

# ChatGPT For Policy & Procedure Writing Including Professional and Ethical Considerations

Friday, 9/22/2023

Danny Limoges, PharmD, 340B A.C.E.  
Project Manager, Meditech Expense Implementation  
Vaccine and 340B Coordinator

St. Bernard Hospital and Healthcare Center  
Englewood, Chicago, IL

2023 ICHP  
ANNUAL MEETING

1

## Statement of Conflicts of Interest

The speaker declares no conflicts of interest regarding the topic of this presentation.

2023 ICHP  
ANNUAL MEETING

2

## Learning Objectives

1. Draft a sample policy on a given topic utilizing prompts and feedback on ChatGPT.
2. Identify potential issues of bias and originality of contribution in a sample policy generated by ChatGPT.
3. Develop an organizational plan to manage data privacy issues while using AI tools such as ChatGPT, following the OpenAI Privacy Policy.

2023 ICHP  
ANNUAL MEETING

3

## Overview

- Disclaimers
- Background
- Demonstration of the Effectiveness of ChatGPT
- How to Prompt for Effective Results
- Ethical Considerations
- Evaluating Bias
- Data Security
- Next Steps as the Technology Develops

2023 ICHP  
ANNUAL MEETING

4

## Disclaimers

- Authorship of any kind must be evaluated for quality, completeness and bias.
- "ChatGPT may produce inaccurate information about people, places, or facts."<sup>1</sup>
- ChatGPT was trained on data up to September 2021.<sup>2</sup>
- Responses generated by ChatGPT are usually indistinguishable from language generated by humans.

1. chat.openai.com/disclaimer. Accessed 8/23/2023.

2. Southern, MG. (2023, January 11). OpenAI's CHATGPT update brings improved accuracy. Search Engine Journal. <https://www.searchenginejournal.com/openai-chatgpt-update/496146/>. Accessed April 12, 2023.

2023 ICHP  
ANNUAL MEETING

5

## Disclaimers

It is the professional opinion of this presenter that Large Language Model AI should not be utilized as a "final step" in professional writing, patient care or insurance decisions.

- There is no widely-recognized model to detect whether a model is biased or aligned to ethical practices.
- Deep models are known for their opacity, making them difficult to hold accountable to patients and regulatory bodies.

2023 ICHP  
ANNUAL MEETING

6

### Background

- Traditional methods of NLP relied on statistical association of words with one another.<sup>3</sup>

- Accuracy was gained by analyzing longer runs of words to improve contextualization.

3. Vasilev, V. (2020). Chapter 3 - How Natural Language Processing Works. In *Natural language processing with python and spaCy: A practical introduction*. essay. Search Press, Inc.

7

### Background

- ChatGPT is a “Large Language Model” / LLM. GPT stands for “Generative Pre-trained Transformer”
- ChatGPT version 4 has 1.7 trillion parameters, derived from machine learning analysis of text and through feedback training with humans.<sup>4</sup>
- The chat essentially works by performing the function over and over of “based on all the previous words, what should be the next word?”<sup>5</sup>

4. Shevchuk, V. (2023, July 17). GPT-4 parameters explained: Everything you need to know. Medium. <https://levelup.gitconnected.com/gpt-4-parameters-explained-everything-you-need-to-know-e210c20576ca>

5. What is chatgpt doing... and why does it work? Stephen Wolfram. *Writings*. RSS. (2023, February 14). Retrieved April 20, 2023, from <https://writings.stephenwolfram.com/2023/02/what-is-chatgpt-doing-how-does-it-work/>

8

### Test Your Knowledge #1

What best describes the source of data used to train ChatGPT?

- New data is being evaluated and fed into the model on a regular basis.
- Data is from a variety of partially disclosed sources from 2021 and before.
- ChatGPT performs an internet search when queried to find information.
- The output is generated by paid staff live and then improved by the AI.

2023 ICHIP ANNUAL MEETING

9

### Background

6. Ouyang, L., Wu, J., Jiang, X., et al. (2022, March 4). Training language models to follow instructions with human feedback. arXiv.org. Accessed April 11, 2023, from <https://arxiv.org/abs/2203.02155>

10

### Background

- ChatGPT-3 was trained on 570 GB of text data, including a large portion of Wikipedia.<sup>7</sup>
- In version 4 of ChatGPT, less was officially disclosed about the model such as how many parameters / “neurons” the network uses and what data was used for training, citing the reasons of competition and safety.<sup>8</sup>

7. Hughes, A. (2023, April 3). CHATGPT: Everything you need to know about OpenAI’s GPT-4 tool. *CHATGPT: Everything you need to know about OpenAI’s GPT-4 upgrade!* BBC Science Focus Magazine. Retrieved April 12, 2023, from <https://www.sciencefocus.com/future-technology/gpt-4/>

8. *Writings*. OpenAI acts for secrecy versus disclosure. ZDNET. (n.d.). Retrieved April 13, 2023, from <https://www.zdnet.com/article/with-gpt-4-openai-acts-for-secrecy-versus-disclosure/>

11

### The Effectiveness of ChatGPT

- Generating an initial policy**  
“This health care system spans several hospitals of different sizes. Write a policy for loaning medications between inpatient pharmacies.”
- Adding Feedback:** “The section on \_\_\_\_\_ needs more detail”  
... should include information about loaning from the ER  
... should use the term “loaning” instead of “lending”

2023 ICHIP ANNUAL MEETING

12

## The Effectiveness of ChatGPT

- **Generating forms:**  
“Make a form based on this policy”
- **Summarizing Text:**  
“Summarize this policy in 50 words or less”
- **Writing professional emails:**
  - “Write an email to someone who violated this policy by...”
  - “Write an email to a pharmacy resident asking them to improve the policy, adding a section on...”

13

## The Effectiveness of ChatGPT: Discussion

- Which output was the most accurate and useful?
- What pitfalls did you note?

14

## How to Prompt for Effective Results

- **Write with clear grammar and punctuation.**
- **Provide context but keep things simple.**  
“This health care system spans several hospitals of different sizes. Write a policy for loaning medications between inpatient pharmacies.”
- **Reply with edits and feedback,** identifying specific areas that need to improve.  
“Elaborate on Section 4”  
“Add more detail to the part about reporting...”

15

## Ethical Considerations

- Evaluation for bias
- Citation of references
- Originality of contribution
  - Discuss with editors if publishing. Currently, the consensus among publishers like Springer Nature (the world’s largest academic publisher) is to *not* cite ChatGPT.<sup>9</sup>

9. Patrick. (2023, January 27). World's largest academic publisher says Chatgpt can't be credited as an author - ghacks tech news. ghacks Technology News. Retrieved April 12, 2023, from <https://www.ghacks.net/2023/01/27/chatgpt-cant-be-credited-academic-author/>

16

## Professional Considerations

An author ought to:

- Be open
- Own each document released
- Own the manner in which the professional atmosphere of pharmacy is formed by their usage of AI.
- Be conscientious in use of the power of generative AI
  - Open letter calling to pause development of AI at GPT-4 for 6 months<sup>10</sup>

10. Pause gpt4? Arguments. An open letter. Future of Life Institute. (2023, April 21). Retrieved April 12, 2023, from <https://futureoflife.org/open-letter/arguments/>

17

## Evaluating Bias

Generative AI bias can be derived directly and indirectly from its source material. ChatGPT and other generative AI is trained using reinforcement learning from inherently biased individuals<sup>11</sup>:

- Confirmation Bias
- Availability Bias
- Survivorship Bias – failed attempts and negative examples may be less well-represented in training data.
- False Causality – “correlation does not imply causation”

11. Rzeszucinski, P (2023, March 7). Council post: The supremacy of biases in ai. Forbes. Retrieved April 12, 2023, from <https://www.forbes.com/sites/forbestechcouncil/2023/03/06/the-supremacy-of-biases-in-ai/?sh=44f44697731>

18

## Evaluating Bias

Tips for evaluating and breaking bias:

- Expose yourself to documents from a variety of sources and compare the differences.
- Limit your exposure to information from a single source.
- Formulate a set of questions *before* looking at generated output: who, what, when, where, why, how?

19

## Test Your Knowledge #2

When checking for bias in generative AI, which approach is recommended for breaking bias?

- A. Expose yourself to information from a single source to maintain consistency.
- B. Trust the computing power and diverse inputs of generative AI to eliminate bias.
- C. Formulate a set of meaningful questions about the topic before viewing AI output.
- D. Choose AI outputs that align with your personal viewpoints.

20

## Data Security

- Do not enter PHI
- Per the OpenAI Privacy Policy, data entered into ChatGPT is associated with your IP address, login data, type of device, etc.<sup>12</sup>
  - The service is not anonymous
  - OpenAI may use entered information for research purposes
  - Data is distributed to third-party vendors without notice, as with most software

12. Privacy policy (v. 4.1). Retrieved April 13, 2023, from <https://openai.com/policies/privacy-policy>

21

## Data Security: Table Discussion

If you were writing guidelines for your organization for usage of large language model AI, what would you include to sufficiently protect data?

- Regarding PHI? Sensitive business data?
- Transparency and disclosure of usage?
- Review for quality and accuracy?

12. Privacy policy (v. 4.1). Retrieved April 13, 2023, from <https://openai.com/policies/privacy-policy>

22

## Test Your Knowledge #3

Which of the following use cases would be the best way to use ChatGPT?

- A. Copy several articles from PubMed into ChatGPT, ask it a question and then submit the result to be published in a journal.
- B. Find a diagnosis that had been missed by physicians by copying a patient's chart into ChatGPT and asking for any missed diagnoses.
- C. Ask the generative AI for a way to write an email that subtly demeans a colleague while remaining professional at first glance.
- D. After a period of original thought, ask ChatGPT to generate a rough draft of a policy. Critique and reshape the policy

23

## Next Steps

- Policies set by major journals
  - *Science*: AI text may not be used in papers, nor may AI be listed as an author<sup>13</sup>
  - *Nature*: LLMs may not author work. Authorship requires accountability for work, a qualification LLMs cannot meet.<sup>14</sup>
- Regulatory Decisions
  - *Library of Congress*: Human authorship is required for copyright. Products of artificial intelligence are not protected by copyright.<sup>15</sup>

13. Science Journals: Editorial Policies. <https://www.science.org/content/page/science-journals-editorial-policies#authorship>.

14. Nature news. Accessed August 23, 2023. <https://www.nature.com/nature/for-authors/initial-submission>.

15. Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence. U.S. Copyright Office, Library of Congress. Published 3/16/2023.

24

### Next Steps

- Watch the news
  - AI will be different depending on the organization and country of origin
  - TLDR AI for summarized updates <https://tldr.tech/ai>
- Pharmacy should focus on development efforts for:
  - A closed-system AI trained on a general language model, health system policies and recent guidelines.
  - AI models developed to cite sources.

25

### Test Your Knowledge #4

What is one of the suggested next steps in the field of AI, as mentioned in the presentation?

- A. Cease all AI development immediately.
- B. Focus on developing open-source AI models only.
- C. Monitor AI developments based on organizational and regional differences.
- D. Rely solely on traditional methods for policy development.

26

### Audience Poll - Which of the previous questions was generated by AI?

**1.** When checking for bias in generative AI, which approach is recommended for breaking bias?

- A. Expose yourself to information from a single source to maintain consistency.
- B. Trust the computing power and diverse inputs of generative AI to eliminate bias.
- C. Formulate a set of meaningful questions about the topic before viewing AI output.
- D. Choose AI outputs that align with your personal viewpoints

**2.** When checking for bias in generative AI, which approach is recommended for breaking bias?

- A. Expose yourself to information from a single source to maintain consistency.
- B. Trust the computing power and diverse inputs of generative AI to eliminate bias.
- C. Formulate a set of meaningful questions about the topic before viewing AI output.
- D. Choose AI outputs that align with your personal viewpoints.

27

### Audience Poll - Which of the previous questions was generated by AI?

**3.** Which of the following use cases would be the best way to use ChatGPT?

- A. Copy several articles from PubMed into ChatGPT, ask it a question and then submit the result to be published in a journal.
- B. Find a diagnosis that had been missed by physicians by copying a patient's chart into ChatGPT and asking for any missed diagnoses.
- C. Ask the generative AI for a way to write an email that subtly demeans a colleague while remaining professional at first glance.
- D. After a period of original thought, ask ChatGPT to generate a rough draft of a policy. Critique and reshape the policy.

**4.** What is one of the suggested next steps in the field of AI, as mentioned in the presentation?

- A. Cease all AI development immediately.
- B. Focus on developing open-source AI models only.
- C. Monitor AI developments based on organizational and regional differences.
- D. Rely solely on traditional methods for policy development.

28

### Audience Poll

Which of the previous questions was generated by AI?

- A. Question 1, recommended approaches to breaking bias.
- B. Question 2, the source of data used to train ChatGPT.
- C. Question 3, use cases for ChatGPT.
- D. Question 4, suggested next steps in the field of AI.

29

### ChatGPT Conclusion

#### Summary:

ChatGPT can provide a strong initial framework for policy construction and can generate related documents like forms and emails. However, users must fine-tune responses and use professional judgement to ensure that all factors are taken under consideration and that bias is identified and corrected.

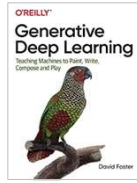
Questions?

30

## Further Reading

*In order of increasing length and complexity...*

- Browne R. (2023, February 8). All you need to know about ChatGPT, the A.I. chatbot that's got the world talking and Tech Giants clashing. CNBC. Retrieved April 12, 2023, from <https://www.cnbc.com/2023/02/08/what-is-chatgpt-viral-ai-chatbot-at-heart-of-microsoft-google-fight.html>
- Rizvi MSZ. (2019, August 10). A comprehensive guide to build your own language model in python! Medium. Retrieved April 12, 2023, from <https://medium.com/analytics-vidhya/a-comprehensive-guide-to-build-your-own-language-model-in-python-5141b3917d6d>
- Foster D. (2023). Generative deep learning: Teaching machines to paint, write, compose and play. O'Reilly Media.
- Most LLMs are written in Python. Begin learning Python if you would like to integrate AI into your career.



2023 ICHP ANNUAL MEETING

31

## Additional Chat GPT “Recipes”

- Compose an email based on a policy. Alter the result based on the tone and brevity required.
  - For instance, “Compose a direct but professional email to a staff member who has violated section 2.4 of the policy”.
- Summarize a policy in a specified number of words/sentences: feed in the policy then ask, “Summarize this policy in less than 50 words”.
- Feed in an existing policy and ask ChatGPT to revise it to have more checks and balances during an audit portion.
- Ask ChatGPT for a strategy to implement a new service
- Run an idea by ChatGPT

2023 ICHP ANNUAL MEETING

32

## Chat GPT “Recipe” Result

Prompt to ChatGPT Mar 23 Version: *What would be the pros and cons of implementing a new infusion service at a small 340B hospital?*

Implementing a new infusion service at a small 340B hospital can have both advantages and disadvantages. Here are some of the pros and cons to consider:

### Pros:

- Increased revenue: Adding an infusion service can help generate additional revenue for the hospital, which can be used to support other programs or services.
- Expanded services: Offering an infusion service can allow the hospital to provide more comprehensive care to patients, which can improve patient satisfaction and help attract new patients.
- Improved patient outcomes: Infusion therapy can be an effective treatment option for many conditions, and by offering this service, the hospital can help improve patient outcomes and overall health.
- 340B program benefits: By participating in the 340B program, the hospital can access discounted drugs for infusion therapy, which can help reduce the cost of providing this service to patients.

### Cons:

- Initial investment: Starting an infusion service requires an initial investment in equipment, supplies, and staff training, which can be costly.
- Staffing challenges: Hiring and training new staff to manage the infusion service can be challenging, especially if there is a shortage of qualified personnel in the area.
- Reimbursement issues: Reimbursement for infusion therapy can be complex, and there is a risk that the hospital may not be adequately reimbursed for the cost of providing this service.
- Regulatory compliance: Infusion therapy is subject to a variety of regulatory requirements, and the hospital will need to ensure that it is in compliance with all relevant regulations.

In summary, implementing a new infusion service at a small 340B hospital can have both benefits and drawbacks. Careful consideration of the pros and cons, as well as thorough planning and preparation, can help ensure a successful implementation and positive outcomes for patients and the hospital.

33