInformation for this table extracted from the IPD Analytics Brand and Biosimilar Pipeline database (see extended methods description in supplemental online material).

^bExtrapolated on basis of NDA submission date and review status (ie, 10 months for standard review and 6 months for priority review). Some agents listed may have been approved by the time of publication.

drug expenditures. Reduced utilization was the driver for decreased expenditures for both generic and branded generic injectables and noninjectables.

Anticipated patent expirations. Table 9 lists selected branded agents expected to lose patent protection in 2021. Generic availability dates are always fluid because they depend on results of patent litigation or market exclusivity agreements and delays in drug manufacturing. The branded agents with the potential to lose patent protection in 2021 that are most important in terms of impact on overall expenditures for clinics and hospitals are bupivacaine liposome (expenditures of \$267.5 million in 2020), ferumoxytol (\$38.0 million), ticagrelor (\$31.0 million), arformoterol (\$14.7 million), dexlansoprazole (\$14.0 million), and sunitinib (\$4.6 million).

Influence of COVID-19. Beginning the week of March 8, 2020, and continuing for 3 weeks, there was a meaningful increase in drug expenditures compared to the same period in 2019. This increased spend was followed by a precipitous drop, during which drug spending was notably lower than in 2019. This drop lasted for 19 weeks before a rebound. For the remainder of 2020 drug expenditures exceeded spending for the same period in 2019, as shown in Figure 2. When the volatile weeks at the early stages of the pandemic were removed from the data, the actual drug spend reached the projections for 2020, showing a modest increase in growth compared to the same week in 2019.

In clinics, atypical increases in expenditure growth were observed for albuterol MDI (200.7% increased growth), azithromycin (84.6% increased growth), hydroxychloroquine (355.5% increased growth), tocilizumab (17.8% increased growth), and dexamethasone (265.3% increased growth) (eFigure 1, panel A). Remdesivir had a rapid expenditure increase in clinics after FDA approval in the fourth quarter of 2020. Interestingly, hydroxychloroquine had negative expenditures starting in May 2020 (eFigure 1, panel B), likely indicative of returns of unused product.

Table 9. Selected Potential Patent Expirations in 2021

Drug	Brand Name	Indication
Aprepitant oral suspension	Emend	Antinausea
Arformoterol	Brovana	COPD
Benzyl alcohol	Ulesfia	Antiparasite
Bupivacaine liposomal	Exparel	Anesthesia use
Degarelix	Firmagon	Prostate cancer
Emtricitabine	Emtriva	HIV infection
Everolimus	Afinitor	Pancreatic cancer
Ferumoxytol	Feraheme	Iron deficiency anemia
Formoterol	Performomist	COPD
Lopinovir/ritonavir	Kaletra	HIV infection
Magnesium sulfate anhydrous/ potassium sulfate/sodium sulfate	Suprep bowel prep kit	Bowel preparation
Naloxone nasal spray	Narcan	Counter effects of drug overdose
Nebivolol	Bystolic	Blood pressure control
Posaconazole oral suspension	Noxafil	Antifungal
Ritonovir	Norvir	HIV infection
Roflumilast	Daliresp	COPD
Sunitinib	Sutent	Cancer treatment
Ticagrelor	Brilinta	Anticoagulant
Varenicline	Chantix	Smoking prevention

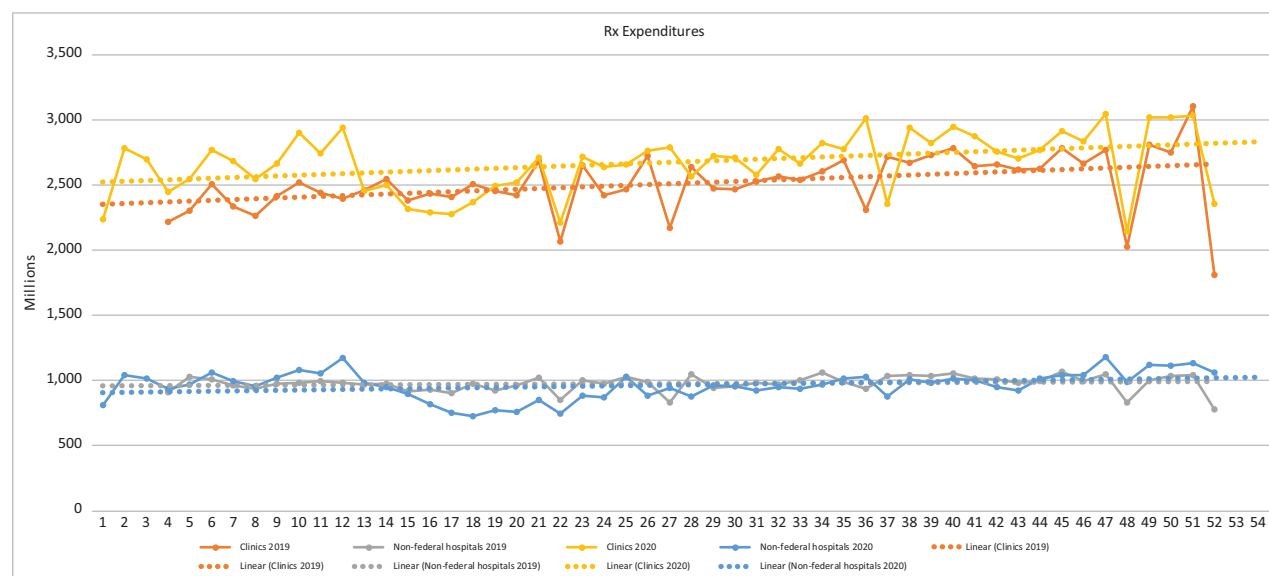
Abbreviations: COPD, chronic obstructive pulmonary disease; HIV, human immunodeficiency virus.

As the top drug by expenditures in nonfederal hospitals, remdesivir captured spending that greatly exceeded expenditures for all COVID-19 drugs in this sector (eFigure 2, panel A). Tocilizumab (42.7% increased growth) and hydroxychloroquine (21.1% increased growth) had striking increases in expenditures after minimal expenditures historically (eFigure 2, panel B). Albuterol (66.7% increased growth), azithromycin (72.6% increased growth after March 20, 2020), and dexamethasone (78.7% increased growth) also experienced uncharacteristic growth (eFigure 2, panel C). With the exception of remdesivir, all COVID-19 drugs experienced significant decreases in spending after expenditures surged.

Discussion

While total pharmaceutical spending in 2020 grew by a similar amount in 2020 than in 2019, there were shifts in the sectors where drug purchases occurred—with major gains in mail-order and home health care—whereas spending decreased in nonfederal hospitals and in long-term care. These changes likely reflect shifts in care due to the pandemic. Moreover, across all sectors, the increases or decreases in drug spending were driven primarily by changes in volume of utilization that also reflect these shifts. Price changes, while concerning in previous years, had little overall impact.

Factors that are likely to increase or decrease pharmaceutical expenditures

Figure 2. Drug expenditures by US clinics and nonfederal hospitals weekly (52 weeks) in 2019 and 2020.

in 2021 in nonfederal hospitals and clinics are discussed below. These include (1) continued availability and uptake of biosimilar agents and generic drugs, (2) new and expanded indications for cancer agents, (3) new drugs and shifts in care related to the COVID-19 pandemic, (4) health policy actions that may influence drug prices, and (5) the continued growth of specialty medication approval and use.

Biosimilars. Since inception of the biosimilar approval pathway, FDA has approved 29 biosimilars in 3 broad categories: chronic and autoimmune diseases, blood disorders, and oncology. However, only 20 biosimilars have made it to market. The highly anticipated biosimilar for adalimumab remains in litigation and is not expected to become available in the United States until 2022. It is expected that FDA will approve new biosimilars for insulin aspart and ranibizumab along with additional biosimilars for adalimumab, bevacizumab, and pegfilgrastim in 2021, which will increase competition and may cause further reductions in expenditures. It is likely that budget pressures driven by COVID-19, increased competition among biologics, and

FDA's Biosimilar Action Plan may have prompted greater use of biosimilars instead of innovator products in 2020. Continuation of this trend will provide one of the most powerful deflationary forces on drug expenditures for the foreseeable future.

Cancer drugs. Oncology drug expenditures are expected to continue to grow in 2021 at rates similar to 2020 rates. Despite the pandemic, in 2020 clinic expenditures for oncology drugs remained close to the growth trajectory predicted in 2019. The trends of oncology new drug approvals and expanded indications will continue to drive expenditures across all sectors in 2021. As the oncology biosimilars continue to gain traction, overall growth in this sector will continue as other novel biologic agents enter the market. For example, 2 antibody-drug conjugates used in HER2-positive breast cancer (trastuzumab deruxtecan and trastuzumab emtansine) were demonstrated to have improved efficacy compared to trastuzumab, which translated to higher expenditures on those agents in 2020. Another trend observed in 2020 that will likely continue in 2021 is the increased utilization of

subcutaneous formulations of monoclonal antibodies. The field of immunoncology will continue to take center stage in 2021 and beyond, with progress in the optimal use of immune checkpoint inhibitors combined with chemotherapy, targeted agents, and other immunotherapies.

COVID-19 pandemic. The COVID-19 pandemic had a dramatic influence on drug expenditures in 2020, causing changes in use of specific drugs (both increases and decreases), shifts in sectors of care, and approval of new agents. Some of these effects are still playing out as the pandemic evolves and new drugs move from emergency use authorization (EUA) to full FDA approval and subsequent availability in the commercial market. Importantly, prescription drug expenditure trends in hospitals drifted back to more typical patterns by the end of 2020. We expect that hospitals will not repeat the elective-care lockdowns of 2020 even if other sectors of the economy do, and will remain near full capacity throughout 2021 as they continue to manage ongoing cases of COVID-19 and adjust admissions for backlogged elective care accordingly to maintain capacity.^{16,17} In addition, delays

in preventive care caused by pandemic precautions or fear may lead to higher utilization of more costly acute care, resulting in a corresponding rebound of prescription drug expenditures in the hospital sector.

Moreover, as drugs transition from EUA to full FDA approval, these expenditures will transfer from the federal government to the sectors where care is occurring. For example, hospital and clinic leaders need to plan for a full year for remdesivir expenses and the transition of monoclonal antibody cocktails to standard distribution, and they should also expect additional new agents for the management of COVID-19. While expenditures for COVID-19 vaccines are expected to be covered by the federal government for the duration of 2021, leaders should budget for commercial availability and expenditure for these vaccines in 2022.¹⁸

Health policy actions. While no meaningful legislative action impacting prescription drug pricing occurred in 2020, the Trump administration took a number of last-minute executive actions directed towards pharmaceutical expenses.¹⁹ The Biden administration then froze all regulations that were within the 60-day window during which newly issued rules must await implementation. As a result, the rules issued by President Trump that focused on drug importation, elimination of rebates in Medicare Part D, and pegging of drug prices to international benchmarks are not expected to survive to implementation.

Two meaningful Trump executive actions that are expected to persist are the “Transparency in Coverage” Final Rule and the ending of the Unapproved Drug Initiative.²⁰ While it is not clear how the former will impact drug expenses, the changes will bring new transparency to the difference between list and net prices, fostering a more competitive environment.³ The ending of the Unapproved Drug Initiative will end the practice of older drugs receiving new patent protection, which over the past decade has led to the

massive expenditure increases for old drugs such as epinephrine and vasopressin; the former is still a top 25 drug in overall expenditures, and the latter is in the top 10 by expenditures in the nonfederal hospital sector.^{21,22}

With control of both the legislative and executive branches of the federal government by the Democratic party, the prospect for substantive policy changes that could reduce drug prices in the United States has grown dramatically in the last year. For example, legislation that would mandate price negotiation for Medicare Part D drugs is expected to be revisited, and other measures to control prices can be expected. While these actions are unlikely to have significant impact on drug prices or expenditures for 2021, they would have longer-term effects and perhaps could set a tone that discourages aggressive pricing increases in the near future.

Specialty drugs. Growth of spending on specialty drugs in the United States continues to outpace growth in the rest of the market despite disruptions by COVID-19 cases and is likely to exceed 50% of overall drug expenditures in 2021. As FDA continues to approve many new novel specialty drug therapies, we can expect continued substantial clinical and financial impact.⁴ Many of the newly approved therapies are for patients with rare and ultrarare diseases. These therapies provide new options for patients with life-limiting and life-threatening rare diseases, but their high costs create challenges for health systems. Another trend that will continue in 2021 is the effort by payors to implement site of care restrictions, which will push more use of high-cost specialty drugs out of hospitals and clinics and into lower-cost alternative sites, such as ambulatory infusion centers and home care.²³

Drug expenditure forecast for 2021. Taking the historical trends and anticipated new drugs and generic availability reviewed above together with other policy, public health, and economic factors, as well as our analytic modeling, we predict that in 2021, for the overall market,

pharmaceutical expenditures will grow 4% to 6% compared to 2020. Further, we estimate that drug spending in clinics and nonfederal hospitals will increase by 7% to 9% and 3% to 5%, respectively, in 2021 compared to 2020. The rationale for the above predictions was further elucidated in the discussion above.

Summary. In this paper, we provide information to help health-system leaders understand drug expenditure patterns and anticipate future growth in spending. Projecting future pharmaceutical spending at either the national level (as done here) or at a local level (which is the objective of an institution’s drug budget) is complex. Actual future spending is determined by many different factors, some of which are unknown at the time of budget projection formation. These factors include but are not limited to changes in patient volume, disease patterns, and/or acuity; changes in local or national policies or economic conditions; availability and adoption of new technological or medications; price changes; and changes in prescribing practices and utilization of medications. Keeping up to speed with changes in the local and national landscapes is critical for leaders to be able to explain variances that occur when comparing budgeted to actual spending. Close monitoring of spending will also help identify measures to proactively manage actual spending so that it does not exceed budgeted amounts. Leaders also need to understand the value of the sectors of business that they manage, since exceeding expenses in areas that produce net operating income is likely to be unfavorable to the overall financial performance of the enterprise.

Limitations. There are many limitations of this analysis of national drug expenditures. There is also an equally diverse array of factors that influence projections for future growth of prescription drug expenditures in any given year. As 2020 sat squarely in the heat of the COVID-19 pandemic, these limitations will loom even more relevant as we sort out the far-reaching effects this pandemic has had on healthcare and the economy and as we hone our projections

for expenditures in 2021 and beyond. Supplemental material that delves deeper into the list of these limitations can be found in the online supplementary material (available at www.ajhp.org).

Conclusion

We predict continued moderate growth of 4% to 6% in overall drug expenditures (across the entire US market). We expected the clinic sector to continue to experience high growth in drug spending (7%-9%) in 2021. Finally, for nonfederal hospitals we anticipate a rebound in growth (ie, growth in the range of 3%-5%). These estimates are for spending growth at the national level. Health-system pharmacy leaders should carefully examine their own local drug utilization patterns to determine their own organization's anticipated spending in 2021.

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