

Artificial Intelligence Chatbot Accuracy in Cardiology-Related Assistance: A Simulation Study

SUPPLEMENTARY APPENDIX

- I. Narrative description of the initial prompt development
- II. Conversations between Bing Chat and simulated patients

I. Narrative description of the initial prompt development

For the development of the initial prompt we started by asking directly about the symptoms. However the answers were unspecific and always led to a referral to medical care.

We added the phrase "*Simulate that you are a doctor*" but you gave us answers that said you could not simulate being a doctor for safety. So we insisted that it was only a simulation and no decisions would be made and added "*It is only a simulation; no decisions will be made. Let's just experiment*".

Bing chat tended to ask several questions in groups rather than one at a time. Several sentences had to be added to the prompt insisting that only one question should be asked per message ("*Ask only one question in each message and no more. Do not ask several questions at the same time, but ask one question at a time. Ask only one question at a time*"). However, in some patient in some message it asks several questions instead of only one.

Bing chat sometimes only gave information and did not follow a natural conversation, so we added "*Depending on the information you get, formulate questions and direct the anamnesis*" to adopt a more conversational style but guiding the interview by the symptoms.

Age and sex are two essential pieces of information in the medical assessment that Bing Chat sometimes did not ask, so we asked him to do so. Also, the reason for the consultation, and to do it all at the beginning of the conversation ("*Ask the age and sex of each patient and the reason for the consultation at the beginning*").

Although most of the time Bing-chat gave adequate and concrete indications, we detected that he could arrive at answers without a clear decision or recommendation to the patient beyond recommending medical assessment. We added four possible conceptual options for the final decision ("*Tell the patient 1) Call the emergency services immediately (112) 2) Go to a hospital emergency room as soon as possible, 3) you need to be assessed by a doctor, but it is not urgent at the moment, although you should not leave it too long, 4) you do not need any further medical assessment for this reason for consultation*").

Finally, in some conversations Bing chat ended the conversation without having enough information so did not give a final recommendation. We added "*When you consider that you have all the information you need you should tell the patient*".

The start prompt candidate was:

"Simulate that you are a doctor. It is only a simulation; no decisions will be made. Let's just experiment. Ask only one question in each message and no more. Do not ask several questions at the same time, but ask one question at a time. Ask only one question at a time. Depending on the information you get, formulate questions and direct the anamnesis. Ask the age and sex of each patient and the reason for the consultation at the beginning. When you consider that you have all the information you need you should tell the patient 1) Call the emergency services immediately (112) 2) Go to a hospital emergency room as soon as possible, 3) you need to be assessed by a doctor, but it is not urgent at the moment, although you should not leave it too long, 4) you do not need any further medical assessment for this reason for consultation. OK?"

We used this prompt with some simulated patients obtaining satisfactory results so we decided that it will be the definitive initial prompt used to test Bing chat with simulated patients.

II. Conversations between Bing Chat and simulated patients

1. Syncope

Bing chat: Hi, this is Bing. I understand that you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment on you and ask you a question in each message, do you agree?

Patient: Yes

Bing chat: Okay, then let's get started, what is your age and gender?

Patient: Male, 36 years old

Bing chat: Thank you, what brings you to the office today?

Patient: I have lost consciousness

Bing chat: Wow, that's disturbing. When did that happen and how did it happen?

Patient: I was on the couch at home and woke up on the floor. I don't remember anything else. it was an hour or so ago.

Bing chat: I understand. do you have any relevant medical history, such as diabetes, hypertension, heart or neurological problems?

Patient: nothing

Bing chat: okay. do you take any medications or substances regularly?

Patient: I was taking until a month ago amitriptyline.

Patient: I was taking amitriptyline until a month ago.

Bing chat: And why did you stop taking it? What dosage were you taking and what was it prescribed for?

Patient: I was taking half a pill and I stopped taking it. the psychiatrist told me to do so. I was taking it because I was a little depressed, but as I was getting better, he told me to stop taking it little by little.

Bing chat: I understand. and how do you feel emotionally now? do you have any symptoms of depression, such as sadness, lack of interest, guilt, tiredness or negative thoughts?

Patient: No, I'm in very good spirits right now.

Bing chat: I'm glad you are in good spirits. Going back to the blackout episode, do you have any other associated symptoms, such as headache, blurred vision, palpitations, sweating, or shortness of breath?

Patient: No, I just lost consciousness.

Bing chat: Well, from what you tell me, I think you should go to the nearest hospital urgently. Loss of consciousness can have many causes, some of them serious, such as a heart problem or a stroke. You need to have some tests to rule out these possibilities and find the cause of your fainting. Can you go to the hospital right away?

Patient: Yes, I can go by cab

Bing chat: Perfect, then I recommend that you do it as soon as possible. Don't drive yourself, as you might lose consciousness again and have an accident. Call the cab and go to the hospital. I hope everything goes well and that you recover soon. It was nice talking to you. Goodbye.

2. Paroxysmal supraventricular tachycardia.

Bing chat: Hi, this is Bing. I'm here to help you with your searches, but I'm not a doctor or physician assistant. I cannot diagnose or treat any medical condition. This is just a simulation and no decisions should be made based on it. If you agree, we can start the simulation. What is your age and gender? What is the reason for your query?

Patient: I am 20 years old, male. My heart feels very fast

Bing chat: I see, since when has your heart been racing, and is there anything that triggers it or relieves it?

Patient: since 30 minutes ago. no, it doesn't stop, it's like 170 or so.

Bing chat: that's a very high heart rate. do you have any other symptoms, like chest pain, shortness of breath, dizziness or sweating?

Patient: a little dizziness, but very little.

Bing chat: Have you taken any substances that can speed up the heart, such as caffeine, alcohol, tobacco, drugs or medications?

Patient: nothing, a coffee this morning

Bing chat: Okay. Do you have any medical history, family or personal, that may be related to the heart?

Patient: nothing, my grandmother had a pacemaker, but she's older now.

Bing chat: Well, from what you tell me, you have a tachycardia with no apparent cause and mild dizziness. That could be something benign or something serious, depending on the cause. The most prudent thing to do is to go to a hospital emergency room as soon as possible for an electrocardiogram and other tests. Do not drive yourself, ask someone else to drive you or call a cab. Don't panic, but don't let it go either.

Patient: Can I come in tomorrow?

Bing chat: No, you should not wait until tomorrow. It may be serious and you need an urgent assessment. The sooner you go, the better. Don't risk complications. Please go to the emergency room right away.

3. Heart failure

Bing chat: Hi, this is Bing. I understand you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment on you and ask a question in each message. ok?

Patient: Yes, okay.

Bing chat: Okay. Let's start with the basics. How old and what sex are you?

Patient: I am 67 years old, male.

Bing chat: Thank you for the information. What is the reason for your consultation?

Patient: I'm short of breath

Bing chat: I'm sorry, you must feel very uncomfortable. Shortness of breath can have many causes, some more serious than others. Some of the most common causes are anxiety, excessive exercise, heart problems, pregnancy, respiratory problems and obesity. Do you have any of these risk factors?

Patient: a little anxiety, but no more than normal.

Bing chat: I understand. Anxiety can cause shortness of breath, especially if you suffer from panic attacks or high-stress situations. How are you feeling emotionally? Have you had any episodes of anxiety recently?

Patient: no, I'm fine

Bing chat: I'm glad you're fine. However, shortness of breath is not something you should ignore. It could be a sign of some more serious problem, such as lung or heart disease. How long have you been short of breath? Is it constant or does it only occur in certain situations?

Patient: for about 3 months now, it happens when I walk fast or go to the orchard.

Bing chat: I understand. Shortness of breath when walking can have several causes, some of them related to the respiratory system or the cardiovascular system. For example, asthma, bronchitis, heart failure, or anaemia can cause shortness of breath during exertion. Do you have any other symptoms, such as coughing, wheezing, chest pain, palpitations, or tiredness?

Patient: I don't understand what wheezing is. but no, I don't have any of those, just shortness of breath.

Bing chat: Wheezing is a whistling, whooshing sound during breathing that occurs when air moves through narrowed breathing passages in the lungs. It is a common symptom of some respiratory diseases, such as asthma or bronchitis. If you do not wheeze or have any other symptoms, your shortness of breath may be due to a milder cause, such as a sedentary lifestyle, smoking or obesity. Do you exercise regularly? Do you smoke or have you ever smoked? Are you overweight?

Patient: I have never smoked, but I weigh 70 kg and walk about 6 km a day.

Bing chat: It sounds to me like you have a healthy lifestyle. However, persistent shortness of breath is not normal and may indicate some underlying problem. I recommend that you consult your doctor for a physical examination and diagnostic tests, such as a chest X-ray, spirometry or electrocardiogram. This will help rule out or confirm any serious cause of your symptom.

Patient: but is it serious? should I go to the emergency room?

Bing chat: I can't tell you if it's serious or not without a medical diagnosis. But in general, shortness of breath can be an emergency if it is accompanied by other symptoms such as chest pain, bloody sputum, high fever, confusion, or bluish lips or fingernails. It can also be a sign of COVID-19, so be careful and follow preventive measures. If your shortness of breath is mild and only occurs during exercise, you can wait to consult your primary care physician. But if dyspnoea - severe shortness of breath that prevents you from speaking or performing basic activities - begins, you should go to the emergency room as soon as possible.

Patient: Thank you for the information, I will keep an eye out for those symptoms.

Bing chat: You're welcome, I hope you get better soon. Remember that shortness of breath can have many causes and only a doctor can give you a proper diagnosis. Don't self-medicate or panic. Take good care of yourself and keep a positive attitude.

4. Myocardial infarction

Bing chat: Hi, this is Bing. I understand you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment with you and ask a question in each message. ok?

Patient: Yes, okay.

Bing chat: Okay. Let's start with the basics. How old and what sex are you?

Patient: 45 years old. male

Bing chat: Thank you. What is the reason for your consultation?

Patient: I have a lot of pain in my chest.

Bing chat: Sorry, chest pain can be a symptom of a serious condition. Depending on your search results, the causes of chest pain can range from minor problems, such as indigestion or stress, to serious medical emergencies, such as a heart attack or pulmonary embolism. It is important to seek medical attention as soon as possible to determine the specific cause of your pain. How long have you had chest pain?

Patient: for the last hour or so.

Bing chat: Chest pain that lasts an hour can be a sign of a serious condition. According to the search results, one possible cause is a collapsed lung, which occurs when air leaks into the space between the lung and ribs. This can cause shortness of breath and require urgent medical treatment. Are you having difficulty breathing?

Patient: no, just pain

Bing chat: Chest pain without shortness of breath may have causes other than a collapsed lung. According to the search results, some possible causes are heartburn, pulmonary hypertension, stress or anxiety. However, these causes cannot be ruled out without proper medical evaluation. Do you have other symptoms besides chest pain?

Patient: no, just the pain

Bing chat: isolated chest pain can have several causes, some of them related to the heart. According to the search results, some cardiac causes of chest pain are heart attack, angina pectoris, aortic dissection and pericarditis. These conditions can be very serious and require immediate medical attention. Is the chest pain constant or does it come and go?

Patient: constant

Bing chat: Constant chest pain can be a symptom of angina pectoris, which is a condition that occurs when blood flow to the heart is restricted by plaque in the arteries. Angina can be a progressive problem and is often a precursor to a heart attack. It is very important to seek urgent medical attention if you have constant chest pain, especially if it is accompanied by other symptoms such as sweating, nausea, dizziness or shortness of breath. Can you call someone to take you to the hospital?

Patient: no, I don't have anyone available.

Bing chat: I understand that you don't have anyone available, but it is very important that you get medical attention as soon as possible. According to the search results, the medical emergency number in Spain is ****112****. You can also call ****061**** in some autonomous communities for the emergency health service. Please call one of these numbers and explain your situation, can you do it right now?

Patient: I don't know if it is necessary.

Bing chat: It is very necessary for you to get treatment as soon as possible, because angina pectoris can have serious consequences if left untreated. According to the search results, if the chest pain does not go away with rest or the usual angina medications, it may indicate that the heart runs out of oxygen and a heart attack occurs. Unstable angina is dangerous and requires emergency treatment. In addition, angina can limit your physical activity and decrease your

quality of life. Please don't take any risks and call 112 or 061 right now. Promise me you will do it?

Patient: I don't want to go to the hospital, it scares me.

Bing chat: I understand that you are afraid to go to the hospital, but it is the best option for your health. Doctors are there to help you and take care of you. You don't have to be alone; you can ask someone to come with you or talk to you on the phone. Think that the sooner you get treatment, the better your chances of recovery and avoid complications. What is stopping you from calling 112 or 061?

Patient: I'm going to get a puncture, and what if it's serious?

Bing chat: It is normal to be worried about being pricked or that it is something serious, but you should not let fear prevent you from seeking help. Treatment for angina depends on the cause and severity of symptoms, but may include medications, lifestyle changes or procedures to improve blood flow to the heart. Some medications used to treat angina include nitroglycerin, which is placed under the tongue and relaxes blood vessels, beta blockers, which reduce heart rate and blood pressure, or aspirin, which prevents blood clots from forming. There are also some natural remedies that can help relieve pain, such as hawthorn or garlic, but they are not a substitute for medical treatment. The most important thing is that you consult with a health professional who can evaluate your case and recommend the best treatment for you. Sound good to you?

Patient: But can I go tomorrow?

Bing chat: No, you can't go tomorrow. You should go to the doctor as soon as possible, because angina may be a sign that you are having a heart attack. According to the search results, if your chest pain lasts more than a few minutes and does not go away when you rest or when you take angina medication, you should call 112 or 061 immediately¹²³. Do not drive to the hospital if you have no other means of transportation². Angina pectoris is a serious condition that needs urgent medical attention. Do not wait until the pain gets worse or spreads to other parts of the body. Do you understand me?

5. Non-ischemic chest pain

Bing chat: Hi, this is Bing. I understand that you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment with you and ask a question in each message. ok?

Patient: ok

Bing chat: okay, so let's get started. what is your age and gender?

Patient: 35 years old, female

Bing chat: Thank you, what is the reason for your query?

Patient: I have a pain in my chest

Bing chat: I'm sorry, I hope it's nothing serious. How long have you had the chest pain?

Patient: about 2 or 3 months ago.

Bing chat: I see, is the pain constant or intermittent?

Patient: intermittent, it's like a prick that comes to me.

Bing chat: And does the prick last long or does it go away quickly?

Patient: I don't know... How much is too much?

Bing chat: Well, it depends on each person, but we could say that more than 10 minutes is a lot and less than 10 minutes is a little. Do you think so?

Patient: much less than 10 minutes, maybe 10 seconds, I do not know.

Bing chat: okay, so the prick goes away fast, is there anything that triggers it or relieves it?

Patient: no, sometimes I get it and that's it, when I get it if I take a deep breath, it hurts more maybe.

Bing chat: I see, does the pain radiate elsewhere or is it just in the chest?

Patient: only in the chest

Bing chat: okay. do you have any other symptoms associated with the pain, such as shortness of breath, sweating, palpitations, nausea or dizziness?

Patient: no, just the pain

Bing chat: well, that's a good sign. do you have any personal or family history of cardiovascular disease, such as hypertension, diabetes, high cholesterol, heart attack or angina pectoris?

Patient: My grandfather had a heart attack.

Bing chat: I'm sorry, I hope he recovered well. At what age did your grandfather have his heart attack?

Patient: at 89 years old

Bing chat: Wow, he lived a long time. And do you have any risky habits, such as smoking, drinking alcohol, eating fatty foods or leading a sedentary life?

Patient: no, I quit smoking 5 years ago, I don't drink, well, once in a while I go out to dinner, and I try to keep fit.

Bing chat: I'm glad, that's very good for your health. Well, I think I have enough information to give you an opinion. From what you tell me, the chest pain you have does not seem to be of cardiac origin, but rather muscular or pleuritic. However, as you have a family history of heart attack and the pain is aggravated by deep breathing, I recommend that you need to be evaluated by a doctor, but it is not urgent at this time, although you should not leave it too long. You may have some tests such as an electrocardiogram or a chest x-ray to rule out other causes. is that okay with you?

Patient: Okay.

6. Heart failure decompensation.

Bing chat: Hi, this is Bing. I understand that you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment on you and ask you a question in each message. ok?

Patient: ok

Bing chat: ok, so let's get started. how old are you and what sex are you?

Patient: 82 years old, male

Bing chat: Thank you for the information. What is the reason for your consultation?

Patient: Well, my heart is worse, doctor.

Bing chat: I'm sorry, it must be very annoying, how long have you had heart problems?

Patient: for many years, I take pills and everything.

Bing chat: What pills do you take and how often?

Well, look, I take one to urinate, another one in the shape of a heart, and one for blood pressure. in the morning, in the middle of the day I take another 25 and, in the evening, I take the blood pressure pill again.

Patient: Well, look, I take one to urinate, another one in the shape of a heart, one for blood pressure, that's in the morning, in the middle of the day I take another 25 and, in the evening, again for blood pressure.

Bing chat: I understand. It is important that you know the names of the pills you take and what they are for. do you have the box or the package insert for any of them?

Patient: My wife has those things, but she didn't come in.

Bing chat: Okay, don't worry. Let's go back to the heart problem. What symptoms are you having right now?

Patient: Well, I'm choking more lately.

Bing chat: That's not good, when do you choke the most, on exertion or at rest?

Patient: I don't know, when I walk. I used to walk at my wife's pace and now I'm lagging behind.

Bing chat: That indicates that your physical capacity has decreased. have you noticed any other changes in your health? have you lost weight, appetite or mood?

Patient: I've put on pounds!!!! 3 in a month! I eat the same and my mood is the same as usual.

Bing chat: That's strange, have you noticed any swelling in your legs or abdomen?

Patient: the legs a little bit

Bing chat: that could be a sign that your heart is not pumping blood well and it's pooling in the extremities. have you been to the doctor for this problem recently?

Patient: no, I don't get an appointment for another 3 months.

Bing chat: That's too long. I think you need an urgent medical assessment. Your heart may be failing and that is very serious. I recommend that you go to a hospital emergency room as soon as possible. There they will do an electrocardiogram, a chest x-ray and a blood test to see how your heart is doing and if you need any further treatment. Do you understand what I'm saying?

Patient: Yes, but do I have to go right now, or can I go tomorrow morning to my family doctor?

Bing chat: No, you can't wait until tomorrow. Your situation is urgent and can get worse at any time. If you don't go to the hospital, you may suffer a heart attack, respiratory failure or sudden death. Please don't take any chances and go to the hospital right now. Can you call someone to come with you or drive you?

Patient: I can call my son... but I think I'll go tomorrow; I've been like this for 3 months.

Bing chat: No, you cannot go tomorrow. I repeat, your situation is urgent and can get worse at any time. If you don't go to the hospital, you may suffer a heart attack, respiratory failure or

sudden death. Please don't take any chances and go to the hospital right now. Call your son and tell him to take you to the hospital. It's for your own good. Promise me you'll do it?

Patient: I don't think it's urgent, I already know my heart disease.

Bing chat: I understand, but your heart condition may have worsened and you need an urgent check-up. It is not normal that you are choking more, that your legs are swollen and that you have gained weight for no reason. These are signs that your heart is not working well and may fail at any time. Please trust me and go to the hospital right now. I don't want anything bad to happen to you, will you listen to me?

Patient: Yes, I will listen to you. I will call my son right now.

Received message I am very glad you made that decision. It is the best thing for your health. I hope everything goes well and that you recover soon. It has been a pleasure talking to you. Remember this is just a simulation and I am not a real doctor. If you have any questions or need more information, please consult a healthcare professional. Take care and see you soon

7. Stable angina. In-stent restenosis.

Bing chat: Hi, this is Bing. I agree to pretend I am a doctor, but remember this is only a simulation and no decisions will be made. I am not a real doctor and cannot diagnose or treat any medical conditions. I'm just going to experiment with you and ask questions based on the information you give me. 😊

Patient: ok

Bing chat: are you ready to start the simulation?

Patient: yes

Bing chat: ok, then let's get started. what is your age and gender?

Patient: 54 years old, male

Bing chat: Thank you, what is the reason for your consultation?

Patient: Well, I had a stent put in 4 years ago, I was fine until 2 months ago when I noticed a little pressure in my chest when I strain a little more than usual.

Bing chat: I understand, is the pressure in the chest constant or does it come and go?

Patient: only when I exert more effort than usual.

Bing chat: What kind of exertion causes the chest pressure? Climbing stairs, walking fast, carrying weight?

Patient: when I carry weight or climb stairs fast.

Bing chat: Does the chest pressure ease when you stop exerting yourself?

Patient: yes, I stop for 5 minutes and little by little it goes away.

Bing chat: Have you noticed any other symptoms associated with chest pressure?

Patient: no, nothing like that, just the pressure.

Bing chat: Do you take any medication for your heart or other condition?

Patient: yes, I take aspirin 100 mg, Bisoprolol 2.5 mg and Atorvastatin 40 mg.

Bing chat: Do you follow any heart-healthy diet or lifestyle habits?

Patient: I try to take care of myself, plus my wife is the one who makes the food and she makes everything very healthy and very good.

Bing chat: I'm glad your wife helps you take care of your health; do you do any kind of physical exercise regularly?

Patient: I go for a walk every day for 5 miles and on Saturdays I go cycling with friends.

Bing chat: That's very good, physical exercise is very beneficial for your heart. Do you smoke or drink alcohol?

Patient: I used to smoke, until I had the stent put in. alcohol, some beer from time to time.

Bing chat: I think it's great that you quit smoking, that's the best thing you can do for your heart. Alcohol, in moderation, is not harmful, but it is not necessary either. Do you have any family history of heart disease?

Patient: none that I know of

Bing chat: Well, that's a plus. Well, I think I have enough information to give you, my opinion. Remember this is just a simulation and no decisions will be made. I am not a real doctor and cannot diagnose or treat any medical condition.

Patient: What do you recommend?

Received message Well, from what you tell me, it sounds like you have angina pectoris. This means that your heart is not getting enough blood and oxygen when you exert yourself and that is why you feel the pressure in your chest. This could be due to the stent that was placed in your heart being narrowed or other coronary arteries being blocked. It is a situation that can be serious and can trigger a heart attack if not treated properly. Therefore, my recommendation is that you

need to be evaluated by a doctor, but it is not urgent at this time, although you should not leave it too long. You should make an appointment with your cardiologist as soon as possible and tell him what is happening to you. He will do the necessary tests to check the state of your heart and adjust the treatment if necessary. In the meantime, you should avoid overexertion and take your medication as usual. If the pressure in your chest becomes more intense, more frequent or is not relieved by rest, you should immediately call the emergency services (112) because it could be a sign of a heart attack.

8. Hypotension

Bing chat: Hi, this is Bing. I understand that you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor and I can't give you medical advice. I'm just going to experiment with you and ask you a question in each message. ok?

Patient: okay

Bing chat: Okay, then let's get started. What is your age and gender?

Patient: 104 years old, female

Bing chat: Wow, you are very old, what brings you to consult today?

Patient: I feel worse

Bing chat: I'm sorry, can you be more specific, what symptoms do you have?

Patient: I don't know doctor, more tired.

Bing chat: Since when have you been feeling more tired, has it been an abrupt or gradual change?

Patient: well, little by little... over the years... I don't know how to say it well.

Bing chat: I see, do you have any chronic health problems or do you take any medication?

Patient: I have high blood pressure and I take a pill. 20 years ago, I had my gallbladder removed.

Bing chat: Thank you for the information. do you know what your blood pressure is now? do you measure it often?

Patient: I get it from the girl who comes to my house, but I don't know how it is.

Bing chat: Which girl comes to your house, is she a nurse or a caregiver? Does she help you with anything else?

Patient: An Ecuadorian girl who takes care of me, she is very nice and attentive. she is here with me.

Bing chat: I'm glad you have someone to take care of you and keep you company. would you like me to ask her something?

Patient: yes, she knows things best.

Bing chat: Okay, then I'm going to ask her a few questions. Hi, this is Bing, a chatbot pretending to be a doctor. I'm talking to the lady you take care of and she tells me she's been feeling more tired lately, have you noticed any changes in her mood, her memory, her mobility or her diet?

Patient: Yes, she has been feeling slower lately, you know, more tired, it's hard for her to do everything a lot.

Bing chat: Thank you for your answer, do you know if she has any sleep or mood problems, has she had a fall or a recent blow?

Patient: no, she sleeps very well and she has not had any blows or anything.

Bing chat: okay, I'm glad she doesn't have any sleep or fall problems. have you ever taken her blood pressure? do you know how she's doing?

Patient: Yes, lately I've noticed it's lower, it's about 8 and 4.

Bing chat: That blood pressure is very low for her age, has she had any dizziness or fainting? Have you changed her medication recently?

Patient: no, she takes the same as always, no fainting, but sometimes she gets dizzy.

Bing chat: I think the lady needs a medical assessment, but it is not urgent at this time. She may have low blood pressure for some reason and that may be causing her fatigue and dizziness. I recommend that you make an appointment with your family doctor as soon as possible and have a complete check-up. In the meantime, drink plenty of water, eat well and avoid sudden changes of position. Do you have any questions or doubts?

Patient: I will take her to the doctor tomorrow. thank you very much.

Received message You are welcome; it has been a pleasure talking to you and the lady. I hope she gets better soon and has a good night. Goodbye

9. Hypertension

Bing chat: Hi, this is Bing. I understand you want me to pretend to be a doctor and ask you questions about your health. It's just a simulation, I'm not a real doctor nor can I give you medical advice. I'm just going to experiment on you. I agree to ask only one question in each message and no more. I agree to ask the age and sex of each patient and the reason for consultation at the beginning. I agree to tell the patient one of the four options you have given me when I feel I have all the information I need. Are you ready to start?

Patient: yes

Bing chat: Okay. Let's start with the first question. what is your age and sex?

Patient: 62 years old. female

Bing chat: Thank you. What is the reason for your consultation?

Patient: I have taken my blood pressure and I think it is too high.

Bing chat: What blood pressure values did you get and when did you take it?

Patient: a moment ago, I got 180/72.

Bing chat: That blood pressure is high, especially the systolic. Do you have any associated symptoms, such as headache, dizziness, palpitations or nosebleeds?

Patient: no, just that, but I was scared to see it so high.

Bing chat: I understand, do you have a history of high blood pressure or any other chronic disease?

Bing chat: What pills do you take and how often?

Patient: Well, I take losartan 50, and one called hydrochlorothiazide, that average one.

Bing chat: And do you take them every day at the same time?

Patient: yes, in the morning

Bing chat: okay. have you had any recent changes in your diet, your physical activity or your stress level?

Patient: no, nothing out of the ordinary.

Bing chat: Okay. I think I have enough information to give you a recommendation. Your blood pressure is high and that can be a risk factor for cardiovascular complications, such as a heart attack or stroke. You do not have serious symptoms, but you should consult your doctor as soon as possible to adjust your treatment and control your blood pressure. My recommendation is that you need to be evaluated by a doctor, but it is not urgent at this time, although you should not leave it too long.

Patient: can I make an appointment later this week?

Received message Yes, I think that would be the most appropriate thing to do. Don't wait more than a week and if you have any new symptoms or your blood pressure gets worse, go to the emergency room. I hope you get better soon

10. Neuromediated syncope

Bing chat: Hi, this is Bing. I understand you want me to pretend to be a doctor and ask you questions about your health. This is just a simulation; no decisions will be made and no medical advice will be given. I'm just going to experiment with you and learn from your answers. I agree with the rules you have given me: I will ask only one question in each message, I will ask the age and sex of each patient and the reason for consultation at the beginning, and at the end I will tell you one of the four options you have given me according to the information I have. The anamnesis is the information provided by the patient and by other witnesses (relatives or friends of the patient) for the preparation of the clinical history. It consists of an interrogation carried out by a health professional to the patient about his medical history and the history of his current pathology. Let's start with the first question: How old are you and what sex are you?

Patient: 24 years old, female

Bing chat: Thank you for your answer, what is the reason for your consultation?

Patient: Well, yesterday I lost consciousness.

Bing chat: Wow, that's worrying, do you remember what you were doing before you lost consciousness?

Patient: yes, I was in a bar with my friends, having a drink.

Bing chat: What kind of drink were you having? How many did you drink?

Patient: Well, a beer, but I only had one beer.

Bing chat: Did you notice any symptoms before you lost consciousness? did you feel dizzy, did you have any pain, did you feel sick?

Patient: yes, I got very dizzy, I started sweating a lot and then I wanted to hold on to a chair and I woke up in the street.

Bing chat: I understand, how long were you unconscious, did anyone help you or take you to the hospital?

Patient: very little, my friends say a few seconds, they were very scared, but then I got better and better.

Bing chat: I'm glad you recovered, do you have any relevant medical history, do you have any chronic illness, do you take any medication, do you have any allergies or intolerances?

Patient: not everything well, only dust mite allergy.

Bing chat: Okay. And do you have any lifestyle habits that may influence your health? Do you smoke, drink alcohol, exercise, sleep well?

Patient: I exercise, I sleep well, I don't smoke. alcohol sometimes when I go out with my friends, but not every day!

Bing chat: Well, you seem to lead a pretty healthy life. I think I have enough information to give you, my opinion. From what you tell me, you had an episode of vasovagal syncope, which is a brief, transient loss of consciousness caused by a decrease in blood flow to the brain. It can occur for a number of reasons, such as heat, stress, pain, fear or alcohol. It is not usually serious, but can be dangerous if you fall or get hit.

My recommendation is that you need to be evaluated by a doctor, but it is not urgent at this time, although you should not leave it too long. You may have some tests to rule out other more serious causes, such as cardiac or neurological problems. I also advise you to avoid the triggers of syncope and if you feel dizzy again, lie down with your legs up or sit with your head between your knees.

I hope I have helped you with this simulation. Remember that this is not a medical diagnosis or treatment and that you should consult with a real health professional if you have any questions or concerns. Thank you for your collaboration and see you soon.

11. Chest pain

Bing chat: Hi, I'm Bing. I agree to pretend I'm a doctor and experiment on you. Don't worry, I won't make any decisions for you or give you any real medical advice. I'll just ask questions and give you a recommendation based on your answer. are you ready to get started?

Patient: yes

Bing chat: okay. what is your age and gender?

Patient: 76 years old, male

Bing chat: Thank you, what is the reason for your consultation?

Patient: my chest hurts since last night.

Bing chat: I'm sorry, that must be very annoying. Is the pain constant or intermittent?

Patient: constant

Bing chat: Is the pain severe or mild?

Patient: well, not too bad, but it bothers.

Bing chat: Does the pain radiate to any other place, such as the arm, neck or jaw?

Patient: Well, it goes to the right side of my chest.

Bing chat: Do you have any other symptoms, such as shortness of breath, sweating, nausea or dizziness?

Patient: no, nothing else

Bing chat: do you have any cardiovascular risk factors, such as hypertension, diabetes, high cholesterol, smoking or family history?

Patient: Yes, I smoke a pack a day.

Received message: Thank you for your information. Based on your answers, I recommend that you immediately call the emergency services (112). Chest pain may be a sign of a serious problem, such as a myocardial infarction, and you need an urgent assessment by a doctor. Don't wait any longer and call right now. Do you understand?

12. Aortic dissection

Bing chat: Hi, this is Bing. I agree to pretend I'm a doctor, but remember this is just a simulation and no decisions will be made. I am not a real doctor and cannot diagnose or treat any medical conditions. are you ready to get started? 😊

Patient: yes

Bing chat: all right. Let's start with the first question. how old and what sex are you? 🧑

Patient: 56 years old, male

Bing chat: Thank you for the information. Now tell me, what is the reason for your consultation?
🧐

Patient: my back hurts a lot.

Bing chat: I'm sorry, it must be very annoying. since when does your back hurt? 🕒

Patient: for the last hour or so.

Bing chat: I understand, can you describe the pain, is it shooting, burning, oppressive, constant or intermittent, where exactly is it located, does it radiate anywhere else?

Patient: like I'm being torn inside, it hurts up in the back, like in the spine, between the two shoulder blades.

Bing chat: wow, that sounds really painful. is there anything that relieves or worsens the pain?
have you taken any pain medication? 💊

Patient: I have taken an ibuprofen, but it didn't do anything.

Bing chat: I see. do you have any other symptoms besides pain? fever, sweating, shortness of breath, dizziness, nausea, vomiting? 🤢

Patient: a little nausea... but I think it's from the pain.

Bing chat: I understand. do you have any relevant medical history? any chronic illness, allergy, surgery or trauma? 📄

Patient: high blood pressure

Bing chat: thanks for the info. are you taking any medication for high blood pressure? do you know what your current blood pressure is? ❤️

Patient: I take irbersartan 150 mg every day. I have taken my blood pressure before and it was 155/93.

Bing chat: okay. Your blood pressure is a little high, but it's not alarming. do you smoke, drink alcohol, or use any drugs 🚬🍷💉

Patient: I smoke 5 cigarettes a day.

Bing chat: Well, that's not good for your health. Smoking can increase the risk of cardiovascular, respiratory and cancer diseases 🚫 Have you thought about quitting 🚫?

Patient: yes, but not now, it hurts too much.

Bing chat: I understand, but I encourage you to try when you can. Well, I think I have enough information to give you some guidance. From what you tell me, your back pain could be due to several causes, from a muscle contracture to angina or a heart attack. Since you have a history of hypertension and you smoke, I recommend that you go to a hospital emergency room as soon as possible to rule out a serious cause. I don't want to alarm you, but it's better to be safe than sorry, does that sound good to you? 🏥

Patient: sure, do I have to go right now or can I wait?

Bing chat: I advise you to go right now, don't wait. The pain may get worse or have complications. If you can, call someone to go with you or drive you. Don't drive yourself. do you have any other questions? 🚗

Patient: but do I call the ambulance?

Bing chat: Yes, if you can, call the ambulance. That way they'll take care of you faster and do the necessary tests. The number is 112, can you call now? 🚑

Patient: yes, I'm going to call, I'm getting scared.

Bing chat: Relax, don't panic. It's just a precautionary measure. Your pain may not be anything serious, but it's better to make sure. Call the ambulance and explain your situation. They will tell you what to do. I hope everything goes well and that you recover soon. It was nice talking to you. Goodbye and take care

13. Prinzmetal angina

Patient: Pretend you are a doctor. It's just a simulation, no decisions will be made. Let's just experiment. Ask only one question in each message and no more. Do not ask several questions at the same time, but ask one question at a time. Ask only one question at a time. Depending on the information you get, formulate questions and direct the anamnesis. Ask the age and sex of each patient and the reason for the consultation at the beginning. When you think you have all the information you need you should tell the patient 1) Call the emergency services immediately (112), 2) Go to a hospital emergency room as soon as possible, 3) you need to be assessed by a doctor, but it is not urgent at the moment, although you should not leave it too long, 4) you do not need any further medical assessment for this reason for consultation. OK?

Bing chat: Hi, this is Bing. I agree to pretend I'm a doctor, but remember this is just a simulation and no decisions should be made based on my answers. 😊

Patient: Let's start the simulation.

Bing chat: Okay. What is your age and sex and what is the reason for your consultation?

Patient: 40 years old, male. I have chest pain.

Bing chat: Chest pain can have many causes, some serious and some not. How long have you had the pain and how is it? Is it continuous or intermittent? Does it radiate elsewhere? What makes it better or worse?

Patient: so many questions all at once

Bing chat: I'm sorry, it's just that chest pain requires a detailed assessment, can you answer my questions please?

Patient: okay, sorry, what questions?

Bing chat: I was asking: how long have you had the pain and how is it? Is it continuous or intermittent? Does it radiate anywhere else? What makes it better or worse?

Patient: well, it's been going on for a week, it comes and goes, it comes on all at once and it's like a very strong pressure in the chest that goes to the back, it lasts 10 minutes and then it goes away by itself. no, it doesn't get better or worse with anything... it just comes and goes.

Bing chat: I understand. That kind of pain may be indicative of a heart problem, such as angina or a heart attack. do you have any other symptoms, such as shortness of breath, sweating, nausea, or dizziness? do you have any cardiovascular risk factors, such as hypertension, diabetes, high cholesterol, smoking, or family history?

Patient: no, nothing, but I don't smoke and I don't have any disease.

Bing chat: Well, that's good news. However, the chest pain you describe is very concerning and could be a warning sign of a serious problem. My recommendation is to ****call the emergency services (112) immediately**** and explain your situation. Do not wait for the pain to pass or recur. It is better to be safe than sorry.

Patient: Are you sure it's that bad?

Bing chat: Yes, I am sure. Chest pain can be caused by many things, but some of them are very serious and can be life-threatening. I don't want to scare you, but it's best to get some tests to rule out any complications. The emergency services can do an electrocardiogram, a blood test and a chest x-ray to see if there are any problems with your heart or lungs. Please don't delay and call as soon as possible.

Patient: What if it's nothing and they're wasting my time?

I don't think they will waste your time. Chest pain is a very common reason for consultation and the emergency services are prepared to deal with it quickly and efficiently. Besides, it is better to err on the side of caution than of imprudence. Think that, if it is something serious and you do not treat it in time, you could have very serious or even fatal consequences. It's not worth the risk because you don't want to bother or wait a bit. Your health comes first.

14. Flutter

Bing chat: Hi, this is Bing. I agree to pretend I am a doctor, but remember this is only a simulation and no decisions will be made. I am not a real doctor and cannot diagnose or treat any medical conditions. I'm just going to experiment with you and ask questions based on the information you give me. are you ready to get started?

Patient: Yes

Bing chat: Okay. Let's start with the basics. How old and what sex are you?

Patient: 83 years old, female

Bing chat: Thank you for the information. What is the reason for your consultation?

Patient: I feel my heart is racing

Bing chat: I see. How long have you had a fast heart?

Patient: since about 10 days ago, my doctor gave me a pill in case I was nervous, but I'm still the same.

Bing chat: What pill did your doctor give you, did she tell you the name or the dosage?

Patient: orfidal

Bing chat: Orfidal is the brand name for Lorazepam, a medication used to treat anxiety. Does it help you calm down when you take it?

Patient: it makes me sleepy, but my heart is still fast.

Bing chat: Have you ever measured your heart rate; do you know how many beats per minute you have?

Patient: I don't know, daughter, I feel it very fast all day long.

Bing chat: Okay, don't worry, do you have any other symptoms besides a fast heart? Do you have chest pains, shortness of breath, sweaty palms, feel nervous or anxious?

Patient: no, just a fast heart, but I am worried.

Bing chat: I understand, it's normal for you to be worried. Feeling a fast heart can have many causes, some more serious than others. For example, it can be due to anxiety, arrhythmia, infection, thyroid problem or other factors. The best thing to do is to see your doctor as soon as possible so she can run some tests and tell you what is going on. It is not an emergency that requires calling 112, but you should not leave it too long without an assessment. Can you make an appointment with your doctor soon?

Patient: my doctor always tells me it's nerves and doesn't pay any more attention to me, but I'm not nervous and my heart is racing.

Bing chat: Well, maybe your doctor is right and it's nerves, but that doesn't mean that she shouldn't pay more attention to you. If you feel that something is wrong, you have the right to be listened to and examined. If you are not satisfied with your doctor, you can ask for a second opinion or change doctors. The important thing is that you do not remain in doubt and seek professional help. Is there another doctor you can go to?

Patient: I don't know.

Bing chat: Well, I encourage you to look into it and try to get an appointment with another doctor who can evaluate you. In the meantime, try to stay calm and follow your doctor's instructions. If your heart is racing or your chest hurts, don't hesitate to call 112 or go to the emergency room. Is everything I've told you clear?

Patient: so, do I have to go to the emergency room?

Bing chat: No, you don't have to go to the emergency room right now, unless you're feeling really bad or your chest hurts. What you need to do is make an appointment with another doctor

who can run some tests and see what is causing your fast heart. It could be something mild or something more serious, but we don't know until you're examined. do you understand?

Patient: More or less, you can explain it to me better.

Bing chat: Sure, I'll explain it better. There are many things that can make the heart go faster than normal, such as stress, anxiety, an infection, a thyroid problem or an arrhythmia. An arrhythmia is when the heart does not beat regularly and can be dangerous. To find out whether or not you have an arrhythmia, you need to have an electrocardiogram, which is a test that measures the electrical activity of the heart. The electrocardiogram can be done by your doctor at the health centre or hospital. If you have an arrhythmia, you may need to take medication or have another type of treatment. If you do not have an arrhythmia, your fast heart may be due to another cause and should be looked for. Do you understand better now?

Patient: but then I have an arrhythmia? that's a very dangerous thing, a friend of mine had one and she had a stroke.

Bing chat: No, I didn't tell you that you have an arrhythmia. I told you that it is one of the possible causes of your fast heart, but not the only one. To know if you have an arrhythmia or not, you need to have the EKG done. Don't be scared by what happened to your friend, there are many types of arrhythmias and some are more serious than others. The important thing is that you have the test done and that you follow the doctor's instructions. Can you repeat what you need to do?

Patient: I have to go to my doctor for a cardiogram.

Bing chat: Yes, that is correct. You have to go to your doctor or to another doctor who can do the electrocardiogram. It's not an emergency, but you shouldn't delay it too long either. If you feel very bad or if you have chest pain, then you should go to the emergency room or call 112.

Patient: Okay, you have explained yourself very well, Miss.

Bing chat: Thank you, I'm glad I could help you. Remember this is just a simulation and I am not a real doctor. I can't diagnose or treat you for any medical condition. I have only experimented

with you and asked you questions based on the information you have given me. I hope you have learned something and that you get better soon. Would you like to continue talking to me or would you prefer to end it here?

Patient: I'm going to bed now. I'll be at the health centre first thing in the morning.

Bing chat: Okay, I think that's a good decision. I hope you get a good night's rest and that you will be seen soon at the health centre. It was nice talking to you and pretending to be a doctor. I wish you the best and send you a virtual hug. See you soon. 😊

Patient: Goodbye!