AI PROMPT GENERATION GUIDE FOR HEALTH CARE PROFESSIONALS

AMERICAN COLLEGE of CARDIOLOGY®

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Prompt generation is not just a technical skill but **A BRIDGE BETWEEN CLINICAL EXPERTISE AND AI CAPABILITIES.**

INTRODUCTION

In the rapidly evolving health care landscape, artificial intelligence (AI) is transforming how we diagnose, treat and manage diseases. Central to this revolution is the ability to craft effective prompts for AI systems – clear, concise instructions that guide algorithms to generate accurate, relevant and actionable insights.

In health care, where precision and context are critical, prompt generation is not just a technical skill but a bridge between clinical expertise and AI capabilities. Whether you're a clinician, researcher or health tech innovator, mastering this skill is essential for unlocking AI's full potential in improving care delivery.

This guide explores the art and science of prompt generation, providing practical strategies to harness AI tools for better patient outcomes, enhanced workflows and innovative problem-solving.

PROMPT GENERATION CHECKLIST

Instruction:
What do you want the AI to do? (e.g., summarize, generate, translate, explain, etc.). Be specific:

- Frame the prompt clearly and use concise language.
- Avoid broad statements.
- Divide it into simpler questions if the topic is complex.

Context:
Provide any background information or relevant details that the AI needs to understand your request (e.g., "Summarize this research article about...").

Input Data:
If applicable, provide the data or text that you want the AI to work with (e.g., specific research article, specific medical history, etc.).

- Define your clinical scenario and include relevant but not identifiable details.

Desired Format:
Specify the format you want the AI's output to be in (e.g., bulleted list, paragraph, table, etc.) and the purpose of the output. (e.g., decision support, documentation, patient education, symptom evaluation, research, etc.).

Constraints:
Include any limitations or specific requirements. (e.g., "Keep the summary under 200 words," "Write in a patient-friendly tone," etc.).

Request Sources/References:
Ask for evidence-based or guideline-supported information, as well as specific links to the sources.

Ethical Considerations:
Ensure prompts are phrased in a way that protects HIPPA, privacy and confidentiality.

Simple:
"Summarize the key findings of this abstract." [Instruction]

More Complex:
"Summarize the key findings of this abstract focusing on the efficacy of drug X for treating heart failure. Present the summary in a bulleted list." [Instruction, Context, Desired Format]

Even More Complex:
"Summarize the key findings of this abstract focusing on the efficacy of drug X for treating heart failure in patients over 65. Present the summary in a bulleted list, keeping it under 150 words and using language that is easy for patients to understand. Please provide references and links for any conclusions derived from other sources. [Insert abstract text or link to the abstract here]" [Instruction, Context, Desired Format, Constraints]

PERSONAS

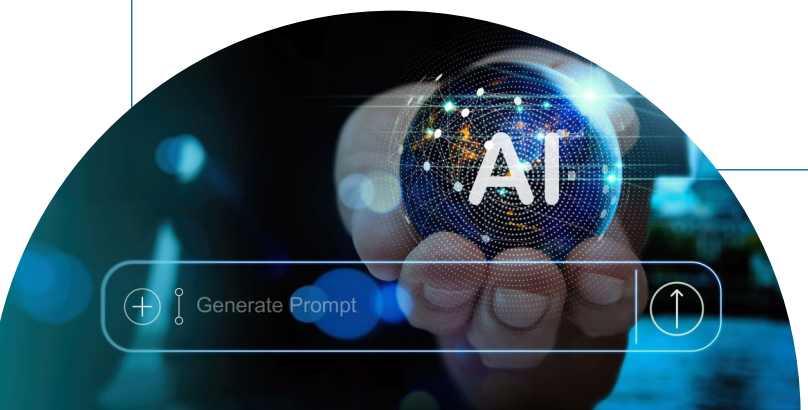
A persona is a role you assign to the AI to guide how it responds to your prompt, helping tailor its tone, depth and perspective. For example, you might ask the AI to "respond as a cardiologist," "explain this to a patient," or "summarize this for a medical student," depending on your audience and goal. Using personas improves the relevance and clarity of AI-generated content, making it more effective for clinical communication, education or decision support. Experiment with different personas to find what works best for you. The possibilities are endless!

EXAMPLE PROMPT WITH PERSONA

"As a clinical educator, summarize the key findings of this abstract, focusing on the efficacy of drug X for treating heart failure in patients over 65. Present the summary in a bulleted list, keeping it under 150 words and using language that is easy for patients to understand." [Instruction, Context, Desired Format, Constraints].

AI PROMPTING CAUTIONS

Cautions	Recommendations
Minimize Hallucinations ***Hallucinations:*** AI chatbots can sometimes generate incorrect or nonsensical information, known as "hallucinations." At times these hallucinations seem very convincing, so due diligence is required to always check for accuracy. Importantly, hallucinations don't mean a model isn't working, but it does require feedback and iteration to improve the accuracy of the answers offered.	• Use validated sources and cross-check content (i.e., peer-reviewed or guideline-based sources). • Utilize generative AI tools that incorporate retrieval-augmented generation rather than relying on open-ended models.
Mitigating Bias ***Bias and Discrimination:*** AI models can reflect biases present in the data they are trained on.	• Ask the model to surface possible limitations or demographic biases. • Keep a human-in-the-loop when reviewing outputs.
Data Privacy & Security ***Data Confidentiality:*** AI chatbots may store and process your data on external servers, which could be vulnerable to breaches or unauthorized access. Data may be retained indefinitely and accessed by third parties. ***Data Privacy:*** It's often unclear how AI chatbot providers use and share the data your input, especially public AI chatbots. There are even recent instances of AI chats being indexed and searchable via search engines for all to see.	• Do not input protected health information (PHI) (names, medical record numbers, dates), proprietary or embargoed information in public AI platforms. • Provide clinicians with training on HIPPA and data privacy compliance for AI use. • Any data submitted to a chatbot may be used by the company, or in some cases, even sold to third parties. This reinforces the need to safeguard both PHI and proprietary information, including your own ideas and intellectual property.



TYPES OF PROMPTS

Weak Prompt	Good Prompt
What definitions and assumptions do the 2024 ACC Heart Failure Pathway specify for clinicians treating heart failure with reduced ejection fraction (HFrEF)?" (Question is too broad) ***The reason this is a weak prompt is that it asks a vague question of a specific document. The stronger approach is to ask a specific question and allow the model to find any relevant sources within your boundaries and then supersede decision-making with your own clinical acumen.***	In a 50-year-old woman with hypertrophic cardiomyopathy, what are the first line therapies for medical versus interventional management according to the 2024 ACC Guidelines and Expert Consensus Decision Pathway?

Use Case	Example
Patient Education	How can I explain the risks and benefits of ARNIs for a 40-year-old male who has heart failure?
Treatment	In a patient with elevated LDL despite statin use, what are the next sequential options for LDL reduction, their relative side effects and cost to the patient? Please give links to references.
Follow-Up	What should be included in a seven-day follow-up for a patient who just underwent a WATCHMAN™ device placement?
Diagnostic	Is a patient with aortic stenosis (AS) with mean pressure gradient of 34 mmHg, peak velocity of 3.4 m/s, and aortic valve area of 0.7 with normal ejection fraction, considered to have moderate AS or severe AS?
Research Review	Please summarize each of the abstract links provided below in a bulleted list with the title of each and a concise summary that is a maximum of 250 words. Here are the links: https://pubmed.ncbi.nlm.nih.gov/39052324/ https://pubmed.ncbi.nlm.nih.gov/39850172/ https://pubmed.ncbi.nlm.nih.gov/39936066/
Research Writing	Write a concise medical abstract (250 words maximum) for a study titled '[Insert Study Title Here]'. The study investigated [briefly state the study's objective]. The methods used were [briefly describe the study design and key procedures]. The main results were [summarize the key findings]. The conclusion is [state the main takeaway message or clinical implications]

AI'S POTENTIAL IN HEALTH CARE DEPENDS ON POWERFUL ALGORITHMS BAND THE QUALITY OF HUMAN GUIDANCE BEHIND THEM.

SEQUENTIAL QUESTIONING

Sometimes sequential questions need context and can be asked that build upon your last question.

- **Example:** Does CRT-P with resynchronization improve mortality in patients with HFrEF?
  - QRS duration greater than 120 msec and NYHA class III?
  - Same question above but for QRS duration > 150 msec.

However, if you ask a question not recognizing there was prior information, the later prompt may assume and incorporate earlier information, which could have been related to a different patient, or a different guideline or study, etc. In general, if you are new to prompt generation, you are best off writing all the details regarding your question in the prompt at the same time.

AI's potential in health care depends not only on powerful algorithms but also on the quality of human guidance behind them. By mastering prompt design, clinicians can better leverage AI to navigate and summarize medical knowledge to support patient care. Learn more about AI in health care via the AI Resource Center.

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ABOUT ACC

The American College of Cardiology (ACC) is a global leader dedicated to transforming cardiovascular care and improving heart health for all. For more than 75 years, the ACC has empowered a community of over 60,000 cardiovascular professionals across more than 140 countries with cutting-edge education and advocacy, rigorous professional credentials, and trusted clinical guidance. From its world-class JACC Journals and NCDR registries to its Accreditation Services, global network of Chapters and Sections, and CardioSmart patient initiatives, the College is committed to creating a world where science, knowledge and innovation optimize patient care and outcomes.

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MedAxiom, an ACC Company, is the cardiovascular community's premier source for organizational performance solutions. MedAxiom is transforming cardiovascular care by combining the knowledge and power of hundreds of cardiovascular organization members, thousands of administrators, clinicians and coders and dozens of industry partners. Through the delivery of proprietary tools, smart data and proven strategies, MedAxiom helps cardiovascular organizations achieve the Quadruple Aim of better outcomes, lower costs, improved patient experience and improved clinician experience.

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