

Utilizing Generative Artificial Intelligence to Develop Patient Education Materials in the Primary Care Setting

1. Practice Setting:

- The Ohio State University General Internal Medicine division consists of eight clinics located in and around Columbus, each embedded with clinical pharmacists to enhance patient care. Serving more than 70,000 patients, these clinics operate within an interdisciplinary setting that includes approximately 100 medical residents and 80 attending physicians. The pharmacy team comprises 12 pharmacists (7.7 clinical FTE) and 3 pharmacy residents, all working collaboratively to manage patients through established practice agreements. This integrated model supports comprehensive, team-based care and optimizes medication management across the network.

2. Practice Innovation Summary:

- Artificial intelligence (AI) is increasingly utilized in healthcare, particularly in generating patient education materials (PEMs). While clinician interest in AI integration grows, ensuring accuracy and appropriate readability remains critical. Despite the average U.S. adult reading level being seventh to eighth grade and the American Medical Association (AMA) recommending PEMs be written at or below a sixth-grade level, gaps exist in evaluating AI-generated PEMs, with previous studies focusing on singular professions. This project addresses this limitation by evaluating AI-generated PEMs while surveying both pharmacists and physicians.
- Microsoft 365 Copilot Chat[®] was used to generate ten PEMs commonly utilized in primary care. The standardized prompt was: “*Write a patient education material for *** at a sixth grade reading level.*” Topics included insulin pen administration, GLP-1 pen administration, GLP-1 side effect management, automatic BP measurement, CGM application, DPI administration, MDI administration, bisphosphonate administration, levothyroxine administration, and SGLT2 inhibitor administration. All materials were generated on July 3, 2025, without additional prompting.
- Each PEM was assessed for readability using five validated tools: Flesch Reading Ease, Flesch-Kincaid Grade Level, Gunning Fog Index, SMOG Index, and the FORCAST formula. Ten primary care clinicians (attending physicians and pharmacists) completed a survey evaluating accuracy, alignment with current education practices, perceived patient understanding, likelihood of clinical use, and suggested improvements. Each participant was given a gift card of their choice as incentive for completing the survey, funded by the APhA Incentive Grant.

3. Sustainability Plan:

- This project utilized existing physician and pharmacist expertise and institution-approved generative AI software to develop readable, accurate, and patient-friendly education materials for primary care use. This process streamlined PEM development without additional costs.

4. Key Outcomes and Impact:

- AI generated PEMs were consistently easy to read, as defined by high Flesch Reading Ease scores. Readability generally aligned with AMA recommendations, with some variations among different metrics for each PEM. The Gunning Fox Index produced higher reading levels compared to Flesch-Kincaid Grade Level and SMOG Index. FORCAST formula yielded higher levels due to increased use of multisyllable words.
- Clinical accuracy was rated acceptable overall. Clinicians identified device-based PEMs as less accurate, citing missing device-specific steps, safety considerations, and product nuances.
- Alignment with current patient education practices, confidence in patient understanding, and likelihood of using the PEMs in practice varied by topic. Non-device-based PEMs were more likely to be adopted by clinicians.
- Lower clinician confidence in patient understanding was associated with a lower likelihood of PEM adoption.
- Differences between pharmacists and physicians were observed, likely reflecting distinct professional roles and expectations in patient education. Discrepancies were most notable for topics requiring individualized counseling, such as differences among insulin pens, GLP-1 pens, and CGM models.

5. Future Direction and Replication:

- Generative AI shows promise for producing readable PEMs. However, more targeted and detailed prompting is essential to ensure key safety information, counseling points, and product-specific instructions are included.
- This project can be replicated at other practice sites by using the preferred generative AI platform to create PEMs with review for accuracy and content by designated clinicians. Because it relies on existing personnel and infrastructure, the model is financially sustainable and scalable across different practice models.