Enterprise-scale business analytics for healthcare

AI and chatbots in enterprise healthcare

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VisiQuate
“Hey, can we talk?”
AI + Chatbots in Enterprise Healthcare BI
Healthcare administration and finance is complex
Data landscape
What users want

- Fast, reliable data
- Clear, intuitive visuals
- Actionable insights
- Predictive analytics
- Intelligent recommendations
Connecting the user to their data in a natural way
Meet Ana.
Nice to hear from you again, Anthony!

You can explore the following, or just ask me a question.
Ana ○

Nice to hear from you again, Anthony!

You can explore the following, or just ask me a question:

- Insights
- Playbooks
- Help
- Recommendations

Anthony ○

How are my denials trending?

Ana ○

Yep, just a second.

I've put together a trended view of your denials by remit period.

Applied filters:
- Current Period: Nov '17, Oct '17, Sep '17, Aug '17, Jul '17, Jun '17, May '17, Apr '17, Mar '17, Feb '17, Jan '17, Dec '16, Nov '16
- Previous Period: Oct '16, Sep '16, Aug '16, Jul '16, Jun '16, May '16, Apr '16, Mar '16, Feb '16, Jan '16, Dec '15, Nov '15, Oct '15

Is that the data you were looking for?

- Show related content
- Adjust filters
- Not really what I wanted
- Help
- Recommendations

Type your message and hit Enter key...
How are my denials trending?

Ana:

Yes, just a second.

I've put together a trended view of your denials by remit period.

Applied filters:
- Current Period: Nov 17, Oct 17, Sep 17, Aug 17, Jul 17, Jun 17, May 17, Apr 17, Mar 17, Feb 17, Jan 17, Dec 16, Nov 16

Is that the data you were looking for?

Show related content

Show related content

Ana:

Nice! Let's keep going.

Here are some related terms that may also be of interest:

- Denials by Payer
- Denial Status
- Timely Filing

Type your message and hit Enter key...
Here are some related items that may also be of interest:

- Denials by Payer
- Denial Status
- Timeliness Filing

Show report:

Let's go take a look at that report. Here we got Dental inventory data by volume and dollar and segmented by payer.

Applied filters:
- Demographic: Nov 17, Oct 17, Sep 17, Aug 17, Jul 17, Jun 17, May 17, Apr 17, Mar 17, Feb 17, Jan 17, Dec 16, Nov 16

Is that the data you were looking for?
<table>
<thead>
<tr>
<th>Payor</th>
<th>Denied Dollars</th>
<th>Denied Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$171,335,054</td>
<td>135,225</td>
</tr>
<tr>
<td>Medicare</td>
<td>$91,774,832</td>
<td>95,248</td>
</tr>
<tr>
<td>Ohio Medicaid</td>
<td>$19,375,448</td>
<td>1,611</td>
</tr>
<tr>
<td>Florida Medicaid</td>
<td>$17,308,088</td>
<td>105,538</td>
</tr>
<tr>
<td>UHC</td>
<td>$2,386,037</td>
<td>495,53</td>
</tr>
<tr>
<td>Tricare</td>
<td>$7,956,020</td>
<td>454,84</td>
</tr>
<tr>
<td>Coventry</td>
<td>$7,682,357</td>
<td>533,96</td>
</tr>
<tr>
<td>Medical Mutual</td>
<td>$7,645,319</td>
<td>463</td>
</tr>
<tr>
<td>Humana</td>
<td>$5,114,385</td>
<td>247,78</td>
</tr>
<tr>
<td>Cigna</td>
<td>$4,362,471</td>
<td>280,99</td>
</tr>
<tr>
<td>CareSource</td>
<td>$2,951,844</td>
<td>389</td>
</tr>
<tr>
<td>Payer</td>
<td>Metric</td>
<td>Denied Dollars (dollars)</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$137,996,054</td>
</tr>
<tr>
<td>MEDICARE</td>
<td></td>
<td>$92,724,012</td>
</tr>
<tr>
<td>OHIO MEDICAID</td>
<td></td>
<td>$23,375,048</td>
</tr>
<tr>
<td>FLORIDA MEDICAID</td>
<td></td>
<td>$14,508,008</td>
</tr>
<tr>
<td>UMHC</td>
<td></td>
<td>$12,590,037</td>
</tr>
<tr>
<td>TRICARE</td>
<td></td>
<td>$7,850,050</td>
</tr>
<tr>
<td>COVENTRY</td>
<td></td>
<td>$7,662,357</td>
</tr>
<tr>
<td>HMO</td>
<td></td>
<td>$7,041,109</td>
</tr>
<tr>
<td>HUMANA</td>
<td></td>
<td>$5,214,985</td>
</tr>
<tr>
<td>CIGNA</td>
<td></td>
<td>$4,202,471</td>
</tr>
<tr>
<td>CARESOURCE</td>
<td></td>
<td>$2,951,644</td>
</tr>
<tr>
<td>AETNA</td>
<td></td>
<td>$2,457,300</td>
</tr>
<tr>
<td>KASSER</td>
<td></td>
<td>$837,118</td>
</tr>
<tr>
<td>HEALTHY OPTIONS</td>
<td></td>
<td>$800,408</td>
</tr>
<tr>
<td>HEALTHPARTNERS</td>
<td></td>
<td>$27,309</td>
</tr>
<tr>
<td>BCBS</td>
<td></td>
<td>$1,233,131</td>
</tr>
<tr>
<td>PKI</td>
<td></td>
<td>$2,605</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$137,996,054</strong></td>
</tr>
</tbody>
</table>
We designed Ana to be part of your team:

- **AUTOMATED ANALYST**
- **PERSONAL ASSISTANT**
- **CONSULTANT**
Business Intelligence On Demand
Key insights for the most common requests and triggers

- Clean
- Constrained
- Triggered on key alert values
- Delivered on NL requests
- Recommended by alerts and natural language requests
Consultative Playbooks

- Value Rich
- Guided
- Triggered on key alert values
- Delivered on NL requests
- Recommended by alerts and NL requests
Extend Fanatical Service Model

- Bring Self Learning Library to life
- Recommend help and content based on NL requests
- Recommend help and content based on triggers
- Seamless hand off to account manager when request goes beyond the capabilities of Ana.
Every request/trigger ends with a recommendation:

- Request -> Response -> Recommend Cycle
- Recommend widgets, playbooks and help/content
Good to see you again, Anthony!

You can explore the following, or just ask me a question:
What is my denials status by payer for black cherry medical center for denied amount greater than $5000?

Ana:

Got it. One moment.

Check out your current denial inventory by payer.

Applied filters:
- Denied Amount: greater than 5000.00
- Facility Name: black cherry medical center
- Rem Month: Nov-17

Denied Dollars: $815,139
Denied Volume: 10

<table>
<thead>
<tr>
<th>Payer</th>
<th>Denied Dollars</th>
<th>Denied Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDICA</td>
<td>$415,096</td>
<td>5</td>
</tr>
<tr>
<td>UHC</td>
<td>$714,504</td>
<td>2</td>
</tr>
<tr>
<td>MNO</td>
<td>$6,490</td>
<td>0</td>
</tr>
<tr>
<td>CARESOURCE</td>
<td>$63,796</td>
<td>3</td>
</tr>
<tr>
<td>OHS MEDICA</td>
<td>$51,296</td>
<td>2</td>
</tr>
</tbody>
</table>

Is that the data you were looking for?
Add filter for DRG 603, 853, 1404

Understood.

Those filter updates are almost ready.

Applied filters:
- Denied Amount: greater than 5000.00
- DRG: 1404, 603, 853
- Facility Name: black cherry medical center
- Remit Month: Nov 17

<table>
<thead>
<tr>
<th>Category</th>
<th>Denied Dollars</th>
<th>Denied Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$140,482</td>
<td>5</td>
</tr>
<tr>
<td>Medicare</td>
<td>$2,405</td>
<td>2</td>
</tr>
<tr>
<td>UHC</td>
<td>$4,805</td>
<td>2</td>
</tr>
<tr>
<td>DHR Medicaid</td>
<td>$36,080</td>
<td>1</td>
</tr>
</tbody>
</table>

Is that the data you were looking for?
Nice choice! This should be interesting since this report is based on what people are looking at.

Ok, let's get it. I've put together a period comparison report of your denial overtures by Payer.

Applied filters:
- Facility Name: Black Cherry Medical Center
- Current Period: Nov 17
- Previous Period: Oct 17

<table>
<thead>
<tr>
<th>Payer</th>
<th>Avg Ovrtmte Rate Most Recent Period</th>
<th>Avg Ovrtmte Rate Prior Period</th>
<th>Ovrtmte Rate Difference</th>
<th>Ovrtmte Amount Most Recent Period</th>
<th>Ovrtmte Amount Prior Period</th>
<th>Ovrtmte Amount Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHC</td>
<td>9.60%</td>
<td>1.81%</td>
<td>+7.79%</td>
<td>$194,171</td>
<td>$70,004</td>
<td>$124,167</td>
</tr>
<tr>
<td>BCBS</td>
<td>2.02%</td>
<td>4.02%</td>
<td>-2.00%</td>
<td>$173,019</td>
<td>$108,005</td>
<td>$64,955</td>
</tr>
<tr>
<td>Ohio Medicaid</td>
<td>6.57%</td>
<td>6.47%</td>
<td>+0.10%</td>
<td>$251,717</td>
<td>$164,306</td>
<td>$87,411</td>
</tr>
<tr>
<td>CareSource</td>
<td>1.27%</td>
<td>1.12%</td>
<td>+0.15%</td>
<td>$691,827</td>
<td>$530,000</td>
<td>$161,827</td>
</tr>
<tr>
<td>MCO</td>
<td>6.01%</td>
<td>1.47%</td>
<td>+4.54%</td>
<td>$458,682</td>
<td>$150,000</td>
<td>$308,682</td>
</tr>
<tr>
<td>Medicare</td>
<td>10.43%</td>
<td>1.13%</td>
<td>+9.30%</td>
<td>$280,497</td>
<td>$549,482</td>
<td>-269,985</td>
</tr>
<tr>
<td>Aetna</td>
<td>3.76%</td>
<td>3.00%</td>
<td>+0.76%</td>
<td>$661,463</td>
<td>$628,000</td>
<td>$33,463</td>
</tr>
</tbody>
</table>

Was the report what you wanted to see and/or helpful? Or would you like to dig into something else?
Coordination of Benefits

The conflict where there may be another responsible payer or a sequencing for which payer is responsible will lead to an avoidable and actionable denial. There are clear steps to resolution and a relatively high probability for overturn.

Description
Recommended Action
Opportunity

What else are you interested in?
Coordination of Benefits

**Description**

- Research patient insurance information from current and past visits.
- If other insurance found, load new insurance.
- Execute eligibility check for other insurance.
- If no other insurance found, move balance to Self Pay.

**Recommended Action**

- [Show playbook](#)
- [Details](#)

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Ask Ana

Excellent! I'll get that ready.

Check out this playbook on Coordination of Benefits denials and how to handle them.
Excellent! I’ll get that ready.

Check out this play on Coordination of Benefits denials and how to handle them.

Coordination of Benefits

On average, 50-75% of all Coordination of Benefits denials are successfully overturned through appeals. I have a report that shows active Coordination of Benefits denials from the past 13 months. Check out the link to see your inventory.
<table>
<thead>
<tr>
<th>Code</th>
<th>CARC Description</th>
<th>SIC</th>
<th>Claim Paid SIC</th>
<th>Claim Adjusted SIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Coordination of Benefits</td>
<td>10</td>
<td>$1,000</td>
<td>$1,492,000</td>
</tr>
<tr>
<td>11</td>
<td>Coordination of Benefits</td>
<td>11</td>
<td>$500</td>
<td>$850</td>
</tr>
<tr>
<td>85</td>
<td>Coordination of Benefits</td>
<td>85</td>
<td>$2,000</td>
<td>$3,492,000</td>
</tr>
<tr>
<td>120</td>
<td>Coordination of Benefits</td>
<td>120</td>
<td>$100</td>
<td>$1,500</td>
</tr>
</tbody>
</table>

This is a work-related injury that is covered by the employee’s insurance policy.

This injury is covered by the employee’s insurance policy.

This injury is covered by the employee’s insurance policy.

The provider cannot collect this amount from the patient. However, this amount may be billed to subsequent carriers. Reimburse the patient, (e.g., with group code X).
How Ana Works

**PRE-PROCESSING**

- Pattern Recognition Engine [NER/Intent]
- Grammar Module [Synonyms/Spelling]
- Natural Language Understanding (NLU)
- Rules Engine

**CONVERSATION MODULE**

Uses D3 to render the data for user

**NUMERO**

- Numero receives payload
- Translate JSON to Java using webSDK
- Java objects passed to prompts for intended report_id
- Java
- Recommendation Engine
- Microstrategy generates data and returns data to Numero

**CHAT APPLICATION**

“Ana, please show me denials overturn by payer for Black Cherry Medical Center for November 2017”
Sharpening the focus

- Industry
- Business Unit
- Problem to Solve
- Intents
“See denials status for DRG code 721 by payer for black cherry medical center since the beginning of the year.”
“See denials status for DRG 721 by payer for black cherry medical center since the beginning of the year.”

“Give me current year denials by payer for DRG code 721 at black cherry medical.”

“How are this year’s denials for just DRG code 721 at black cherry broken down by payer?”

“What are black cherry medical center’s denials by payer for DRG 721 in the current year?”
“Show me denials for DRG 721 for black cherry for this year by payer.”

“Let's see denials by payer for black cherry where DRG is 721 since the beginning of the year.”

“For black cherry medical what’s the denial status by payer for claims with DRG code 721 this year?”

“See denials status by DRG code 721 by payer for black cherry medical since the beginning of the year.”
NLP/NLU requirements...pretty intense
Ana is continually being trained

Healthcare Data Experts

Knowledge Workers

Account Managers

Client Users
Ana enters enterprise analytics data flow

The future of enterprise analytics

Iterative transition from VisiQuate human analyst to large % automated
Ana Roadmap

- Expansion Ana's footprint beyond the back office analytics:
  - Patient access
  - Pre-billing
  - Operations
  - Clinic + ER
  - Disease management (analytics and workflow)

- Bluechip consultancy playbook delivery and facilitation

- Whitespace opportunity identification and facilitation

- Vendor marketplace intermediary

- Technical enhancements

- JSON for in-line text-based responses

- JS API for direct delivery of MSTR visualization packages
Additional topics

- Our experience with the Lean Product Validation Process and Google Sprint Methodology
- Engaging pilot program participants
- Defining chat dialogs: Technical Product Requirements
- MicroStrategy integration: SDK, configuring drill downs, custom visualizations
- Leveraging Ana as a key differentiator
- Developing Ana’s persona
Ask Ana.

Text **ANA** to **66866** to receive this presentation by email.