Using Generative AI with Retrieval-Augmented Generation to Automate Slide Deck Development from AMCP Formulary Dossiers

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MSR245

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Pharmaco Evidence

First to submit AI-SLR to HTA

INTRODUCTION

- The Academy of Managed Care Pharmacy (AMCP) dossier is a cornerstone of formulary decision-making in the United States, which gives payers a structured, comprehensive account of a product's clinical, economic, and humanistic value[1]
- However, translating dossier content into slide decks is resource-intensive and time-consuming. It requires medical affairs and health economics and outcomes research (HEOR) teams to manually extract, synthesise, verify, and format large volumes of evidence
- Generative artificial intelligence (GenAI) offers an opportunity to streamline presentation development through automated evidence extraction, summarization, synthesis, and generation of presentation-ready content[2]

OBJECTIVE

- This study explored the utility of GenAI to automate development of a payer presentation slide deck derived from an AMCP dossier in a psychiatric disorder, using a human-in-the-loop approach

METHODS

1. Tool development:

- A structured workflow was developed to support the generation of an AMCP deck for a psychiatric disorder use case using Evaior (Pharmacoevidence AI tool), within a Retrieval-Augmented Generation (RAG) framework, complemented by systematic human oversight

2. Grounding with RAG:

- A RAG framework was integrated to reduce the risk of unsupported or fabricated content
- The model drew slide content only from retrieved passages in the AMCP dossier and supporting source documents
- Each statement could be traced to its originating source, which allowed subject matter experts (SMEs) to verify claims quickly

3. Knowledge base

- A total of 75 documents were ingested into the RAG pipeline
- Document types included peer-reviewed journal articles, conference abstracts, treatment guidelines and epidemiological data sources
- Together with the AMCP dossier, these formed the evidence base for slide generation

4. Multi-agent architecture

- Specialised agents were configured, each responsible for a section of the AMCP dossier
- Each agent retrieved relevant evidence and generated structured slide content for its section
- Outputs included narrative text, summary tables, and data visualisations (bar graphs, pie charts, and line graphs)
- The agents' outputs were combined into a single slide deck

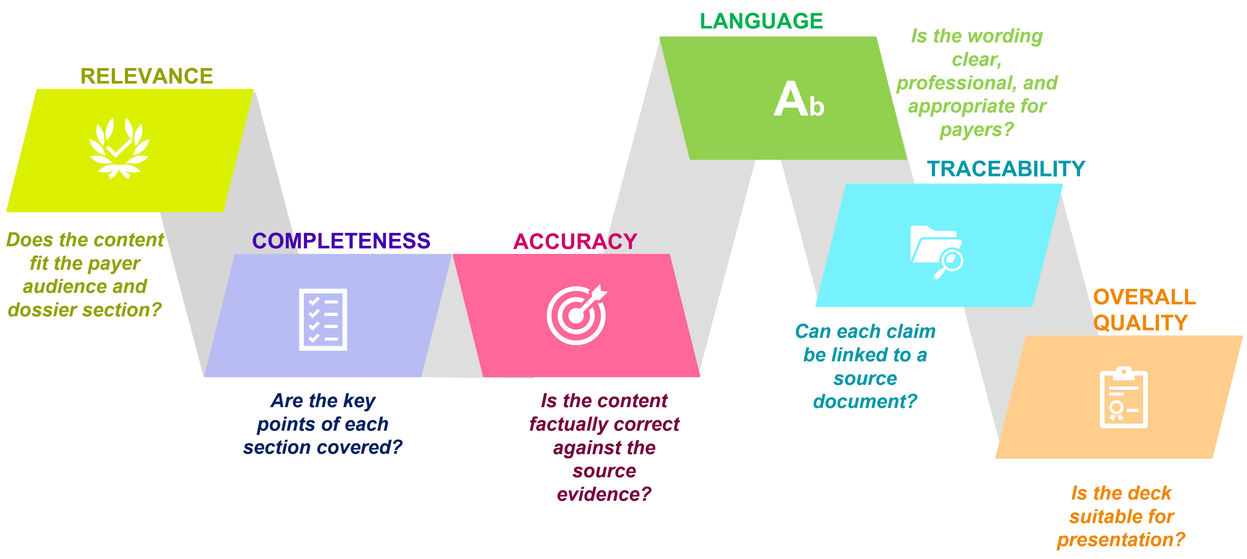
5. Human-in-the-loop SME review

- Subject matter experts reviewed and validated the generated outputs
- Evaluation covered six criteria: relevance, completeness, accuracy, language, traceability, overall quality as in **Figure 1**

6. Efficiency assessment

- Efficiency was assessed in days by comparing the time taken to develop the deck with the automated workflow against the manual approach

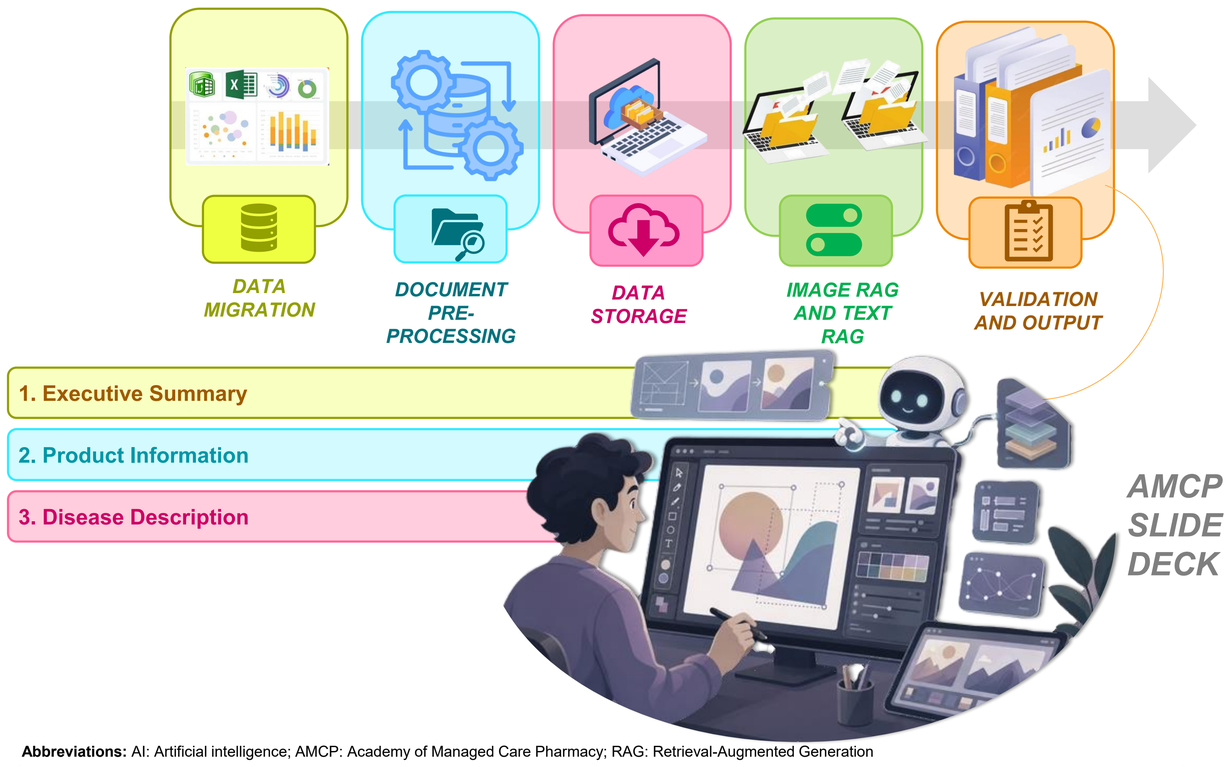
Figure 1. Assessment Parameters for the GenAI-Generated AMCP Dossier Slide Deck



RESULTS

- Evaior generated a comprehensive 55-slide AMCP dossier covering the executive summary, product overview, and disease description, with each section featuring structured, payer-focused narrative content (**Figure 2**)
- Evaior also generated data visualisations, including bar graphs, pie charts, and line graphs. The deck therefore combined text, tables, and figures, which the payer presentations usually need
- While most figures and tables were generated accurately, a small number of bar graphs and tables required manual formatting adjustments; however, all underlying data remained fully traceable to source references
- SMEs reviewed the output against relevance, completeness, accuracy, language, traceability, and overall quality

Figure 2. Workflow of the AI-Assisted AMCP Slide Deck Development Process

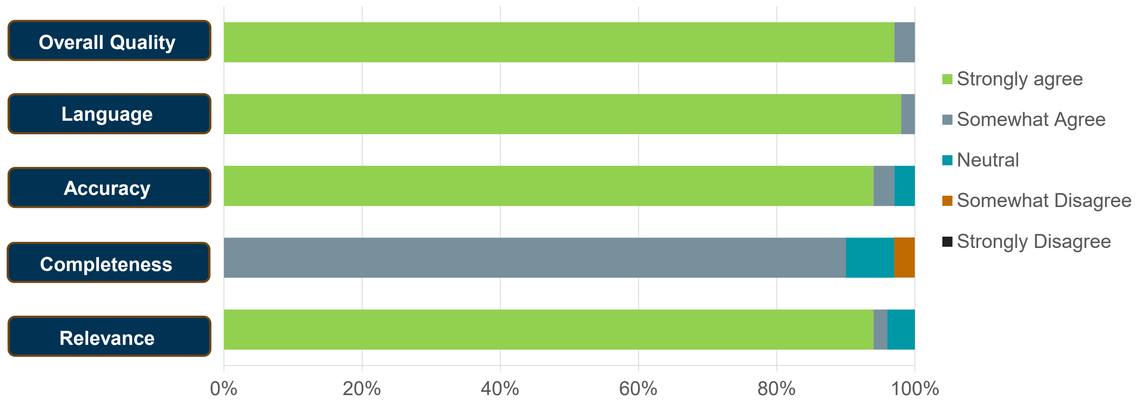


Abbreviations: AI: Artificial intelligence; AMCP: Academy of Managed Care Pharmacy; RAG: Retrieval-Augmented Generation

RESULTS (Cont.)

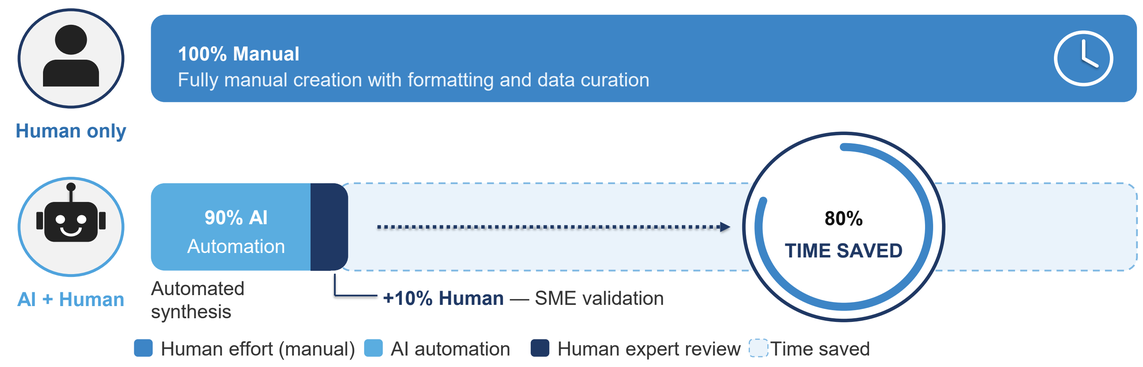
- Based on the Likert-scale assessment, SMEs strongly agreed that the generated content was relevant and accurate to the topic under consideration, with 96% strongly or somewhat agreeing (**Figure 3**)
- Responses were also considered largely complete, with 90% of SMEs somewhat agreeing; however, completeness could be further improved through prompt refinement and editing
- Instances of repetition were observed across all sections, plausibly because individual agents generated sections independently, resulting in overlapping evidence appearing in multiple sections. Nevertheless, SMEs agreed that the responses were mostly well written, with 98% strongly or somewhat agreeing
- SMEs also agreed that the overall quality of the generated outputs was sufficient for incorporation into an AMCP dossier, with 97% strongly or somewhat agreeing (**Figure 3**). However, manual review and editing were still required to meet final presentation standards
- Despite these limitations, the automated pipeline produced a deck that was approximately 90% presentation-ready, meaning that the remaining effort primarily involved refinement rather than content creation. Overall, development time was reduced by approximately 80% compared with the manual approach (5 days with GenAI + human-in- the-loop vs 25 days with manual only approach; **Figure 4**)

Figure 3. SME Evaluation of LLM Generated AMCP Dossier Content



Abbreviations: AMCP: Academy of Managed Care Pharmacy; SME: Subject Matter Experts; LLM: Large Language Model

Figure 4. Comparison of Manual and AI-Assisted Workflows with Human Oversight



Abbreviations: AI: Artificial intelligence

- ✓ The AI-generated content demonstrated a high level of accuracy and writing quality, capturing most relevant details with minimal hallucinations or copying errors
- ✓ Overall, the outputs aligned well with expectations for a first-draft report; however, human review remains essential to ensure completeness and accuracy



CONCLUSIONS

- The GenAI-enabled, RAG-grounded pipeline accelerated AMCP dossier-to-slide deck development, reducing preparation time by approximately 80% while generating outputs that were about 90% presentation-ready
- By converting comprehensive dossier content into concise, payer-focused presentations, the approach streamlined evidence communication and reduced the manual burden on medical affairs and HEOR teams
- Integration of RAG ensured evidence-grounded content generation, maintaining accuracy, traceability, and alignment with formulary submission requirements
- A human-in-the-loop framework preserved expert oversight, allowing SMEs to validate source-supported claims and retain responsibility for final content and decision-making

References

1. AMCP Format for Formulary Submissions 5.0, Guidance on Submission of Pre-approval and Post-approval Clinical and Economic Information and Evidence, jmcp.org. 2024; 30(4b) **2.** Yung R et al., Retrieval-augmented generation for generative artificial intelligence in health care. Njp. Health Systems. 2025; 2(2)

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Disclosure: AS, GK, RK and BS the authors declare that they have no conflict of interest

Presented at ISPOR Europe 2026 | 8-11 November 2026 | Vienna, Austria