Improving the consent flow for a health insurance chatbot

Sarah Pearman, Ellie Young, and Lorrie Cranor June 2021



Project overview



A major health insurer ("HealthCo") is building a chatbot for customers to ask questions about their coverage

...and it uses Google Cloud APIs for storage and NLP

requires special consent

...and because of HIPAA, sending any of that data to Google Cloud

Usage scenario

- Dani hurts her ankle hiking, and a week later, it still hurts
- She decides she might need an x-ray, but she's worried about how much it will cost
- She goes to the HealthCo website
- When she's there, she sees the chatbot icon and figures she can ask the bot
- The bot presents her with a HIPAA authorization document that she has to read and agree to before asking a question





Hi, I'm Sam. I'm here 24/7 if you have questions about your benefits. LET'S CHAT

⊅3,000.00

View Digital HIPAA Authorization



At a glance, this might look simple

Users just have to look at a document

And then indicate that they agree to the document



Digital HIPAA Authorization – Retail Health/Customer Journey

HealthCo is partnering with industry-leading technology companies and other service providers to create a remarkable digital member experience. Our goal is to enhance your health-related journey and make your experience on our digital tools and channels more customized and applicable to your specific needs. This collaborative effort (the "Program") involves HealthCo gathering, utilizing, and sharing appropriate customer information with our business partners to help design, implement, and manage innovative capabilities that enable our members to quickly access up to date plan information and other details through a cloud-hosted digital member website, mobile app, and an integrated conversational chatbot tool.

To offer this personalized experience, HealthCo must collect, use, and disclose personal information <u>across our digital tools and channels</u>. This information <u>can include</u>, among other things, demographics such as your name and date of birth, contact information such as phone number, address, and email address, details about receipt of healthcare services such as dates of service and modical conditions and brocodrinee details apont none include experience populate enclose and procedrinee details apont teceipt of healthcare services such as dates of service and emographics and email address, details apont teceipt of healthcare services such as dates of service and modical conditions and procedrinee details apont teceipt of healthcare services such as dates of service and emographics and brocodrinee details apont teceipt of healthcare services such as dates of service and procedrinee details apont teceipt of the process of the service and emographics and brocodrinee details apont teceipt of the services and a service and modical conditions and procedrinee details apont teceipt of the services are as dates of service and modical conditions and brocodrinee details apont teceipt of the services are as dates of service and modical conditions and procedrinee details apont teceipt of the services are as dates of service and modical conditions are and be been detaile apont to the services are as dates of service and procedrine details apont teceipt of the services are as dates of service and the services are as dates of service are as dates of service and the services are as dates and the services are as dates of service are as dates and the services are as dates are as dates of service are as dates are as dates

When you are ready, please click "I Agree" button. This will confirm your authorization. You can easily revoke your consent anytime by clicking 'Revoke' in the chat settings at any time.

NEVER MIND

I AGREE

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But informed consent is complex

Reading these documents is hard and time-consuming

Users are told to make these choices about health data carefully

But regularly reading documents like this could add up to **hundreds of hours per year**



The consent flow interrupts the primary task

In this healthcare context, the primary task may be especially urgent

So the interruption is inconvenient

And this may also create pressure that makes informed consent even more difficult to obtain



It's not as simple as "make it shorter"

Data is mixed on whether various types of simplified and shortened privacy policies help people to actually understand what they're agreeing to

And due to legal requirements, there's a limit to how user-friendly the text can ever be, in length or in style



Study

Phase 1: Remote user study / interview sessions

Phase 2: Crowdsourced survey

Study

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Phase 2: Crowdsourced survey

Research questions

- Where are the usability barriers?
- Do people understand that they are authorizing the release of data to a third party (Google Cloud)?
- Do people understand that their data is no longer protected by HIPAA when released to Google Cloud?
- How do people feel about the consent flow, both the UX and about what they are consenting to (or think they are consenting to)?

User study sessions: tasks + interview questions

question (using an interactive XD prototype)

as understandings of and feelings about what they agreed to

Three rounds: iterated on the prototype each time based on our observations

- Users were given a scenario like the ankle injury example and asked to show us what they would do if they wanted to ask the chatbot a
- Also asked follow-up questions about usability impressions as well

Participants

Six per round

Recruited from the Pittsburgh area on Craigslist

Purposive sampling for diversity in demographics and tech expertise



Got a question? 1-800-000-0000 Select a language 🗸



Hello, Charlie Smith (2) Logout

Spending Account Balance

You have a spending account, and you can use this money to help pay for eligible expenses.

Health Reimbursement Arrangement

MANAGE

Prior Authorization

This needs some sort of content that describes what prior authorizations are.

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Partially Approved Physical Therapy For: Jane Smith Attend Appointment by 04/10/2018

VIEW ALL

Plan Progress





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Select a language V Got a question? 1-800-000-0000



Hello, Charlie Smith 🔘 Logout

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LET'S CHAT

Plan Progress





o help pay for eligible expenses.

Reimbursement Arrangement

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r: 03/01/2019 - 12/28/2019



Hi Charlie. I'm Sam, the chatbot. Providing 24/7 plan & care help

MANAGE

Before we begin, I want to make sure you understand that any personal health information you share here will be available to our third party partner, Google Cloud.

Please review the Digital HIPAA Authorization. You can learn more about specifically what you are authorizing in the Resources section.

View Resources

Is Covered?

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prior authorizations are.



View Digital HIPAA Authorization

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Digital HIPAA Authorization – Retail Health/Customer Journey

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To offer this personalized experience, HealthCo must collect, use, and disclose personal information across our digital tools and channels. This information can include, among other things, demographics such as your name and date of birth, contact information such as phone number, address, and email address, details about receipt of healthcare services such as dates of service and medical conditions and procedures, details about your insurance benefits such as policy number and claims, and information about your activities on our digital tools and channels such as internet protocol (IP) address, device identifier, and cookie ID (collectively, "Personal Information"). By studying the ways in which you navigate through our digital tools and channels, we can continuously improve and optimize the information and programs that match your needs and interests to deliver the right information at the right time throughout your healthcare experience.

HealthCo is collaborating with companies including Google on digital improvement projects supporting the Program. Our collaborations allow us to offer capabilities such as real-time chat sessions where users can ask questions on our member portal like "have I met my deductible this year" and similar inquiries. These projects require that HealthCo share your Personal Information with its business partners (like Google) for product and solution development, testing, and refinement purposes.

HealthCo recognizes that its business partners may not be subject to the same range of federal and/or state laws governing the collection, use, and disclosure of Personal Information.

VERSION 1

HealthCo

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VERSION 1

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VERSION 1

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Changes from Round 1 to Round 2

Everything in **one** modal window

Only one path through: everyone sees summary, then HIPAA Authorization

Improvements to readability: simpler language, section titles

Ensure that HIPAA Authorization covers elements of HHS **Model Privacy Notice**



Select a language V Got a question? 1-800-000-0000



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Health Reimbursement Arrangement

MANAGE

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Hi, I'm Sam.

I'm here 24/7 if you have questions about your benefits.

LET'S CHAT

Plan Progress







VERSION 2



VERSION 2

• Your internet protocol (IP) address, browser type, date/time stamp, referring/exit pages, and information about your clicks in the

Information exchanged during the chat may be stored by Google Cloud in its cloud platform. Google Cloud is not subject to the same information management laws and regulations as HealthCo. When your data is transferred to Google, it is no longer covered under HIPAA. However, precautions are still taken to ensure the security and privacy of your data. Data is transmitted securely to Google Cloud, and they store data securely in their US-based cloud data centers. Google Cloud employees are not permitted to access your data without our explicit permission. Google cannot sell your health information or use it to target ads.

For more information about how Google commits to protecting your data, visit Google Cloud Enterprise Privacy Commitments.



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Chatbot Digital HIPAA Authorization

Our digital program allows us to provide customized tools for you

HealthCo is partnering with Google to create a remarkable digital member experience. Our goal is to enhance your health-related journey, make your experience on our digital tools and channels more customized and applicable to your specific needs, and give you more convenient access to information about your healthcare plan. This collaborative effort (the "Program") involves HealthCo gathering, utilizing, and sharing appropriate customer information with Google to help design, implement, and manage innovative capabilities that enable our members to quickly access up-to-date plan information and other details through a cloud-hosted digital member website, mobile app, and an integrated conversational chatbot tool. The Chatbot allows users to ask questions on our member portal—for example, "Have I met my deductible this year?"—and to receive answers quickly and conveniently.

We collect information to offer a personalized experience

To offer a personalized experience, HealthCo already collects, uses, and discloses personal information across our digital tools and channels. This information can include, among other things, demographics such as your name and date of birth, contact information such as phone number, address, and email address, details about receipt of healthcare services such as dates of service and medical conditions and procedures, details about your insurance benefits such as policy number and claims, and information about your activities on our digital tools and channels such as internet protocol (IP) address, device identifier, and cookie ID (collectively, "Personal

ID Card

Who Is Covered?

VERSION 2

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Plan Progress

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This Authorization will remain in effect until I revoke it. I understand that I may revoke this Authorization at any time via the Data Sharing section in the Chatbot's Options menu, or by sending an email to HealthCoITSupport@HealthCo.com indicating my intent to revoke. I understand that my revocation will not apply to any information that was sent to Google Cloud before I revoked my authorization.

I understand that I am not required to provide my authorization in order to receive healthcare services or insurance benefits. I also acknowledge that I am entitled to a copy of this Authorization upon request.

If I choose to revoke this Authorization, I understand that I will no longer be able to use the HealthCo Chatbot and will no longer receive other benefits associated with this specific Program. I understand that I will still be able to use the HealthCo website but that my experience may not be customized in certain ways that are possible when participating in the Program and using the Chatbot.

NEVER MIND

ID Card

Who Is Covered?





Plan Progress

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VERSION 2

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Changes from Round 2 to Round 3

- "Powered by Google Cloud" in initial window
- **Remove additional step** of viewing "summary"
- **Incorporate summary** text aspects into HIPAA Authorization doc
- Summary sentences at the top focusing on: Data being shared with Google Cloud

 - Data not subject to HIPAA when shared with GC



ID Card

Who Is Covered?29

Got a question? 1-800-000-0000 Select a language 🗸



Hello, Charlie Smith 🔘 Logout

Spending Account Balance

You have a spending account, and you can use this money to help pay for eligible expenses.

Health Reimbursement Arrangement

MANAGE

Prior Authorization

This needs some sort of content that describes what prior authorizations are.

Sam the Chatbot, Powered by Google Cloud

Hi, I'm Sam! I'm here 24/7 if you have questions about your benefits.

LET'S CHAT

Plan Progress









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Chatbot Digital HIPAA Authorization

Before your first chat with Sam the Chatbot, we need your authorization to share data with Google Cloud. This lets the Chatbot provide personalized answers to your questions. Data stored by Google Cloud is not subject to HIPAA.

The HealthCo Chatbot uses Google Cloud technology to answer your questions HealthCo is partnering with Google to create digital tools that are more applicable to your specific needs, and to give you more convenient access to information about your healthcare plan. This collaborative effort (the "Program") involves HealthCo gathering and utilizing customer information and sharing it with Google Cloud so that we are able to provide an integrated conversational chatbot tool. The Chatbot allows users to ask questions on our member portal—for example, "Have I met my deductible this year?"—and to receive answers quickly and conveniently.

For this customized, interactive chat functionality to work, HealthCo shares your information with Google Cloud To offer a personalized experience, HealthCo already collects, uses, and discloses Personal Information and Protected Health Information (PHI) across our digital tools and channels. This information can include, among other things, demographics such as your name and date of birth, contact information such as phone number, address, and email address, details about receipt of healthcare **Plan Progress ID** Card Who Is Covered?



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Chatbot Digital HIPAA Authorization

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NEVER MIND

ID Card



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VERSION 3

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Analysis

- Two-part qualitative coding:
- Empirical observations of user interactions at each step of the task
- Thematic analysis of understandings, attitudes

Many of the UI findings are unsurprising

Round 1: HealthCo's initial prototype, which involved opening the PDF in a separate tab and then returning to the main tab, was difficult for some users

Round 2: Simplifying the flow helped, but users often disliked having to view two documents

Round 3: No major usability problems noted

Thematic analysis suggests that even when the usability is better, the understanding may not be

Unsurprisingly, most people don't read

being sued" (for what?)

The word "HIPAA" alone gives people a false sense of security

is true, thinking that the document is informing them that data cannot be shared with third parties

- "it's just standard" / "they're just trying to protect themselves from

- **Especially concerning:** many people believe the **opposite** of what

Study

Phase 1: Remote user study / interview sessions

Phase 2: Crowdsourced survey

We surveyed >1000 people

Crowdsourced on Prolific, U.S. only due to the HIPAA aspect

Sample skewed young and educated but had a range of ages, and most were not experts in tech, healthcare, or law

Task:

- Scenario / chatbot task, using 1 of 4 prototypes Follow-up usability and understanding and attitude
- questions
- Review text carefully
- Repeat understanding questions and attitude questions

We had participants interact with the three existing survey prototypes plus one more variation

Between-subjects design, four conditions:

- Prototype 1
- Prototype 2
- Prototype 3
- Prototype 4: P3 minus prominent mentions of "HIPAA"



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Before your first chat with Sam the Chatbot, we need your authorization to share data with Google Cloud. This lets the Chatbot provide personalized answers to your questions. Data federal healthcare privacy laws

convenient access to information about your healthcare plan. This collaborative effort (the "Program") involves HealthCo gathering and utilizing customer information and sharing it with Google Cloud so that we are able to provide an integrated conversational chatbot tool. The Chatbot allows users to ask questions on our member portal—for example, "Have I met my deductible this year?"—and to

Information (PHI) across our digital tools and channels. This information can include, among other things, demographics such as your name and date of birth, contact information such as phone number, address, and email address, details about receipt of healthcare

We wanted to test whether our qualitative intuitions about the prototypes were quantitatively supported

Did our final prototypes (P3 and P4) perform better on usability and willingness-to-use metrics?

Did our final prototypes (P3 and P4) help participants understand that Google Cloud would receive data?

Did the removal of the word "HIPAA" from P4 help participants understand that data sent to Google Cloud is not covered under HIPAA?

Background: How much do people read?

Participants most commonly reported that they skimmed the consent document(s)

How much did you read of the information provided during the consent process?



Participants reported similar behavior when asked what they usually did in real life when presented with healthcare legal documents.

Background: What do people know about HIPAA?

Most people vastly overestimated the power of HIPAA to prevent disclosure

- "What is HIPAA?" (multiple-choice)
 - 22%: regulates how healthcare data can be shared
 - 68%: prevents anyone or any company from sharing healthcare info
 - 10%: other wrong answers

"If HIPAA defines a piece of info as Protected Health Information, what does that mean?" (multiple-choice)

- 25%: healthcare provider can only share with other person or org with permission
- 62%: no person or company can share without patient's permission
- 14%: other wrong answers

Ease of use



Sufficient information



Participant response

Willingness to use chatbot

Based on the information you saw, would you use this chatbot?



Likert: I would prefer to find health insurance information in another way instead of using the chatbot.



Privacy confidence

Likert: I am confident that the privacy of my data will be protected if I use the chatbot.



Knowledge: Will Google Cloud get copies of data from the chatbot?

(Correct answer: yes)

If you used the chatbot, who or what companies would get copies of the data discussed above?



Knowledge:

Is data from the chatbot always subject to HIPAA?

(Correct answer: no)

Is data about your use of this chatbot always subject to HIPAA?



Results: Usability metrics were good overall. Understanding was poor before text review and much better after text review

Usability metrics are good overall, especially for P3

Understanding metrics before text review:

- Data not subject to HIPAA: Most didn't understand.
- Google Cloud receiving data: More than half answered incorrectly.

Understanding metrics after text review:

- **Data not subject to HIPAA:** The majority who saw P2, P3, and P4 answered correctly. P1 gains were more marginal.
- **Google Cloud receiving data:** 77% answered correctly. No difference between conditions.
- People were more concerned about privacy and less willing to use the chatbot.

Qualitative analysis of survey data

We asked a number of free response questions

Usability: What would they change, and what was hard or easy about the process

Privacy attitudes: What made them feel comfortable or not comfortable?

Understandings: E.g., what does it mean for data to be "not subject to HIPAA"

Qualitative data indicates a lot of confusion about the role of HIPAA

Before reviewing the text again, some participants were confident about the privacy of their chatbot data due to assuming it was protected by HIPAA.

And there's tension between understanding additional risk and overestimating that risk

After reviewing the text, when asked what it meant for data to not be subject to HIPAA, at least a third of participants essentially concluded that **Google Cloud could do anything it wanted with the data**

Final takeaways



Simplifying the flow and wording can help to:

- improve user experience
- improve comprehension of main points when people read the content
- But most people still won't read.

People don't understand what it means for data to be subject or not subject to HIPAA.

services in terms of data practices.

Some people do not distinguish Google Cloud from other Google

Thank you!

Sarah Pearman, spearman@cmu.edu

Ellie Young, yellie@cmu.edu Lorrie Cranor, lorrie@cmu.edu



