What It Really Takes for AI to Handle Patient Billing Calls

INSIGHTS FROM **20,000 REAL-WORLD CONVERSATIONS**
+ CEDAR'S AI VOICE AGENT, KORA

cedar

The mandate is clear:

Do more with less

With healthcare administrative spending topping **$1 trillion** and hospitals operating on **razor-thin margins**, revenue cycle leaders are under immense pressure to **reduce costs** wherever possible. Patient billing support is a prime opportunity: it's labor-intensive, a major consumer friction point, and increasingly unsustainable to scale with people alone.

That's why organizations are turning to **AI voice agents alongside outsourcing and traditional tech solutions**. But building the right strategy starts with understanding the problem: not just **which calls can be automated**, but **how resolution actually happens**—especially as patients shoulder more of their healthcare costs.

"AI should not be the selling point. The conversation should be about how it uniquely and distinctly solves your problem. Full stop."

Nworah Ayogu, MD
Head of Healthcare Impact at Thrive Capital

This report shares insights from more than 20,000 real patient billing calls and early findings from our AI voice agent, Kora. You'll see where automation can drive impact, what makes these conversations deceptively complex, and the core capabilities AI must have to reduce costs and improve the patient experience.

If you read nothing else...

It's not just the volume of billing calls that drives costs—it's their complexity. These conversations often involve emotionally–charged situations, unclear patient intents, and agent judgment calls. That's the opportunity: deploying AI agents that can actually handle these unique support challenges, so human agents can focus where they're needed most.

Our top takeaways

1 Authentication consumes more time than you think

2 Most patients aren't calling to pay— they're confused

3 Patients often present symptoms, not diagnoses

4 Being factually correct isn't the same as being helpful

1 Authentication consumes more time than you think

Most leaders jump to thinking about how AI agents can automate balance inquiries and payment requests. But there's low-hanging fruit in the first part of most calls: authentication.

Billing conversations often start the same way: agents manually collect names, dates of birth, and Social Security numbers before they can discuss anything meaningful. It's a basic requirement—and a surprisingly costly one:

Every call involving PHI needs it.
HIPAA mandates identity verification, and providers often have their own policies.

It burns valuable time.
In these cases, agents can't access account details and begin resolving the issue until it's done.

It's trickier than it sounds.
Patients might pause, speak in fragments, or switch between voice and keypad inputs. And the process varies by caller type—patient, guarantor, caregiver, even insurer.

EARLY RESULTS FROM OUR **AI VOICE AGENT** SHOW THE POTENTIAL. WHEN AUTHENTICATION WAS SUCCESSFULLY AUTOMATED, **AVERAGE HANDLE TIME DROPPED BY 13.4%**[3] —SHIFTING AGENT CAPACITY FROM ROUTINE VERIFICATION TO COMPLEX PROBLEM–SOLVING THAT REQUIRES THEIR EXPERTISE.

UP TO

25%

of call time is consumed by patient authentication[4]

THE CHALLENGE

Authentication blocks every call involving PHI from progressing—while different caller types require distinct verification approaches.

AI DESIGN IMPLICATION

AI must handle fragmented information collection across multiple conversation turns and adapt authentication workflows for different caller types.
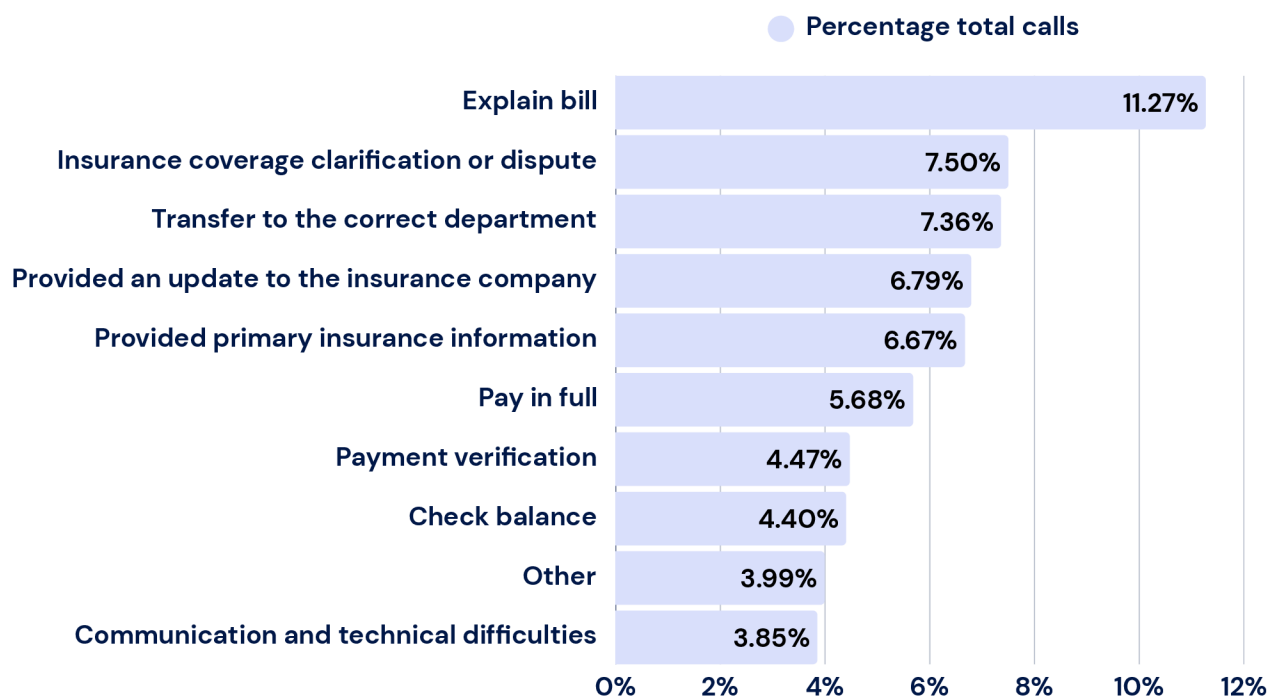
WHAT TO LOOK FOR

Flexible verification that can resume if interrupted and handle unclear responses—not rigid scripts that fail when conversations don't follow expected patterns.

2 Most patients aren't calling to pay—they're confused

It's often said that some patients will always call, no matter how easy the online bill pay experience. That may be true—but they're rarely calling just to make a payment.
In fact, at one large health system, we found only 6% of calls were actual payment requests. Most were confusion-driven inquiries: Why do I have a bill? Has insurance paid yet? Do I qualify for financial assistance?[5]

Top 10 reasons patients call across three healthcare providers

● Percentage total calls

Reason	Percentage
Explain bill	11.27%
Insurance coverage clarification or dispute	7.50%
Transfer to the correct department	7.36%
Provided an update to the insurance company	6.79%
Provided primary insurance information	6.67%
Pay in full	5.68%
Payment verification	4.47%
Check balance	4.40%
Other	3.99%
Communication and technical difficulties	3.85%

0%   2%   4%   6%   8%   10%   12%

But the real insight?

These are often navigation challenges. Agents act as human routers, connecting the dots across third-party payers, Medicaid enrollment vendors, collection agencies, and more. As these calls grow in volume, the old way—more people, more phone tree options—can't scale efficiently.

THE CHALLENGE

Confusion-driven calls require connecting dots across systems and vendors to give patients clear answers about coverage and assistance programs.

AI DESIGN IMPLICATION

AI needs access to insurance benefits, eligibility rules, and assistance policies—not just account details—to resolve navigation problems effectively.

WHAT TO LOOK FOR

Systems with diverse underlying datasets that eliminate "let me transfer you" moments when patients need clarity beyond what's visible in their account.

3 Patients often present symptoms, not diagnoses

In most industries, customer service requests have straightforward intents: track an order, cancel a subscription, request a refund. The customer names the problem; the agent resolves it.

Calling the hospital billing office couldn't be more different.

Patients frequently don't know how to describe what's wrong, just that something feels wrong. That means agents must take the lead: comb through account details, decipher insurance explanations, and connect disparate charges—all while keeping the conversation on track.

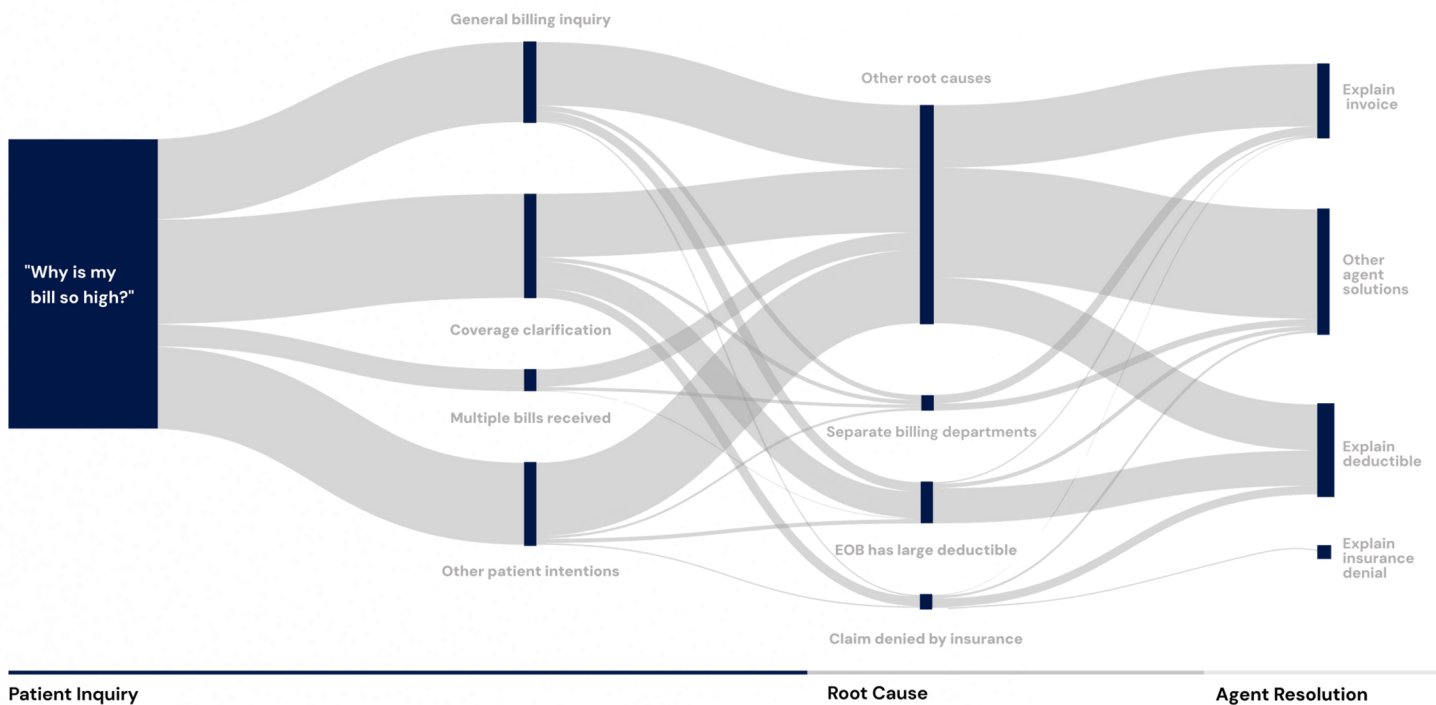## The diagnostic challenge of patient billing support

At one health system, we found that billing questions can actually be one of **71 different inquiry types**, stemming from **61 different root cause groups**, and requiring one or more interventions **spanning 99 different resolution categories.**[6]

What can one billing call entail?

71
Inquiry Types

61
Route cause groups

99
different resolution categories
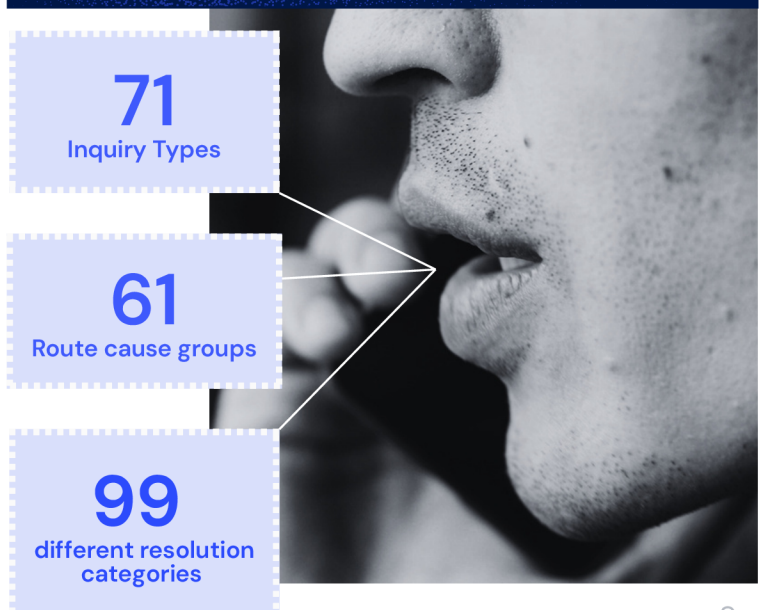
Mapping one patient inquiry: From root cause to resolution

This diagram shows the different pathways each call can take. Branch thickness indicates call volume.

| Patient Inquiry | Root Cause | Agent Resolution |

(Diagram labels: "Why is my bill so high?" → General billing inquiry, Coverage clarification, Multiple bills received, Other patient intentions → Other root causes, Separate billing departments, EOB has large deductible, Claim denied by insurance → Explain invoice, Other agent solutions, Explain deductible, Explain insurance denial)

This complexity creates costly operational challenges

■ **Long onboarding times:** New agents must master hundreds of potential scenarios created by these intersecting complexities, delaying speed to productivity.

■ **Knowledge gaps:** Even tenured agents often encounter new edge cases, leading to prolonged resolutions and variation in how patient questions are handled.

■ **High turnover rates:** The steep learning curve and high cognitive load leads to burnout, attrition, and constant reinvestment in training.

THE CHALLENGE

Vague patient inquiries require skilled investigation to uncover the real issue before any resolution can begin—most calls don't start with clear intent.

AI DESIGN IMPLICATION

AI must guide patients through discovery with smart follow-up questions while simultaneously analyzing account details to identify potential root causes.

WHAT TO LOOK FOR

Conversational flows that clarify intent by combining patient responses with account context—not just reactive questioning or data retrieval alone.
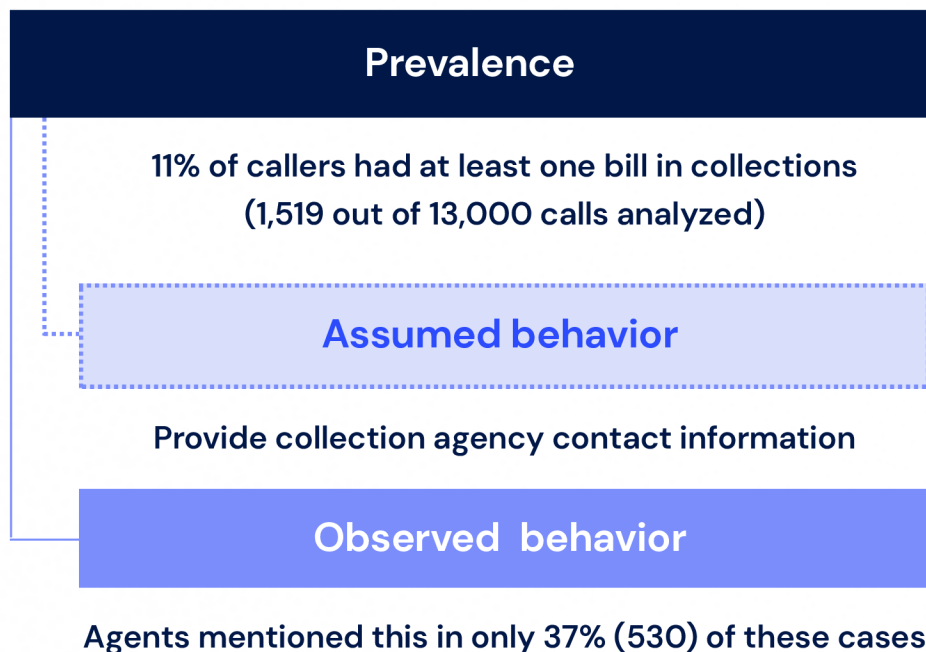
4 Being factually correct isn't the same as being helpful

When agents pull up a patient's account, they're looking at dozens of data points spanning multiple dates of service, billing cycles, even years. The challenge isn't just finding the right information—it's knowing what to ignore while they're still figuring out what's wrong.

Agents instinctively know what information matters

We studied a specific scenario: patients who had bills in collections at a physician group. Even with this clear data point available, agents only mentioned it in 37% of cases—showing they filter based on what's actually relevant to each call.

Prevalence

11% of callers had at least one bill in collections
(1,519 out of 13,000 calls analyzed)

Assumed behavior

Provide collection agency contact information

Observed behavior

Agents mentioned this in only 37% (530) of these cases

VOICE DEMANDS PRECISION

UNLIKE TEXT-BASED CHATBOTS, WHERE PATIENTS CAN SCAN DETAILED RESPONSES, VOICE AGENTS HAVE SECONDS TO PROVIDE EXACTLY THE RIGHT INFORMATION BEFORE LOSING A PATIENT'S ATTENTION.

Maybe the patient was calling about a more recent invoice—or had a completely unrelated question. Some calls come with clear intent, but, as we know, many do not. When a patient says, "I have a question about my bill," the agent has to figure out which one, what the issue is, and whether collections even apply.

Getting this filtering wrong is costly. Surface irrelevant information and you've turned a quick billing question into an escalation. Miss relevant details and you've failed to help the patient address their most pressing financial obligation.

THE CHALLENGE

Billing systems surface dense, chronological data, but resolving patient questions requires relevance filtering—not comprehensive data dumps.

AI DESIGN IMPLICATION

AI must learn which data points matter for specific inquiry types rather than defaulting to comprehensive account summaries.

WHAT TO LOOK FOR

Information architecture that presents AI agents with relevant details first and suppresses irrelevant details until they're needed for resolution.

Your next step

No two call centers are the same. Understanding your call patterns, complexity drivers, and operational constraints is essential to designing an automation strategy that works.

Cedar offers a focused assessment to help you evaluate where AI can drive real impact—so you can reduce costs, improve the patient experience, and invest where it matters most.

Start your assessment ›

Methodology

Patient billing call insights in this report are drawn from **multiple proprietary studies conducted by Cedar across different healthcare organizations**. All data is anonymized and processed through Cedar's call assessment tool and by AI applied scientists.

Studies analyzed patient billing calls from various health systems and physician groups, conducted between 2024 and 2025. Performance data for Kora's authentication automation comes from a separate analysis at a large physician group during the first month of implementation.

Insights represent patterns observed across these studies rather than a single comprehensive dataset.

References

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4. Cedar. (2024). Patient authentication time analysis. Unpublished data from a health system and physician group, showing authentication consumes approximately 25% of total call time.

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About Cedar

Cedar is the leading healthcare financial experience platform built to meet the needs of today's patients—and the providers who serve them. Optimized by billions of patient interactions, tailored to individual needs, and connected to 200+ healthcare and financial partners, Cedar replaces fragmented point solutions with one connected platform. Leveraging advanced AI and a partnership model grounded in shared accountability, Cedar helps providers improve margins, streamline vendor management, and deliver more personalized, empathetic experiences.

Kora, Cedar's AI voice agent, is purpose-built for healthcare billing—combining AI, proprietary billing data, and empathetic communication to resolve patient inquiries. As part of Cedar Support, Kora reduces costs while delivering the clear, personalized billing guidance patients deserve. Kora is projected to automate 30% of patient billing calls by the end of 2025.

To learn more, visit cedar.com and join us on LinkedIn, X, and YouTube.