

Documentation & Workflow:

AI Scribes and Reduction of Clerical Burden

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Conflict of Interest Disclosure

No Financial Disclosures

AI Disclosures:

- Open Evidence
- Claude (Anthropic)
- ChatGPT 5.5 (OpenAI)

What a Good Ambient AI Scribe Should Accomplish

More Accurate



Reduces errors from memory lapses and typing fatigue

More Coherent



Synthesizes the encounter into a logical, readable narrative

Faster



Removes clerical friction so you focus on the patient in the room

Our Institution: Heidi AI

Not all tools are created equal; **retry newer modalities** as they become available to you.

AI Scribes and the Resident: Educational Tradeoffs

The Promise

–1.7 hrs/shift saved

(Rotenstein et al., JAMA 2026)

↑ Visit Efficiency (more patients seen)

Residents can Focus on the Patient

The Unresolved Question

Does AI negatively impact the **learning process**?

At the expense of independent **problem-solving and critical thinking**?

Is the struggle of holding clinical data in **working memory** developmentally important?

Real-World Data:

EHR Documentation Time — AI Scribe Adopters by Clinician Subgroup (Rotenstein et al. JAMA 2026)

- Large multisite study: 8,581 clinicians
- Yale, Emory, UC Davis, UCSF, MGB

Total Time Spent on the EHR – Pre and Post AI Scribe

Clinical Subgroup	Pre → Post Hours	Time Saved / Day
Primary Care	8.74 → 8.01	0.73 hrs
Surgical Specialties	5.93 → 5.37	0.56 hrs
Residents	14.02 → 12.31	1.71 hrs

If AI Gives Us Time Back — What Should It Be Used For?

Institute for Healthcare Improvement: Quintuple Aims

**Enhance
Patient Experience**

**Improve
Population Health**

**Reduce
Cost of Care**

**Improving
Health Equity**

**Support
Clinician Well-being**

*Includes how clinicians are trained –
and how they think.*

Is Note-Writing Itself Educational?

*"Documentation is not merely a communication task —
the **writing process** itself plays a pivotal role in supporting trainee thinking."*

Bowker et al., Advances in Health Sciences Education 2023

Before the Encounter

Residents report writing helps:

- Organize and **prioritize** what is known
- **Identify gaps** in history
- Develop **selectivity in what facts can be trusted** in EHR
- Focus their history-taking approach

After the Encounter

Writing forces Residents:

- Synthesis of data into **hierarchical problem list**
- Developing the **Assessment and Plan** and next steps

SENIOR residents relied less on writing:

- Detailed pre-encounter notes → used short-hand to map out outline for their dictation
- “More comfortable” with the Synthesis of Data and ability to present without writing

The Neuroscience of Writing vs Typing: What Does the Evidence Show?

Mueller & Oppenheimer (2014)

Supports handwriting

Longhand note-takers outperformed laptop users on conceptual questions:

- “Forced Reformulation” vs. “Verbatim Transcription”

Van der Weel & Van der Meer (2023)

Supports handwriting

Handwriting produced richer brain connectivity (in parietal regions) vs. typing — **area critical for memory formation.**

Urry et al. (2021) — Direct Replication

No clear difference

142 participants: no significant difference between laptop and longhand on immediate quiz.

- Mini meta-analysis of 8 more recent studies echoed this.

Bottom line: “Reformulation” matters more than the medium.

The question becomes: Does reviewing/editing an AI-generated note provide the same cognitive work as writing one?

Three Risks When AI Substitutes for Clinical Reasoning

Abdulnour et al., NEJM 2025

“Deskilling”

Loss of clinical reasoning skills due to repeated AI substitution

“Never-Skilling”

Failure to develop note-based clinical reasoning in early training

“Mis-Skilling”

Uncritical acceptance of AI-generated narratives and errors

⚠ *“If those risks are real, then the question isn’t whether to use AI—it’s how to introduce it without losing core skills.”*

Lessons from Prior “Efficiency” Transitions

*Every time we reduce friction through efficiency gains, we risk removing cognitive work that supports learning.
This concern predates AI.*

EHR Transition (2015)

Varpio et al., Medical Education

Paper -> EHR:

- Expanded the volume of data residents were expected to review
- Fragmented the clinical history
- **Cognitive workload increased** but not in ways that supported clinical reasoning

Secure Messaging (2025)

Kochar et al., JAMA Internal Medicine

Secure Messaging -> Instant Expertise:

- Faster access to consultants and pharmacists
- Bypass learning and using guideline and problem-solving skills

Our Institutional Approach:

Why EPIC Templates First?

PGY-1 | Templates First

Clinic -> EPIC Templates

- Structured scaffold for urologic HPI
- Builds habits around high-risk details:
 - Anticoagulants, cardiac history, medications

Consults: -> AI scribe:

- Bedside interview: often no computer
- Captures details lost in shorthand note-taking
- Reduces workday disruption from urgent consult
 - “I don’t mind getting that ED consult in the middle of the day anymore”

PGY-2+ | AI Scribe Permitted

Clinic & Consults -> Ambient scribe

- Foundational documentation habits established
- AI reduces clerical work, allowing focus:
 - Clinical synthesis & reasoning
 - Patient relationship

Reinforce ongoing editing and critical review

Why EHR Templates Work for PGY-1s

*Templates aren't punishment —
they are a cognitive scaffold during the critical window of skill formation.*

- Creates clinical habits of history taking
- Reduces loss of high-risk details
- Preserves the cognitive work of clinical synthesis

Our Framework is supported by Emerging Data on AI Scribe Best Practices

Abernethy et al. (JGIM, 2026)

- 48 IM residents, ~1,000 notes, 6 months.
- Proposed ACGME-aligned best practices

- Establish foundational note-writing skills **before** AI use
- Require **active verification and revision** of AI-generated notes
- Develop **mastery of EHR template customization** and workflow integration

Summary and Practical Guardrails

- AI scribes meaningfully reduce clerical burden - the resident benefit is real and measurable.
- Note-writing has educational value. Outsourcing it entirely in early training risks deskilling before skill is formed.
- Stratified guardrails (templates first, then AI) are a reasonable, evidence-informed approach while resident-specific outcomes data continue to evolve.

Thank you



*The question isn't whether AI should be in residency.
It's how we utilize it so that residents emerge as better doctors - not more efficient note generators.*

