Pre-Claim Denial Intelligence PRD

(Confidential material; sharing is prohibited without Optum's express approval)

Purpose: This Product Requirements Document (PRD) is a detailed outline that specifies the features, functionalities and requirements for pre-claim Denial Intelligence, serving as a guide for the Tech teams (Engineering and Data Science) throughout the product lifecycle.

Overview & Problem Statement

Medical Claims that are unnecessarily complex and cause denials that are avoidable are key contributors to lost revenue, diminished satisfaction and reduced enrollment among medical providers.

Healthcare providers and revenue cycle teams face persistent challenges in managing claim denials, creating friction across the entire RCM process:

- **Opaque denial reasons:** Payer responses often use complex CARC/RARC codes and technical language that front-line staff struggle to interpret quickly.

- **Uncertainty on corrective actions:** Even when the denial reason is known, staff lack clear guidance on what steps to take—update demographics, obtain prior authorization, attach clinical documentation, or contact the patient.
- **Fragmented workflows:** Information needed to resolve denials (eligibility, benefits, prior-auth status, provider credentialing, coding) is scattered across multiple systems, forcing manual lookups and slowing resolution.
- **Reactive posture:** Most denials are addressed only after they occur, leading to rework, delayed reimbursements, and increased administrative costs.
- **Operational waste:** Industry estimates point to billions lost annually due to denial-related inefficiencies, with significant impact on provider cash flow and patient experience.

By flagging errors early, payers prevent unnecessary denials and costly resubmissions, improving first-pass acceptance rates.

Overview & Solution Description	Denial Intelligence is an advanced capability designed to transform the way healthcare organizations manage claim denials and appeals. In the current state, denial management is highly reactive and manual, often occurring days or weeks after the initial claim submission. Processes typically involve fragmented workflows across mid-office and back-office teams, reliance on payer portals, and batch-driven systems that lack real-time visibility into payer logic. This results in delayed identification of denial risks, limited transparency into root causes, and increased administrative burden for providers. In contrast, the desired future state of Denial Intelligence aims to shift denial prevention and resolution earlier in the revenue cycle by leveraging real-time insights and automation. This capability will proactively analyze claims against industry standard content and payer-specific rules before submission, predict potential denial scenarios using AI-driven models, provide a level of clarity with human readable explanations, and recommend corrective actions to ensure clean claims. Denial Intelligence (DI) is a real-time intelligent feature within Optum Real Provider Platform that: 1. Translates claim issue signals for both edits and denials into clear, provider-friendly language. 2. Explains the root cause of the issue in the context of a specific claim. 3. Suggests the best next action (NBA) for addressing an issue or denial, tailored to the specific patient or claim. 4. Predicts the likelihood of denial versus payment at both the Inquiry (Pre-Service and Checkout) and Final (Submission of final 837) stages, enabling staff to prevent denials early and manage work efficiently. DI operates as an autonomous agent with an optional Human in the loop (HITL) step. It runs on the Optum Real Provider Platform and is accessible through the Provider App and Provider APIs. Denial Intelligence will be developed as a modular component which can be called at any phase of the claim lifecycle i.e, pre-service, pre-claim and post-claim. Denial Intelligence aims to address denials for both Acute and Ambulatory care providers.

Market Information

According to the Optum 2024 Revenue Cycle Denials Index, national denial rates remain at about 12%, with the average denial rate up from 9% in 2016. Further, Optum reported that 84% of claims denied in 2023 were potentially avoidable, while 22% were not recoverable. The healthcare industry is turning to AI to address these issues.

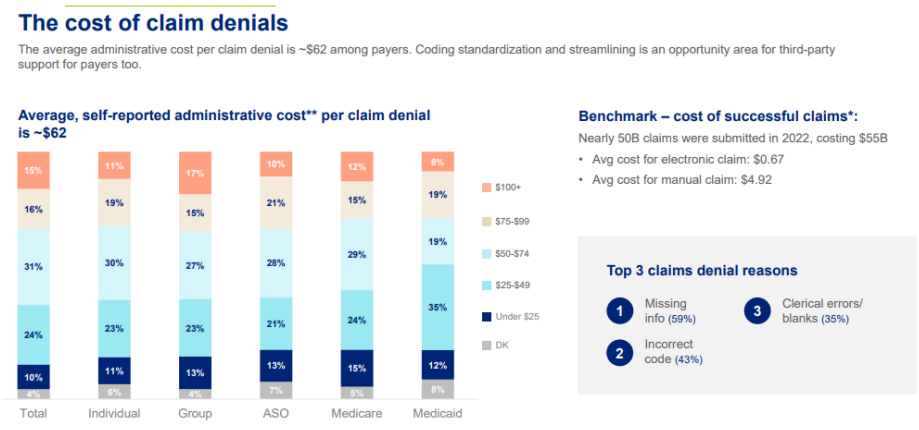
A 2025 study released by Waystar shows AI driving improvements of 13%-36% in high impact RCM areas, with the majority of healthcare leaders choosing trusted RCM software partners to deliver these capabilities.

A recent Forrester report claims AI is enabling organizations to see a 13% to 36% improvement in key revenue cycle-related efforts such as claim follow-up, payment accuracy, denial prevention, and workforce efficiency, among others.

Across both 2024 and 2025, rankings for primary denial triggers are unchanged according to Experian Health. The percentages did change, however, and some are worse.

Denial Triggers	2024	2025
Missing or inaccurate claim data	46%	50%
Authorizations	36%	35%
Incomplete or incorrect patient registration data	30%	32%
Code inaccuracy	27%	24%
Services not covered	26%	23%

Cost of claim denials for Payers



Cost of claim denials for Providers

	 **Competitive Landscape** According to the recent Optum Real Competitive Landscape **Experian Health -** Focused on Eligibility Verification, Prior Authorization Automation, Predictive Denials, Patient Scheduling, Financial Engagement Portal. One of Experians recognised key strengths is Denial prevention and revenue cycle optimization. **Availity -** Focused on Availity Essentials, Provider Data Management (PDM), Real-time claims and eligibility tools, ARIES platform for intelligent exchange. Availity is a viable competitor with a robust portfolio of products & solutions. They're the only other company noting the concept of "Shift-Left" within its claim life cycle solution(s). **Note:** See appendix for links to all sources.
Strategic alignment	We will develop the next generation claims processing network that will replace the current system with a real time, retail-like experience for payers, providers and patients, making it easier for providers to create clean "right-first-time claims", payers to adjudicate them in real-time, and deliver a retail-like experience for consumers. Denial Intelligence fits into this Optum Real strategy by providing real time intelligent insights to the provider at different stages in the claim lifecycle.
Anticipated Volume	Provider trust is driven by financial aspects with claims denials topping the list. RT provider suite can generate ~$90-130B in gross value to providers based on the recent Optum RT Value Creation Compendium. It is estimated that the introduction of Denial Intelligence can create a gross value of **$18 billion**. $1 billion in Admin cost reduction and $17 billion in write-off reduction.

Personas

User personas

- Eoin (25): Early in career Medical Coder. Still needs to look up what codes to use in different situations.
- Joanne (47): Experienced Billing Specialist trying to ensure claims are submitted correctly first time.

Stakeholders

Role	Responsibility	Pain point	Metrics
Provider office - Coding/Billing specialists	Ensure a medical note is correctly transformed into medical codes, that the coding conforms to standardised rules as well as payer policies and guidelines.	• Coding rules and requirements are very situation specific. While there are standard rules, payers have their own policies and specific requirements. Errors are easily made. • Roles are currently siloed with specialised teams, requiring multiple touches to interpret and resolve an issue.	Missing or invalid data makes up 16% of denials. Medical coding makes up 5% of denials.

Provider office - Claim/Denials specialists	Understanding denials, coordinating with additional staff to review and correct claims, appeals management.	• Vague CARC and RARC codes create additional work to understand what has been denied and why. • Dependence on multiple payer portals with varying terminologies and policies. • Payer specific code use leads to inconsistent denial parsing rules between payers, increasing complexity.	32% of denials are avoidable. Industry benchmark time to resolve claim denials is 30 days. [MD Clarity]
Payer	Validate claim is appropriate for payment.	• Rising denials drive higher claim processing costs.	The average administrative cost per claim denial is ~$62 among payers compared to a successful claim of $0.67 (electronic) or $4.92 (manual). [Payer-Provider abrasion June 2023]
Patient	Provide accurate information, receive care, pay what they owe.	• Typically the one to pay denied claims. • Increased costs and higher denial trends may prevent users from pursuing treatment.	60% of denials are never appealed leading to increasing costs for patients.

User Journey

The following diagrams provide examples of high level user journeys through the RCM flow with Denial Intelligence. They can also be found here: Denial Intelligence End to End Flows

The typical claim flow would proceed through the following steps:

1. **Pre-Service:** An appointment is created for a patient. Their data is collected and verified. The patient's eligibility is checked to determine whether they have active insurance.
2. **Pre-Claim:** After the patient's service/treatment, the details of the diagnosis and services provided are documented and signed off by the doctor. They are then translated into medical codes which are used to define the charges, a claim is created and submitted. As part of this process, there are validation steps which assess the claim for common issues and errors, returning codes which can be used to investigate the issue.
3. **Post-Claim:** Once a payer has adjudicated the claim, it is returned to the provider, either paid in full, partially denied or denied. In the case of a partial of full denial, the claim can then be reviewed and followed up as required.

Denial Intelligence acts as an evolution to the validation that exists today throughout this process, predicting errors in cases where payer validation is unavailable as well as adding clear explanations of errors and recommended next best actions to address them. This intelligence is based on current national/local, payer guidelines and policies, kept up to date through a content management system and reasoned over by AI to provide real time responses and remove the burden of interpreting, researching and formulating remediation plans from the provider, moving to a more. streamlined exception management workflow.

Scenario 1: Ambulatory (Professional) flow with a coding issue caused when services were coded individually when a more specific code should have been used i.e, Bundling.

In the scenario described in Figure 1, the issue is caused at the coding stage. The claim flows through the pre-service process as normal. When it is time for pre-service validation, no errors are identified as the patient's details are correct and they have appropriate insurance coverage.

After the service, there is a mistake at the coding stage which uses a combination of codes for a service that should have been covered by a single, specific code. When the claim next goes through the validation process, the error exists. In this example, the payer has APIs available to validate an inquiry claim. This API returns a 277CA response flagging the coding error. Denial Intelligence interprets the 277CA response in the context of the inquiry claim. It returns back an explanation of the code that was returned in the 277CA, the procedure code that caused the error, and what the correct code should be in this case. It also provides recommended actions to resolve the issue.

Once the issue is corrected, the claim is regenerated. Because the issue has been resolved, when it is next submitted for validation; no errors are identified or denials predicted. The claim proceeds for submission.

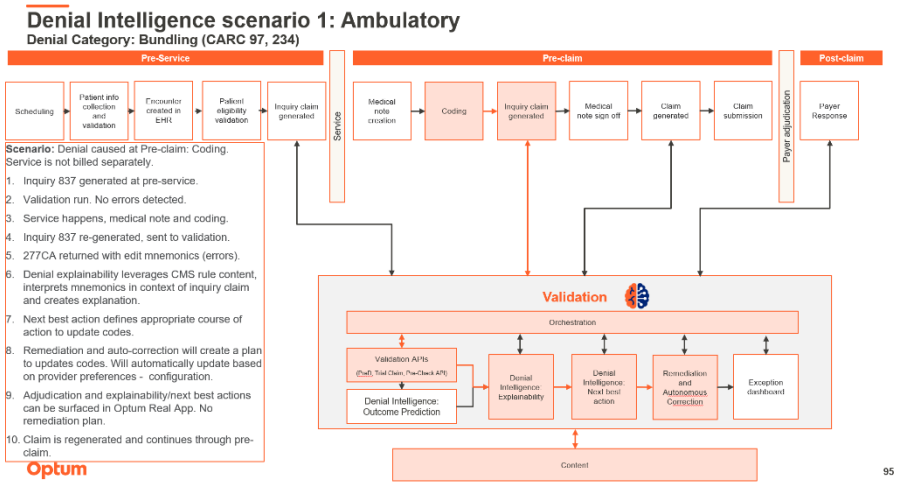


Fig 1.

Scenario 2: Acute (Institutional/Facility) flow with an issue caused due to missing information on the claim.

In the scenario described in figure 2, the issue is caused by missing or invalid information. In this example we do not have a direct connection to the payer. The claim flows through the pre-service as normal. When it is time for pre-service validation, no errors are identified as the patient's details are correct and they have appropriate insurance coverage.

After the service, everything is documented and coded correctly. This time, when the inquiry claim is validated there are no errors detected with the claim. In this case however a denial is predicted as the procedure typically requires prior authorization, and no code is present. Denial Prediction returns a likely denial for a CARC 16. The Explainability component takes the 837 and predicted CARC 16 and explains the reason for the predicted denial, highlighting the missing prior authorization code for the given procedure as the reason and why that causes an issue. It also provides recommended actions to resolve the issue.

Once the issue is corrected, the claim is regenerated. Because the issue has been resolved, when it is next submitted for validation; no errors are identified or denials predicted. The claim proceeds for submission.

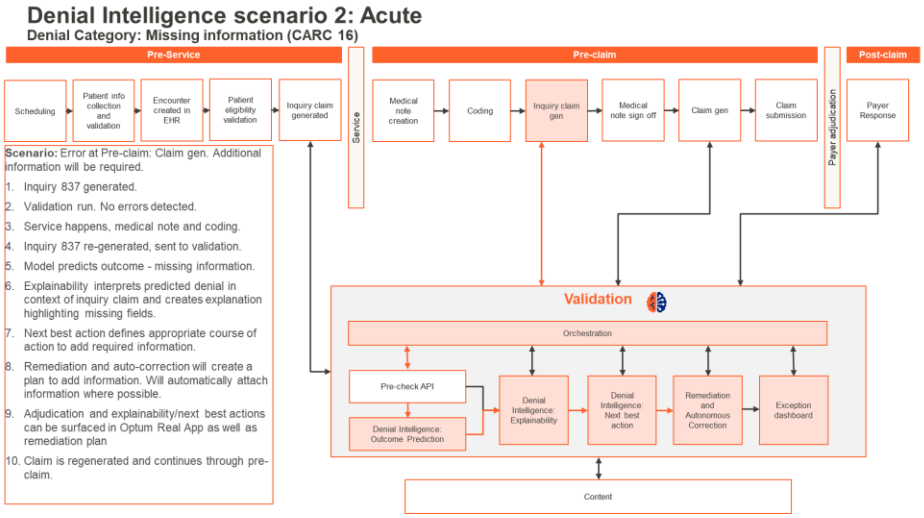


Fig 2.

In Scope

The following section outlines the main use cases and features required for denial intelligence in the pre-claim phase of the claim lifecycle.

ID	Title	Use Case	MoSCoW prioritization	Rank Order
UC1	Outcome Prediction - Pre-claim	As a billing provider employee, I want to know if a patients claim will likely be denied or paid by the payer prior to claim submission in order to prevent avoidable denials and help prioritize other valid denials.	Must	1
UC2	Explainability and Root-Cause Highlighting	As a billing provider employee, if a patients claim is likely to be denied, I want to understand why (root-cause & fields causing denial) in provider-friendly language so that I can review to determine next steps.	Must	2

UC3	Next-Best-Action & Claim Reconstruction	As a billing provider employee, if a patients claim is likely to be denied, I want to be provided with recommended corrective actions to reduce rework and in order to correct the claim before submission.	Must	3
UC4	Denial Reporting	As a provider, I want to see trends in the denials and issues being predicted post claim so that I can adapt my business practices to reduce errors in future.	Should	4

Features

Use case	Feature	Description

UC1, UC2, UC3, UC4	Denial Intelligence Orchestration	**Summary:** Take an inquiry or final claim (837P or 837I) and determine processing required. Return Denial Intelligence Outcome to calling service. This should work for both real-time and batch-based RCM systems (e.g, Assurance).
		
		Trigger: The Validation module is called.
		
		Functionality:
		
		1. Receive 837 in EDI format.
		2. Identify 837 type
		    1. Ambulatory (837P) or Institutional (837I)
		3. Identify 837 status - Inquiry (pre-service), Inquiry (pre-claim) or Final (pre-claim)
		4. If there are no edits or predicted denials, return an outcome of "Likely Adjudication".
		5. If there are edits or predicted denials.
		    1. Process them for explainability and next best actions.
		    2. If the explainability process fails, return "likely denial" status, validation and prediction outputs.
		    3. If the next best action process fails, return "likely denial" status and explainability output.
		    4. If all processes succeed, return the explainability, next best actions and "likely denial" status to the calling service.

UC1	Outcome Prediction	**Summary:** When we don't have a validation from a payer, we will run denial prediction to determine a likely denial. **Trigger**: Claim validation process (e.g. PreD or Pre-Check API calls) is complete and no edits have been returned by the API. **Functionality:** 1. Take the 837 and run it against the appropriate denial models. Details to be confirmed with Data Science. 2. If a denial category is returned, run the appropriate classification model for that category. 3. The number of models available will expand post-MVP. Updates to this component should be transparent to the rest of the module.

UC2	Denial/Issue Explainability	**Summary:** The outcome of the validation and denial prediction phases will be codes that are not particularly human readable without considerable training and experience. They also do not reveal the cause of the issue which can be different based on the patient and claim. The explainability capability will translate these codes in the context of the 837.
		
		Trigger: Claim Validation and denial prediction steps have completed.
		
		Functionality:
		
		1. Ingest either the validation output or the denial prediction output.
		2. Ingest the 837
		3. Leverage language models to reason over relevant external content
		    - For MVP this will be CMS content.
		    - Post-MVP the goal is to integrate with digitization hub.
		4. Leverage Gen AI to formulate a human readable explanation of the error in the context of this claim.
		5. Response must
		    - Identify whether edit/error came from payer or AI prediction.
		    - Include the edit/error with the code received.
		    - Include the category.
		    - Include the edit/denial type (e.g. mnemonic, CARC).
		    - Explain the error.
		    - Highlight the field that caused the error, referencing the field if it exists in the 837.
		    - Identify the correct value if possible.
		    - Be concise.
		    - Be understandable by someone without medical or billing experience.

UC3	Next Best Actions	**Summary:** To make the denial intelligence outcome actionable for providers, we will provide recommended next best actions to take to resolve any issues found to improve resolution speed.
		
		Trigger: The explanability process has successfully completed.
		
		Functionality:
		
		1. Receive the explainability output.
		2. Receive the 837.
		3. Leverage Gen AI to create next best actions, reasoning over external content as required.
		    - For MVP this will be CMS content.
		    - Post-MVP the goal is to integrate with digitization hub.
		4. The next best actions must
		    - Be step by step
		    - Be clear
		    - Not recommend anything that will cause issue
		    - Highlight that they are generated by AI with appropriate warnings.
		    - Be accurate.
		5. Next best actions should
		    - Be personalized to the 837 where possible.

UC1, UC2, UC3	Configurability	**Summary:** For Providers who use the Denial Intelligence module, I want to have options in terms of how denial intelligence is integrated in to my existing operational flows. **Trigger:** N/A **Functionality:** 1. Provide configurability option either through an API or UI which enables our implementation teams to configure where denial intelligence will be called within the claim lifecycle i.e, pre-service, pre-claim and post-claim. 2. Provide configurability option either through an API or UI which enables our implementation teams to configure which subcomponents of the denial intelligence module I wish to run at each phase e.g, Optum has payer connectivity for trial claims so outcome prediction may not be required. 3. Provide configurability option either through an API or UI which provides the ability for our implementation teams to define a threshold for an evaluation on the prediction models.
UC1, UC2, UC3	Continuous Model Learning	**Summary:** The models will stay accurate by continuously learning and training on predicted responses vs actual responses to ensure it is able to react to changes in the ecosystem, including changes in payer policies, to ensure continued clean claim improvements and denial reductions. **Trigger**: An 835 is returned for a submitted 837. **Functionality:** 1. Ingest an associated 837 and 835 into a model feedback loop. 2. Model retrains on an ongoing basis.

Out of Scope

The following section outlines what is out of scope from this requirements document:

- **Validation API's:** any API called as part of the validation process i.e, pre-eligibility, pre-check, pre-d, benefit and auth referral.
- **Denial Intelligence at Pre-Service:** This will be covered by another PRD.

- **Denial Intelligence at Post-Claim:** This will be covered by another PRD.
- **Autonomous Correction:** This will be covered by another PRD.
- **Exception Management UI:** for claim remediation.

Goals/Success Metrics

Goal	Success Metric
% of claims processed end to end with no manual touch.	Target ≥85%
% of claims accepted on first submission.	Target ≥90%
% of submitted claims returned with denial codes from payer.	Target ≤2%
% user satisfaction scores from admin and billing staff.	Target ≥90%

Accurately predict denial risk pre-submit (Inquiry) to prevent avoidable denials and prioritize work.	**Product KPIs**
	• Predictive quality
	  ◦ AUC-PR (denial class): ≥ 0.70 Inquiry; ≥ 0.80 Final
	  ◦ AUC-ROC: ≥ 0.85 Inquiry; ≥ 0.90 Final
	  ◦ Calibration: Brier ≤ 0.18 (Inquiry), ≤ 0.15 (Final); ECE ≤ 0.05 (both)
	• Business lift
	  ◦ Prevention uplift: ≥ 15% reduction in avoidable denials vs. baseline rules-only
	  ◦ Repeat-denial reduction: ≥ 20% decrease for same root-cause category over 4–8 weeks
	• Operational
	  ◦ Latency (p95): ≤ 1.5s Inquiry;
	  ◦ Scoring coverage: ≥ 95% of eligible claims; hard error rate < 0.5%
	• Safety & governance
	  ◦ Model drift alarms: triggered if PSI > 0.2 or monthly AUC drop > 0.05
	  ◦ Override logging: 100% of user overrides captured with reason code

Make issues and denial reasons understandable in seconds and pinpoint the fields most responsible.	**Product KPIs**
	
	• Coverage & accuracy
	  o Code coverage: ≥ 95% of encountered CARC/RARC or edit mnemonics mapped to plain-language explanations
	  o SME agreement: ≥ 85% match to expert ground truth on sampled reviews; $\kappa \geq 0.70$
	• Usability
	  o Time-to-comprehension: median ≤ 15s to understand "why" (usability tests)
	  o Usefulness rating: ≥ 4.3/5 from front-line RCM users
	• Traceability
	  o Highlighted fields present: ≥ 90% of cases
	  o Source linkage: 100% explanations cite underlying code(s)/policy text; audit completeness 100%

Turn understanding into precise, guided correction and a clean, ready-to-submit claim.	**Product KPIs**
	
	• Action quality & adoption
	  o NBA acceptance rate: ≥ 70% overall; ≥ 80% when denial-risk ≥ 0.70
	  o User usefulness rating: ≥ 4.2/5
	• Operational impact
	  o Time-to-first-action: ≥ 30% faster vs. baseline
	  o First-pass resolution (FPR) uplift: ≥ 15% improvement on resubmitted claims influenced by NBA
	  o Repeat-denial reduction (same root cause): ≥ 20%
	• Claim draft quality
	  o "No-edit" submissions from draft: ≥ 60% (Alpha) → ≥ 80% (GA)
	  o Resubmission success rate uplift: ≥ 10 pts vs. baseline
	• Safety & compliance
	  o Justification present: 100% of NBAs include rationale & policy tie-back
	  o PHI incidents: 0; audit trail completeness 100%

Assumptions

- Given the Pre-Check API does not have an 835 formatted response as yet, we will continue to leverage the Pre-D API until such time it is ready to be used.
- It is assumed that we will have customer data (preferably 2 years) in order to train the models.

Risks

- **GTM timing** - The move to AI in RCM is underway with 59% of organizations planning to invest in the space in the next one to two years. (Waystar June 2025 report). Waystar is currently seen as an industry leader in AI supported denial management. [Black Book Research Feb 2025 evaluation]. Optum needs to move on this fast or risk being behind our competitors.
- Epic maintains near 100% customer retention. If they were to build competing solutions they will likely be more appealing to customers. (Breaking down Epic's business model, strategic moat, economics, culture, origin story, and journey to a $45 billion monopoly).

Milestones (tbd)

The specific scope of the initial Pilot release is still under discussion with our Tech partners. However, we intentionally want to:

- Minimize disruption to existing systems and operations
- Safely test integration points within complex back-end environments
- Establish a scalable, compliant foundation for rapid iteration
- Deliver initial value while building out coverage of AI capabilities

Based on the data points collected to date (see appendix), we propose to focus on two denial categories to begin with 1) Missing Information for Acute 2) Bundling for Ambulatory. We may further refine specific CARC's for Acute based on research findings.

Therefore, process flow would:

- Take an inquiry or final 837p or 837i from the claim gen process
- Validate the claim against validation APIs (PreD, Pre-Check)
- Predict a CARC 16 Missing Information (Acute) and/or Predict a CARC 97/234 Bundling issue (Ambulatory) where prediction is needed

- Generate human readable explanation of 999, 277CA, 835 or predicted CARC in context of 837

- Generate next best actions to address issue

- Surface outcomes of denial intelligence to users in the Optum Real App for necessary edits in the EHR

We will need to deliver this module in phases in order to get an MVP as soon as possible. Possible phases are outlined below but timelines will need to be agreed with our Tech partners.

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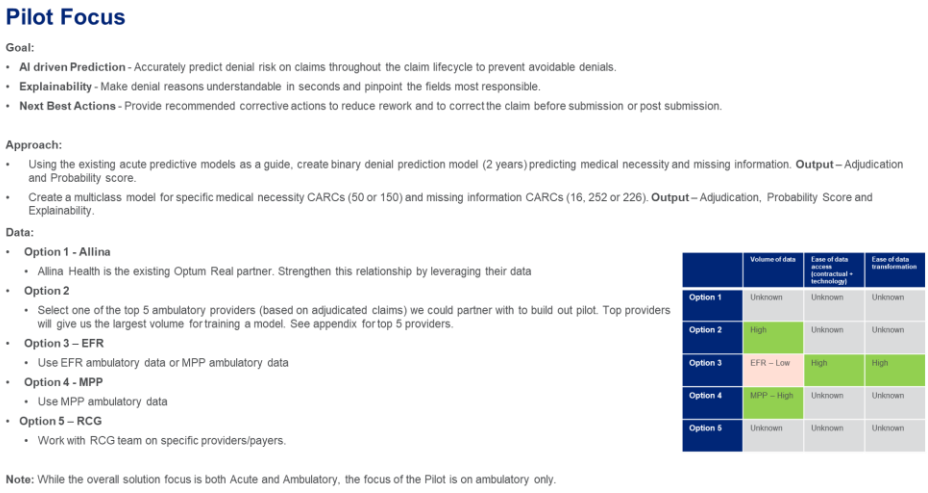
Fig 3.

It is imperative we agree on who's data can be used for a pilot MVP. We have mapped out several options below but need alignment before moving forward.



Pilot Focus

Goal:

- **AI driven Prediction** - Accurately predict denial risk on claims throughout the claim lifecycle to prevent avoidable denials.
- **Explainability** - Make denial reasons understandable in seconds and pinpoint the fields most responsible.
- **Next Best Actions** - Provide recommended corrective actions to reduce rework and to correct the claim before submission or post submission.

Approach:

- Using the existing acute predictive models as a guide, create binary denial prediction model (2 years) predicting medical necessity and missing information. **Output** – Adjudication and Probability score.
- Create a multiclass model for specific medical necessity CARCs (50 or 150) and missing information CARCs (16, 252 or 226). **Output** – Adjudication, Probability Score and Explainability.

Data:

- **Option 1 - Allina**
  - Allina Health is the existing Optum Real partner. Strengthen this relationship by leveraging their data
- **Option 2**
  - Select one of the top 5 ambulatory providers (based on adjudicated claims) we could partner with to build out pilot. Top providers will give us the largest volume for training a model. See appendix for top 5 providers.
- **Option 3 – EFR**
  - Use EFR ambulatory data or MPP ambulatory data
- **Option 4 - MPP**
  - Use MPP ambulatory data
- **Option 5 – RCG**
  - Work with RCG team on specific providers/payers.

	Volume of data	Ease of data access (contractual + technology)	Ease of data transformation
Option 1	Unknown	Unknown	Unknown
Option 2	High	Unknown	Unknown
Option 3	EFR – Low	High	High
Option 4	MPP – High	Unknown	Unknown
Option 5	Unknown	Unknown	Unknown

Note: While the overall solution focus is both Acute and Ambulatory, the focus of the Pilot is on ambulatory only.

User Interaction and Design

Denial Intelligence should be built as a modular component that can be called from any phase within the RCM workflow. While this PRD focuses on Pre-Claim, we expect this module to be called at Pre-Service as well as Post-Claim. These will of course be optional depending on client needs. The Denial Intelligence module is devised in to 3 sub-components as outlined in the use case section above.

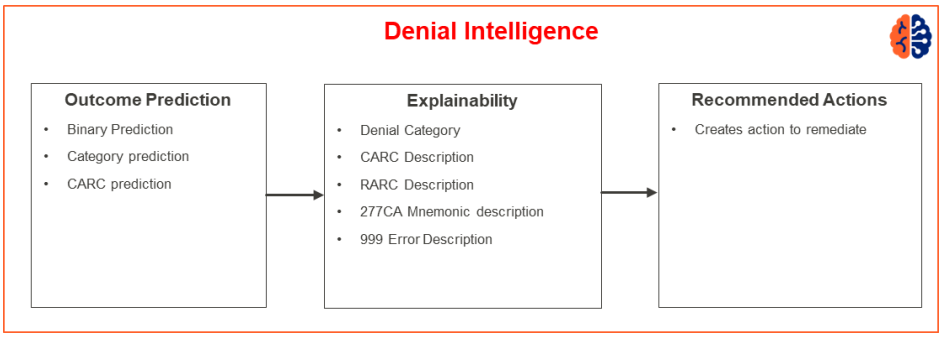


Fig 4.

In Phase 1, we propose using the existing UX but add a tag to identify likely denials coming from AI versus the inquiry claim response. If inquiry results exist, they will train the LLM. If no inquiry response exists then the predicted model output will be shown. **Note:** Predicted model is more applicable where no payer connection is available.

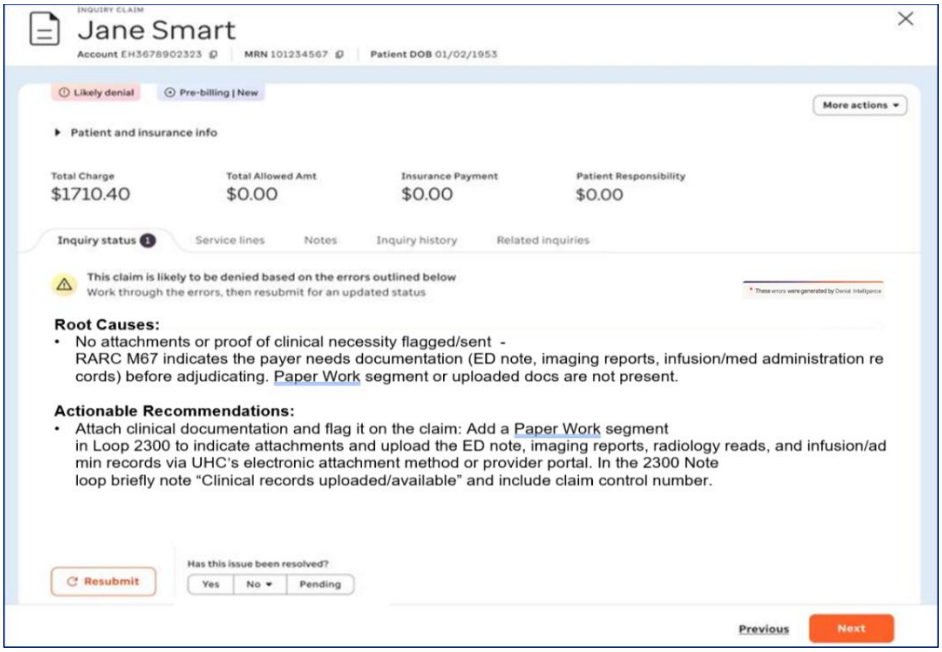


Fig 5.

Non-Functional Requirements

Type	Requirement(s)
UI / User based	N/A

API based	TBD Examples include but not exclusive: ▪ Typical number of calls per second ▪ Peak calls per second ▪ Uptime/ Availability percentage e.g. 99.9999% ▪ Performance monitoring requirements/reporting metrics
Feature Flag	TBD
Model based	Any predictive model quality gates e.g, AUC-PR, AUC-ROC, Brier Score. See in Success Metrics defined above.

Questions

Date Asked	Question	Submitter	Answer	Answered By	Date Answered

Sign Off

Internal Dept	Impacted (Y/N)	Approval Required?	Point of Contact/Delegate for Sign Off	Sign-off/Date
Optum Real	Y	Y	Irshad Mohammed (VP - Digital Product)	
Optum Real	Y	Y	Harsha Nimmaraju (Sr Dir Software Engineering)	
Optum Real	Y	Y	Usha Cheruka (VP - Product (Ambulatory))	
Optum Real	Y	Y	Rob Wood (VP - Product)	
Optum Real	Y	Y	Lisa Bartlett (VP - Product (Acute))	

Appendix

Source	Link to Document

Waystar - AI in healthcare payments software: A strategic imperative	Report_ AI in healthcare payments software_ A strategic imperative.pdf
Optum	2024 Revenue Cycle Denials Index e-book
Optum Payer-Provider Abrasion June 2023	2022 on-screen graphic and layout guide
Experian	Obliterate claim denials with a modernized patient access engine - Healthcare Blog
Experian	State of Claims 2025 - Experian Health
HFMA denial metrics	Report - Standardizing denial metrics for the revenue cycle | HFMA
Black Books Research into claim denial software	blackbookmarketresearch: black-book-research-releases-first-industry-wide-evaluation-of-ai-driven-revenue-cycle-management-solutions
Optum Value Compendium	Optum Value Creation Compendium_vF - Copy.pptx
Optum Real Competitor Landscape 2025	Optum Real_Competitor Landscape (Aug 22 2025) - Editable - Add Comments.pptx
Denial Intelligence end to end flows	Denial Intelligence End to End Flows
Personas FigJam	UXR Hub_Optum Real/RTS – FigJam

Acute Denial Data

Note: From Telemetry October 2024 to October 2025. CARC code coverage included where % > 1%.

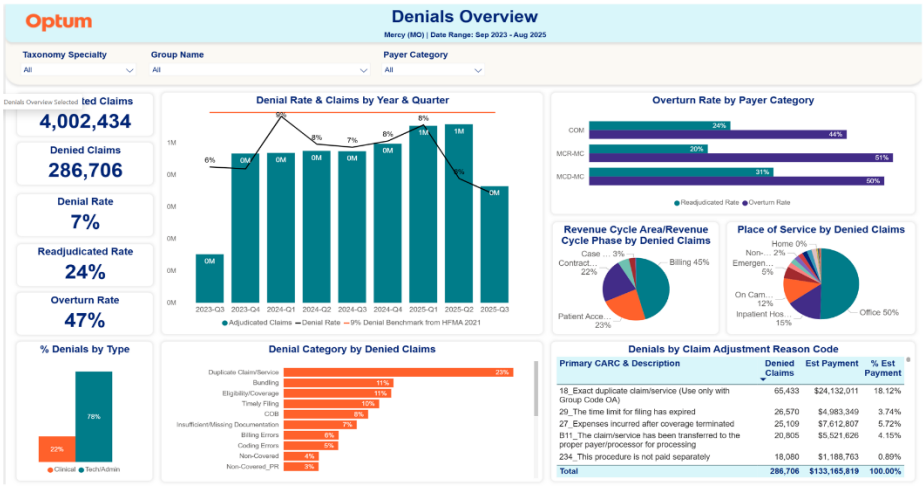
Category	**Value**	**Key CARC Codes and %**
Top by denied value		
Missing Information	$4.2Bn	CARC 16 (18%), 252 (1%)
Authorization	$1.6Bn	CARC 197 (6%), 39 (1.75%)
Not Covered	$1.2Bn	CARC 96 (5%)
Medical Necessity	$1Bn	CARC 50 (3%), 150 (1%)
Coordination of Benefits	$867M	CARC 24 (3%), 22 (1%)

Extra: Claim Billing Error	$697M	CARC B11 (4%)
Top by volume		
Not Covered	360k	CARC 96 (17%), 204 (4%), 167 (1%), 256, 276, 272, 95
Missing Information	197k	CARC 16 (12%), 252 (1%), 250, 226, 251, 163
Medical Necessity	104k	CARC 50 (6%), 150, 186, 151, 55, 40
Coordination of Benefits	74k	CARC 24 (4%), 22 (1%)
Code Related	54k	CARC 4 (2%)

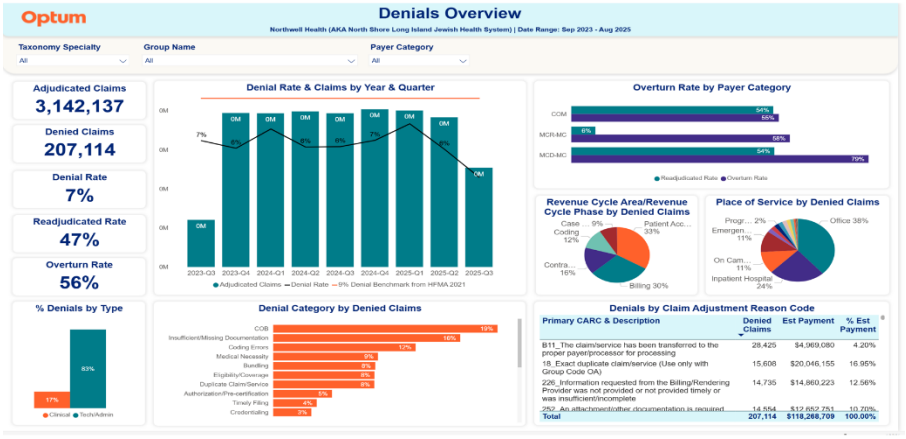
Ambulatory Denial Data

Note: No aggregate Ambulatory Data, top 2 providers based on adjudicated claims.

No 1 Ambulatory Provider based on adjudicated claims



No 2 Ambulatory Provider based on adjudicated claims



Primary CARC & Description	Denied Claims	Est Payment	% Est Payment
B11_The claim/service has been transferred to the proper payer/processor for processing	28,425	$4,969,080	4.20%
18_Exact duplicate claim/service (Use only with Group Code OA)	15,608	$20,046,155	16.95%
226_Information requested from the Billing/Rendering Provider was not provided or not provided timely or was insufficient/incomplete	14,735	$14,860,223	12.56%
252_An attachment/other documentation is required	14,554	$12,652,751	10.70%
Total	**207,114**	**$118,268,709**	**100.00%**