

USING DATA TO CATCH PROBLEMS EARLY

How operational safety nets can turn practice data into early warnings for workflow and reimbursement issues.

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As retina practices adjust to growing patient volumes, reduced reimbursement, employee turnover, and the introduction of new therapies (including biosimilars), the opportunity for operational mistakes is ever-present. At the same time, insurance companies are

becoming increasingly aggressive in denying or underpaying claims for rendered services and intravitreal injections. In retina care, small operational misses can quickly become significant clinical or financial problems. While practice data is often used to monitor overall financial and operational performance, a deeper analytical approach can help identify workflow gaps, catch errors before they escalate, and monitor reimbursement at a granular level.

IDENTIFYING THE PROBLEMS

At Talley Eye Institute, we recognized that despite the best efforts of our staff, errors in appointment scheduling,

KEY TAKEAWAYS

- ▶ Leadership at Talley Eye Institute used structured query language (SQL) programming to develop operational “scrubbers” to identify potential workflow, coding, and billing issues.
- ▶ The SQL-based program reported an unexpected change in the allowable reimbursement for aflibercept 8 mg (Eylea HD, Regeneron), allowing the practice to identify the issue before significant additional underpayments occurred.
- ▶ Proactive data reporting can help practices identify workflow gaps and reimbursement trends early, so that staff can intervene before small issues become larger operational or financial problems.

Appointment Scrubber as of 6/2/2026				
Appointment Date	Acct Number	Scrub Rule	Provider	Facility
6/3/2026	CCCCC	Glaucoma evaluation without visual fields	Johnson	TEI
6/5/2026	DDDDD	New patient after 10:46 or 2:46	Davis	TEI
6/5/2026	EEEEEE	YAG appointment without same day 1 hour post-op	Thompson	TEI
6/12/2026	GGGGG	Doctor does not see patients under 18	Currier	TEI
6/12/2026	HHHHH	Early Injection	Jones	TEI

Figure 1. The SQL-based reporting system reviews scheduled appointments for potential errors. All names and data are fictional and for illustrative purposes only.

Patient Responsibility Reason Codes as of 5/29/2026						
Acct Num	DOS	Patient	Insurance	Reason Code	Reason	Amount
XXXXXX	8/21/2025	John Doe	GoldPath Medicare	PR27	Ins Termed	\$429.00
XXXXXX	8/21/2025	John Doe	GoldPath Medicare	PR27	Ins Termed	\$186.00
XXXXXX	8/21/2025	John Doe	GoldPath Medicare	PR27	Ins Termed	\$445.00
YYYYYY	4/28/2026	Jane Doe	Sterling Health	C022	Coordination of Benefits	\$258.00

Figure 2. A daily email summary shows where balances transferred from the payer to the guarantor. All names and data are fictional and for illustrative purposes only.

coding, and billing can still occur. For example, patients may be added to the schedule after the day’s prior authorizations for injections or surgeries had been completed, creating gaps that are easy to miss in real time. To help ensure that intravitreal injections were reimbursed accurately, we identified areas where rare scheduling exceptions could create operational or financial consequences if left undetected. These included patients being scheduled inside the 28-day injection window, patients being scheduled with providers who were not enrolled with the patient’s insurance plan, and appointment changes that could bypass established authorization workflows.

On the coding and billing side, we identified rare administrative missteps, including Medicare claims being submitted to the incorrect state, claims billed with incorrect procedure or drug units, and other issues that could result in denials, delayed payments, or inaccurate reimbursement if not identified promptly.

Next, we set out to find a system to stop these errors before they affected our patient care and bottom line.

CREATING A FLAGGING SYSTEM

We started with the operational side of the business, and with the help of frontline staff members, we identified vulnerabilities and opportunities for improvement within their daily responsibilities. Based on those findings, we used

structured query language (SQL) programming to develop a series of automated “scrubbers” designed to identify potential workflow, coding, and billing issues before they progressed further into the revenue cycle or patient workflow. The scrubbers created daily audit reports of the patient management (PM)/electronic health record (EHR) database that were delivered as automated emails to supervisors and team leads for review (Figure 1). If an issue required correction, staff could intervene before it resulted in claim delays, denials, or scheduling disruptions.

As the SQL system evolved, employees provided feedback that helped refine the reports and improve their effectiveness. These reporting systems initially focused on simple but preventable mistakes, such as scheduling intravitreal injections too soon or assigning an incorrect number of units to a J-code.

Over time, we developed methods to improve the reporting accuracy and reduce unnecessary alerts. For example, a patient may appropriately receive an injection in one eye and return 2 weeks later for treatment in the fellow eye. In these cases, staff could enter a predefined “all clear” code into the appointment notes to indicate that the situation had already been reviewed and approved. This prevented the same item from repeatedly appearing on subsequent scrubber reports and allowed staff to focus their attention on issues that required intervention.

High Value Drugs Paid Yesterday as of 1/26/2026											
Internal CPT	Tx Entry Date	Account	Primary insurance	Provider	DOS	Charge	Allowed	Prim Ins	Adj Chg	Adj Pay	Writeoff
J0177 (J0177JZ - MEDICATION - EYLEA HD 8MG/0.07)											
	1/26/2026		SUMMITCARE INSURANCE	SMITH	4/8/2025	\$7,500.00	\$49.60	\$0.00	\$0.00	(\$31.52)	\$0.00
	1/26/2026		SUMMITCARE INSURANCE	SMITH	4/8/2025	\$7,500.00	\$49.60	\$0.00	\$0.00	(\$31.52)	\$0.00
	1/26/2026		HORIZON MEDICARE	JONES	4/17/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$0.00	\$0.00	\$460.00
	1/26/2026		HORIZON MEDICARE	SMITH	4/20/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$0.00	\$0.00	\$460.00
	1/26/2026		RIVER VALLEY MEDICARE	SMITH	4/21/2026	\$7,500.00	\$2,440.00	\$1,952.00	\$0.00	\$0.00	\$488.00
	1/26/2026		RIVER VALLEY MEDICARE	SMITH	4/21/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$39.39	\$0.00	\$460.00
	1/26/2026		RIVER VALLEY MEDICARE	SMITH	4/22/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$0.00	\$0.00	\$460.00
	1/26/2026		RIVER VALLEY MEDICARE	JONES	4/23/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$0.00	\$0.00	\$460.00
	1/26/2026		UNITYCARE	SMITH	4/27/2026	\$7,500.00	\$2,300.00	\$1,840.00	\$0.00	\$0.00	\$460.00
	1/26/2026		UNITYCARE	SMITH	4/28/2026	\$7,500.00	\$2,600.00	\$2,080.00	\$0.00	\$0.00	\$520.00
	1/26/2026		SENIORPLUS HEALTH PLAN	SMITH	5/8/2026	\$15,000.00	\$4,600.00	\$3,680.00	\$0.00	\$0.00	\$920.00
J0178 (J0178JZ - MEDICATION - EYLEA)											
	1/26/2026		GOLDPATH MEDICARE	JONES	1/8/2025	\$3,885.00	\$1,700.00	\$1,643.96	\$0.00	\$0.00	\$0.00
	1/26/2026		GOLDPATH MEDICARE	JOHNSON	1/17/2025	\$7,770.00	\$3,900.00	\$0.00	\$0.00	(\$152.00)	\$0.00
	1/26/2026		UNITYCARE	SMITH	2/24/2025	\$3,885.00	\$1,577.63	\$0.00	\$0.00	(\$306.29)	\$0.00
	1/26/2026		UNITYCARE	SMITH	5/5/2025	\$3,885.00	\$1,566.25	\$0.00	\$0.00	(\$318.34)	\$0.00
	1/26/2026		BLUE RIDGE HEALTH	JONES	7/28/2025	\$3,885.00	\$2,331.00	\$0.00	\$0.00	(\$360.41)	\$0.00
	1/26/2026		UNITYCARE	ROBINSON	8/6/2025	\$3,885.00	\$1,557.26	\$0.00	\$0.00	(\$439.66)	\$0.00
	1/26/2026		BLUE RIDGE HEALTH	JONES	8/25/2025	\$3,885.00	\$2,331.00	\$0.00	\$0.00	(\$224.07)	\$0.00

Figure 3. A daily email summary shows any payer or guarantor activity with intravitreal injections. The \$49 allowable for aflibercept 8 mg (red circle) was the "canary in the coal mine" moment. All names and data are fictional and for illustrative purposes only.

2026										
Years (DOS)	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	
2025	\$7,545.86	\$6,995.21	\$3,513.25	\$2,807.11	\$5,513.32	\$946.37	\$7,935.38	\$726.17	\$2,452.93	
	\$11,677.48	\$5,564.20	\$2,452.71	\$1,048.52	\$427.11	\$1,444.98	\$1,554.67	\$4,278.13	\$660.83	
	\$9,103.36	\$4,045.23	\$4,300.67	\$841.65	\$1,669.61	\$309.59	\$409.95	\$660.46	\$440.99	
	\$17,045.11	\$12,467.43	\$6,724.59	\$1,779.95	\$5,642.11	\$654.50	\$887.02	\$1,450.21	\$3,451.74	
	\$26,016.82	\$4,045.17	\$3,503.05	\$2,424.97	\$1,719.24	\$2,717.65	\$760.81	\$278.02	\$1,762.59	
	\$33,137.83	\$9,673.31	\$2,805.77	\$1,086.08	\$8,037.22	\$3,704.43	\$3,537.80	\$1,375.06	\$372.23	
	\$209,070.91	\$57,064.57	\$20,297.71	\$3,098.33	\$8,984.86	\$3,363.23	\$3,227.65	-\$107.04	\$1,921.46	
	\$1,500,622.89	\$180,980.37	\$20,130.20	\$11,720.85	\$13,649.77	\$15,153.15	\$4,216.29	\$2,380.94	\$1,680.34	
	\$885,415.71	\$1,619,799.36	\$120,432.15	\$28,315.85	\$10,167.66	\$7,463.70	-\$2,763.64	\$1,687.40	\$1,188.61	
	\$0.00	\$791,984.54	\$1,817,046.01	\$163,423.37	\$127,974.34	\$22,945.46	\$11,860.10	\$6,812.91	\$2,618.22	
	\$0.00	\$0.00	\$691,347.68	\$1,232,390.42	\$341,470.05	\$36,733.70	\$13,923.07	\$6,707.94	\$6,448.04	
	\$0.00	\$0.00	\$0.00	\$993,289.70	\$1,573,420.40	\$204,136.32	\$48,821.15	\$20,412.92	\$7,097.12	
2026	\$0.00	\$0.00	\$0.00	\$0.00	\$652,601.44	\$1,265,442.78	\$306,884.89	\$92,940.03	\$35,621.06	
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$711,589.98	\$1,696,949.96	\$258,400.36	\$59,399.47	
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$979,582.39	\$1,361,381.62	\$229,786.51	
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,177,202.75	\$1,759,666.13	
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$918,423.59	
Grand Total	\$2,699,635.96	\$2,692,619.79	\$2,692,553.79	\$2,442,226.80	\$2,751,277.12	\$2,276,605.85	\$3,077,787.49	\$2,936,587.88	\$3,032,991.87	

Figure 4. The SQL-based reporting can also calculate revenues by age. All names and data are fictional and for illustrative purposes only.

We then expanded the SQL program beyond scheduling to identify coding and insurance-related issues. This includes claims submitted to the incorrect Medicare jurisdiction, insurance plans that would not recognize certain code sets such as eye codes or consultation codes, and instances where patients who had not been seen in 3 years were inadvertently scheduled and billed as established patients.

On the financial side, we started to monitor reimbursement activity for intravitreal injections. Our revenue cycle management (RCM) staff received automated reports that identified payment variances, denials, or recoupments related to medications. Because these reports were reviewed daily, changes in payor allowables were flagged almost immediately.

BY COMBINING OPERATIONAL ANALYTICS WITH THE INSIGHTS OF FRONTLINE STAFF AND REAL-WORLD WORKFLOW EXPERIENCE, PRACTICES CAN CREATE MEANINGFUL SAFETY NETS THAT SUPPORT BOTH PATIENT CARE AND FINANCIAL STABILITY.

The SQL reporting process extended into revenue cycle workflows beyond traditional coding and billing audits. For example, one staff member identified a recurring issue involving claims that processed to patient deductibles or generated coordination-of-benefits denials. In many cases, these balances would be automatically transferred to the guarantor account and remain unresolved until the next patient statement was generated. To address this, we created an automated report that notified staff whenever these situations occurred (Figure 2). This allowed team members to proactively contact patients, verify insurance information, resolve coordination-of-benefits issues, and discuss outstanding balances before the normal statement cycle. In addition, the process helped improve communication with patients and reduced the likelihood of unresolved balances lingering in accounts receivable.

CASE EXAMPLE

Recently, a payer unexpectedly changed the allowable reimbursement for aflibercept 8 mg (Eylea HD, Regeneron) to less than \$50 per injection (Figure 3). The day after the first remittance was posted, our RCM team received an email that showed the discrepancy and immediately notified administration and providers. We temporarily halted use of the medication for patients covered by that payer until the issue was investigated further. This was our “canary in the coal mine” moment, as the reporting process allowed us to identify the issue before significant additional underpayments occurred. We also notified the company of the issue so they could work directly with the payer and alert other retina practices in the state to the problem.

WHAT THE SYSTEM OFFERS

We further enhanced our reporting capabilities to provide more actionable financial data for leadership and the RCM team. While most PM/EHR systems provide standard reporting tools, we found that extracting data directly from our SQL database allowed for significantly greater flexibility and faster operational analysis. This approach made it easier to identify reimbursement trends, evaluate payment timelines, and answer operational questions that were difficult to address through standard system reports alone.

Using SQL-based reporting, we can evaluate revenue according to the original date of service, allowing us to better understand the true aging of incoming reimbursements (Figure 4). This complements traditional accounts receivable aging buckets and provides a more detailed view of payment timelines and reimbursement trends. With this approach, we can evaluate actual drug profitability at a more granular level than traditional financial reporting alone. By linking acquisition costs, reimbursements, and dates of service, we can calculate true net cost recovery and margin performance for individual medications over specific periods. This visibility helps identify reimbursement trends, evaluate the financial effect of payer policy changes, and make informed decisions regarding high-cost medications.

As biosimilars, drug pricing, and payer policies continue to evolve, this level of detail has become increasingly important for evaluating both operational efficiency and long-term financial sustainability.

HARNESS YOUR DATA

Your practice’s data can provide far more value than standard reporting alone. When used proactively, it can help identify scheduling errors, reimbursement discrepancies, workflow gaps, and revenue cycle issues before they create larger consequences. By combining operational analytics with the insights of frontline staff and real-world workflow experience, practices can create meaningful safety nets that support both patient care and financial stability. ■

Author’s note: Patient privacy and data security were a primary consideration throughout the preparation of this article, and no identifiable or proprietary practice information was disclosed.

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