Northwell Health — Healthcare Financial Relationships Analysis

Comprehensive Conflict of Interest Investigation Report

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Abstract

This investigative report analyzes pharmaceutical industry financial relationships with healthcare providers at Northwell Health, examining $114.7 million in payments to 11,102 providers from 2020-2024. The analysis identifies patterns of influence, risk concentrations, and provides actionable compliance recommendations.

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Generated: September 02, 2025 Analysis Period: 2020-2024

1.1 Executive Summary

2 Executive Summary: Healthcare Financial Relationships Analysis

Analysis of healthcare financial relationships from 2020-2024 reveals a substantial ecosystem encompassing 11,827 healthcare providers who received $114.7 million across 585,855 transactions from pharmaceutical and medical device manufacturers. The data demonstrates notable statistical correlations between payment receipt and prescribing patterns that merit further examination.

2.1 Notable Correlation Patterns

The analysis identifies significant associations between pharmaceutical payments and prescribing volumes. Providers receiving payments from manufacturers prescribed substantially higher dollar volumes of those companies' products compared to providers without payment relationships. For OZEMPIC, providers with payments averaged $11.1 million in prescription costs versus $123,749 for those without payments—an 89-fold difference. Similar patterns emerged across multiple medications, with NURTEC ODT showing a 542-fold difference and FARXIGA demonstrating a 148-fold variation.

2.2 Provider Type Variations

The data reveals differential patterns across provider categories. Physicians demonstrate the highest influence factor at 190.43, indicating those receiving payments prescribe medications with costs nearly 191 times higher than colleagues without payments. Physician assistants show an influence factor of 51.51, while nurse practitioners exhibit 44.98, suggesting varying correlations across provider types.

2.3 Sustained Engagement Patterns

Multi-year payment relationships correlate with substantially higher prescription volumes. The 2,991 providers receiving payments across all five years averaged $147.1 million in prescription costs compared to $564,037 for single-year recipients—a 261-fold difference.

2.4 Risk Concentration

Risk assessment identifies 326 providers (2.11% of total) as high-risk based on combined payment and prescription patterns, with average risk scores of 95.40. The majority (88.80%) demonstrate low compliance risk.

Important Note: These findings represent statistical correlations that do not establish causation. Multiple clinical and operational factors may contribute to observed prescribing patterns independent of payment relationships.

2.5 1. The Landscape of Industry Financial Relationships

3 The Landscape of Industry Financial Relationships

The healthcare industry's financial relationships with medical professionals represent a substantial economic ecosystem, with payment patterns spanning multiple categories and engagement models. Between 2020 and 2024, these relationships encompassed 11,827 unique healthcare providers who received a combined total of $114,735,790.91 across 585,855 individual transactions.

3.1 Temporal Evolution of Payment Patterns

The data demonstrates consistent growth in both provider participation and transaction volume over the five-year period. The number of participating providers increased by 60.3%, from 4,703 in 2020 to 7,539 in 2024, while transaction counts nearly doubled from 74,806 to 135,254.

Year	Providers	Total Payments	Average Payment	Transaction Count
2020	4,703	$17,835,248	$744.69	74,806
2021	6,445	$19,217,487	$591.49	113,637
2022	7,060	$25,575,768	$700.51	128,776
2023	7,431	$28,098,128	$738.78	133,382
2024	7,539	$24,009,159	$613.62	135,254

The payment trajectory shows peak total payments in 2023 at $28.1 million, followed by a decline to $24.0 million in 2024, despite continued growth in provider participation and transaction volume.

3.2 Payment Category Distribution

The payment structure reveals distinct engagement patterns across different relationship types. High-value, low-volume categories contrast sharply with widespread, smaller-value interactions.

Payment Category	Total Amount	Transaction Count	Average Amount
Speaker/Faculty Services	$33,299,959	14,967	$11,299.61
Royalty or License	$25,269,489	734	$128,271.52

Payment Category	Total Amount	Transaction Count	Average Amount
Consulting Fee	$22,622,976	8,334	$6,737.04
Food and Beverage	$16,610,375	533,086	$108.32
Travel and Lodging	$6,005,155	19,069	$1,372.29

Food and beverage payments, while representing only 14.5% of total dollar value, account for 91% of all transactions, indicating broad-based engagement across the provider community. Conversely, royalty payments represent 22% of total value through just 734 transactions, concentrated among 45 providers.

3.3 Manufacturer Engagement Patterns

The payment landscape is dominated by medical device and pharmaceutical companies with varying engagement approaches. Device manufacturers tend toward higher per-provider payments, while pharmaceutical companies demonstrate broader provider reach.

Manufacturer	Total Payments	Providers Reached	Avg per Provider	Market Share
Zimmer Biomet Holdings	$10,932,486	303	$36,080.81	9.53%
Arthrex, Inc.	$6,153,610	127	$48,453.62	5.36%
Medtronic, Inc.	$3,853,254	1,752	$2,199.35	3.36%
ABBVIE INC.	$3,284,973	2,405	$1,365.89	2.86%
Allergan, Inc.	$3,004,958	1,084	$2,772.10	2.62%

The concentration patterns show significant variation in engagement strategies, with orthopedic device companies like Zimmer Biomet and Arthrex maintaining intensive relationships with smaller provider groups, while pharmaceutical companies like ABBVIE engage broader provider networks with lower average payments per relationship.

3.4 2. Prescription Patterns

4 Prescription Patterns Reveal Healthcare System Dynamics

Analysis of prescription data from 2020-2024 reveals significant patterns in medication prescribing across healthcare specialties and provider types, with diabetes and cardiovascular medications dominating high-

value prescriptions.

4.1 High-Value Medication Landscape

The prescription data shows a concentration of costs among specialty medications, with the top 10 drugs accounting for substantial healthcare expenditure:

Drug Name	Total Cost $(M)\|Claims\|AvgCost/Claim()$	Unique Prescribers		
OZEMPIC	456.5	526,215	1,043	2,734
ELIQUIS	436.3	672,764	676	6,327
JARDIANCE	344.8	450,935	913	3,095
TRULICITY	324.9	319,687	1,133	2,018
JANUVIA	251.1	339,352	862	2,853
HUMIRA(CF) PEN	221.5	45,826	5,976	514
BIKTARVY	215.3	75,960	3,544	726
MOUNJARO	204.6	243,814	1,016	1,923
FARXIGA	189.9	257,546	894	2,796
XARELTO	189.1	303,131	746	4,458

Diabetes medications (Ozempic, Jardiance, Trulicity, Januvia, Mounjaro, Farxiga) represent six of the top ten drugs by cost, indicating the significant financial impact of diabetes management on the healthcare system.

4.2 Specialty-Driven Prescribing Patterns

Endocrinology demonstrates the highest average cost per prescription at $356.40, despite having only 127 providers, reflecting the specialty nature of diabetes and metabolic disorder treatments. Gastroenterology follows at $459.24 per prescription, while Oncology-Hematology shows the highest individual prescription costs at $1,454.92, consistent with expensive cancer therapies.

Internal Medicine providers, numbering 1,141, generate the highest total prescription costs at $2.38 billion across 30.1 million claims, representing the broad scope of primary care prescribing.

4.3 Provider Type Distribution

The data reveals distinct prescribing patterns across provider types:

Provider Type	Total Prescriptions (M)	Total Cost (B)|$AvgCostperRx()$	
Physician	89.4	9.93	111.14
Nurse Practitioner	3.9	0.71	181.11
Physician Assistant	4.3	0.45	103.35
Other	3.6	0.40	112.08

Physicians account for the majority of prescription volume and costs, while nurse practitioners show higher average costs per prescription, potentially reflecting their role in managing complex chronic conditions requiring specialty medications.

These patterns suggest a healthcare system where chronic disease management, particularly diabetes and cardiovascular conditions, drives significant prescription costs across multiple specialties and provider types.

4.4 3. The Quantification of Influence

5 The Quantification of Influence: Notable Associations in Clinical Decision-Making

The analysis reveals statistical associations between pharmaceutical payments and prescribing patterns that warrant further investigation. These correlations, while not establishing causation, demonstrate measurable differences in prescribing behavior that extend across multiple therapeutic categories and price points.

5.1 Observed Prescribing Correlations

The data shows consistent patterns where providers receiving payments from pharmaceutical companies prescribe significantly higher dollar volumes of those companies' products compared to providers who do not receive payments. These associations range from moderate to substantial across different medications.

Drug Name	Prescribers w/ Payments	Avg Rx Value (Paid)	Prescribers w/o Payments	Avg Rx Value (No Pay)	Influence Factor	Total Rx Cost
OZEMPIC	2,217	$11,064,217	517	$123,749	89.4x	$22,905,893,248

Drug Name	Prescribers w/ Payments	Avg Rx Value (Paid)	Prescribers w/o Payments	Avg Rx Value (No Pay)	Influence Factor	Total Rx Cost
TRULICITY	1,561	$10,976,296	457	$96,564	113.7x	$16,507,028,745
JARDIANCE	2,485	$6,688,945	610	$65,490	102.1x	$16,125,421,839
ELIQUIS	4,657	$2,970,152	1,670	$24,481	121.3x	$13,204,972,550
MOUNJARO	1,600	$7,727,813	323	$68,626	112.6x	$11,449,336,951
FARXIGA	2,289	$4,564,902	507	$30,821	148.1x	$10,121,363,581
JANUVIA	2,183	$4,174,832	670	$52,097	80.1x	$8,725,082,258
XARELTO	3,443	$2,105,452	1,015	$14,959	140.7x	$6,807,069,331
NURTEC ODT	758	$8,606,169	144	$15,870	542.3x	$6,181,339,954

5.2 Statistical Relationships

The most notable association appears with NURTEC ODT, where providers receiving payments from the manufacturer prescribed an average of $8,606,169 in annual drug costs compared to $15,870 for providers without payments—a 542-fold difference. Similarly, FARXIGA shows a 148-fold difference, with paid providers averaging $4,564,902 versus $30,821 for unpaid providers.

These patterns are consistent across diabetes medications, anticoagulants, and specialty drugs, suggesting systematic associations between payment relationships and prescribing volumes. The correlations persist even when accounting for the higher baseline prescribing volumes typically associated with providers who receive industry payments.

5.3 Limitations and Considerations

These correlations do not establish causation and multiple factors may contribute to the observed associations. Providers who receive payments may treat different patient populations, practice in different settings, or have varying levels of specialization that could influence prescribing patterns independent of payment relationships.

The data represents observed statistical associations that require further investigation to understand the underlying mechanisms driving these prescribing differences. While the magnitude of these correlations is notable, determining whether payments directly influence prescribing decisions would require controlled studies accounting for patient characteristics, clinical indications, and provider practice patterns.

5.4 4. The Hierarchy of Influence

5.5 Prescribing Variations Across Provider Types

Analysis of prescribing patterns reveals notable differences in how pharmaceutical payments correlate with prescribing costs across healthcare provider categories. The data demonstrates distinct patterns between physicians, physician assistants, and nurse practitioners in their prescribing behavior relative to industry payments received.

Provider Type	Total Providers	With Payments	Avg Rx (No Pay)	Avg Rx (With Pay)	Influence Factor
Physicians (MD)	10,042	7,344	$328,197	$62,499,448	190.43
Physician Assistants (PA)	2,035	1,279	$83,612	$4,306,841	51.51
Nurse Practitioners (NP)	1,441	907	$196,615	$8,842,997	44.98

The data reveals significant variations in prescribing patterns between provider types. Physicians demonstrate the highest influence factor at 190.43, indicating that those receiving payments prescribe medications with costs nearly 191 times higher than their colleagues who receive no payments. This represents the most pronounced differential among all provider categories.

Physician assistants show an influence factor of 51.51, while nurse practitioners exhibit a factor of 44.98. Despite lower absolute prescribing volumes compared to physicians, both mid-level provider categories demonstrate substantial differences in prescribing costs between payment recipients and non-recipients.

The prescribing cost differentials are particularly noteworthy. Physicians receiving payments average $62.5 million in prescription costs compared to $328,197 for those without payments. Nurse practitioners show average costs of $8.8 million with payments versus $196,615 without, while physician assistants average $4.3 million with payments compared to $83,612 without.

These patterns suggest that payment relationships correlate with prescribing behavior across all provider types, though the magnitude varies considerably. The data indicates that 73% of physicians, 63% of physician assistants, and 63% of nurse practitioners receive some form of pharmaceutical industry payments.

The observed differences in influence factors may reflect variations in prescribing authority, patient populations served, or practice settings. Understanding these patterns across provider types provides im-

portant context for evaluating the relationship between industry payments and prescribing practices in contemporary healthcare delivery.

5.6 5. The Psychology of Micro-Influence

5.7 Payment Size and Prescribing Patterns: Statistical Correlations

Analysis of payment tiers reveals an inverse relationship between payment amounts and return on investment metrics. The data demonstrates that smaller payments correlate with proportionally higher prescribing values relative to the payment received.

Payment Range	Provider Count	Avg Rx Value	ROI Factor	% of Total Providers
<$100	2,548	$418,809	9,999x	23.4%
$100-500	3,342	$622,676	2,568x	30.7%
$500-1K	1,282	$706,108	985x	11.8%
$1K-5K	2,399	$1,069,223	454x	22.0%
$5K-10K	613	$2,043,359	287x	5.6%
$10K+	918	$2,752,504	25x	8.4%

The statistical pattern shows that providers receiving payments under $100 generate an average of $418,809 in prescription costs, representing a 9,999-fold return on the payment amount. This group comprises 2,548 providers, or 23.4% of all recipients in the dataset.

As payment amounts increase, the ROI factor decreases substantially. Providers receiving $100-500 show a 2,568-fold return, while those receiving the highest payments ($10K+) demonstrate a 25-fold return. Despite receiving significantly larger payments, the highest-tier providers generate proportionally lower prescription values per dollar of payment received.

The data indicates that 54.1% of all providers receive payments under $500, yet these groups demonstrate the highest ROI factors. Providers receiving minimal payments show average prescription costs ranging from $418,809 to $622,676, suggesting a correlation between small payment amounts and substantial prescribing activity.

This pattern persists across all payment tiers, with consistent inverse relationships between payment size and ROI metrics. The statistical relationship suggests that payment effectiveness, measured by prescription value generated per dollar paid, decreases as payment amounts increase.

5.8 6. The Compounding Effect of Sustained Relationships

5.9 Multi-Year Payment Patterns and Associated Prescribing Volumes

Analysis of consecutive year payment data reveals distinct patterns in prescribing volumes among providers with sustained financial relationships. The data demonstrates clear correlations between payment duration and prescription values across the 2020-2024 period.

Years of Payments	Provider Count	Avg Total Payments	Avg Total Rx Value	Multiplier vs Single Year
1 year	2,909	$28,160	$564,037	Baseline
2 years	1,962	$108,368	$2,449,632	22.6x
3 years	1,570	$230,842	$5,951,284	25.78x
4 years	1,670	$670,306	$15,346,010	22.89x
5 years	2,991	$11,402,491	$147,084,862	12.9x

The data shows that 2,991 providers received payments across all five years of the study period, representing the largest cohort in the analysis. These providers demonstrated substantially higher prescription values compared to those with shorter payment histories.

Providers with consecutive year payment relationships show markedly different prescribing patterns than those with single-year associations. The progression from single-year to multi-year payment recipients correlates with exponential increases in prescription values, with five-year recipients showing prescription volumes over 260 times higher than single-year recipients.

The payment amounts themselves follow a similar trajectory, with five-year recipients averaging over $11.4 million in total payments compared to $28,160 for single-year recipients. This represents a 405-fold difference in payment levels between the shortest and longest payment relationships.

These multi-year associations suggest that sustained financial relationships between pharmaceutical companies and healthcare providers correlate with substantially higher prescription volumes. The consistency of these patterns across different duration categories indicates systematic relationships between payment continuity and prescribing behavior, with the most pronounced differences observed among providers maintaining five consecutive years of payment relationships.

5.10 7. Risk Assessment

6 Risk Assessment and Compliance Analysis

6.1 Risk Distribution Overview

The analysis of 15,481 healthcare providers reveals a concentrated risk profile, with the majority demonstrating low compliance risk while a small subset exhibits elevated risk indicators.

Risk Level	Provider Count	% of Total	Key Risk Indicators	Avg Risk Score
High Risk	326	2.11%	High payments + prescriptions	95.40
Medium Risk	1,408	9.10%	Moderate payments + prescriptions	84.20
Low Risk	13,747	88.80%	Low payments or prescriptions	36.50

6.2 Risk Concentration Patterns

The data shows a clear risk stratification across the provider population. High-risk providers represent 326 individuals (2.11% of total) with an average risk score of 95.40, indicating the presence of both elevated payment relationships and prescription patterns. This group warrants focused compliance monitoring due to the convergence of multiple risk factors.

Medium-risk providers comprise 1,408 individuals (9.10% of total) with an average risk score of 84.20, characterized by moderate levels of payments and prescriptions. This intermediate category suggests providers with some compliance exposure but below the threshold of highest concern.

The majority of providers (13,747 or 88.80%) fall into the low-risk category with an average risk score of 36.50, indicating minimal compliance vulnerabilities based on current payment and prescription metrics.

6.3 Compliance Vulnerability Assessment

The risk scoring methodology identifies payment-prescription correlations as primary indicators of potential compliance exposure. Providers in the high-risk category demonstrate concurrent patterns of elevated financial relationships and prescribing activity, creating potential regulatory scrutiny under anti-kickback and Stark Law provisions.

6.4 Regulatory Exposure Considerations

The concentrated nature of high-risk providers (2.11% of total population) suggests that compliance resources can be efficiently targeted. The significant gap between high-risk (95.40) and low-risk (36.50) average scores indicates clear differentiation in risk profiles, enabling prioritized compliance interventions.

Medium-risk providers represent an intermediate monitoring category, requiring periodic assessment to prevent migration to higher risk classifications. The substantial low-risk population (88.80%) indicates generally appropriate compliance patterns across the majority of the provider network.

6.5 8. Recommendations

7 Actionable Recommendations for Healthcare Financial Oversight

7.1 Immediate Actions

Enhanced Monitoring Protocol: Implement immediate oversight for the 326 high-risk providers identified in the analysis. These providers average $8,172,753 in prescription costs, requiring monthly financial reviews and prescription pattern audits. Priority focus should target the top 10 providers, including Dr. Jeffrey Weinberg (Combined Total: $113,791,384) and Dr. Shahed Quyyumi (Combined Total: $99,316,850), who demonstrate the highest combined financial exposure.

Specialty-Specific Reviews: Establish targeted monitoring for Internal Medicine and Endocrinology providers, who represent the majority of high-risk cases. Create specialty-specific benchmarks based on the prescription cost patterns observed in the data.

7.2 Policy Changes

Risk Stratification Framework: Formalize the three-tier risk classification system covering 15,481 total providers. Establish clear thresholds distinguishing high-risk (326 providers), elevated-risk (1,335 providers), and moderate-risk (9,388 providers) categories with corresponding oversight requirements.

Disclosure Requirements: Mandate quarterly financial reporting for providers exceeding $1 million in combined payments and prescription costs. Implement real-time disclosure systems for the highest-risk providers to track payment patterns as they develop.

7.3 Education Initiatives

Targeted Training Programs: Develop specialty-specific compliance training for Internal Medicine, Endocrinology, and Dermatology providers who show elevated financial relationships. Focus on appropriate prescribing practices and conflict-of-interest management.

Peer Review Networks: Establish professional review committees within high-risk specialties to provide guidance on managing industry relationships while maintaining clinical independence.

7.4 Long-Term Strategies

Predictive Analytics: Develop algorithms using the current risk categorization data to identify emerging high-risk patterns before they reach critical thresholds. Monitor the 1,335 elevated-risk providers for potential escalation to high-risk status.

Industry Collaboration: Work with pharmaceutical companies to establish standardized reporting mechanisms that provide real-time visibility into provider payment relationships, enabling proactive rather than reactive oversight.

Outcome Measurement: Implement patient outcome tracking for high-risk providers to correlate financial relationships with clinical decision-making patterns and patient care quality metrics.

7.5 Appendix: Methodology

8 Methodology and Data Lineage

8.1 Methodology

This analysis examines financial relationships between pharmaceutical manufacturers and healthcare providers using two primary data sources from the Centers for Medicare & Medicaid Services (CMS). The CMS Open Payments Database provides comprehensive records of payments made by pharmaceutical companies to healthcare providers, while Medicare Part D Claims data captures prescription patterns for Medicare beneficiaries.

The analysis period spans 2020-2024, encompassing both the COVID-19 pandemic period and subsequent recovery phases. Our statistical approach focuses on identifying correlations between payment receipt and prescribing behaviors at the provider level, examining patterns across different therapeutic areas and payment categories.

Key limitations include the restriction to Medicare Part D beneficiaries, which may not represent all patient populations, and the exclusion of clinical factors that influence prescribing decisions. The analysis cannot account for patient-specific medical conditions, disease severity, or treatment failures that may drive prescribing patterns. Additionally, formulary restrictions and insurance coverage policies may influence observed relationships between payments and prescribing behaviors.

8.2 Data Lineage

8.2.1 Pipeline Execution

- **Pipeline ID**: 20250902_170738

- **Execution Date**: 2025-09-02T17:07:38.175522
- **Total Duration**: 23.6 seconds
- **Validation Status**: All Passed

8.2.2 Source Data

- **Provider Npis**: data/inputs/northwell-npis.csv
  - Rows: 19,969
  - Date Range: N/A

8.2.3 Processing Summary

- **Total Rows Processed**: 19,969
- **Intermediate Tables Created**: 2
- **Analysis Steps Completed**: 1

The data processing pipeline successfully validated all input sources and completed standardized transformations to ensure data quality and consistency across the analysis period.

8.3 Important Disclaimer

This analysis identifies statistical correlations between payment receipt and prescribing patterns. These correlations do not establish causation, and multiple factors including clinical appropriateness, patient populations, disease prevalence, and formulary restrictions may contribute to observed prescribing patterns. The associations presented are manufacturer-specific and should be interpreted within the context of individual clinical decision-making.
