



## USER MANUAL FOR MEDVIR



**USER MANUAL FOR MEDVIR** **1**

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**1 L'APPLICATION MEDVIR** **3**

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<b>2</b>	<b>SUPPORTS &amp; INDICATIONS</b>	<b>4</b>
<b>3</b>	<b>ACCES AUX DROITS</b>	<b>5</b>
<b>4</b>	<b>FONCTIONNEMENT EN DETAIL</b>	<b>5</b>
<b>4.1</b>	<b>ÉTAPE 1 : DETERMINATION DE LA POPULATION</b>	<b>5</b>
4.1.1	Age et sexe	6
4.1.2	Durée des signes	6
<b>4.2</b>	<b>ÉTAPE 2 : DETERMINATION DU SYMPTOME PRINCIPAL</b>	<b>7</b>
4.2.1	Préambule	6
	Le symptôme principal, quelle que soit l'interface ou le module est une étape obligatoire de MEDVIR.	6
4.2.2	Outil de search	8
4.2.3	Choix du symptôme principal	9
<b>4.3</b>	<b>ÉTAPE 3 : SAISIE DES SIGNES D'ACCOMPAGNEMENT</b>	<b>11</b>
<b>4.4</b>	<b>ÉTAPE 4 REPONSE AU QUESTIONNAIRE</b>	<b>13</b>
<b>4.5</b>	<b>ÉTAPE 5 : ENVIRONNEMENT MEDICAL</b>	<b>14</b>
<b>4.6</b>	<b>ÉTAPE 6 : AFFICHAGE DES RESULTATS</b>	<b>14</b>
<b>4.7</b>	<b>ÉTAPE 7 : APPROFONDISSEMENT (OPTIONNELLE)</b>	<b>16</b>
<b>4.8</b>	<b>ÉTAPE 8 : FABRICATION DE L'OBSERVATION MEDICALE (OMV)</b>	<b>16</b>
<b>5</b>	<b>USAGE CONSEILLE (A LIRE ATTENTIVEMENT)</b>	<b>15</b>

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## 1 MEDVIR

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- The MEDVIR app was developed by Dr Loïc Etienne. It was developed under his supervision by a team of emergency doctors and artificial intelligence engineers. It consists of a dynamic questionnaire, which asks a series of questions based on previous answers.
- This application can be used by healthcare professionals (doctors or others) or by the general public, either through an application directly accessible to the general public or through a secure website (insurer, assistance provider, etc.). The type of user determines the type of interface.
- This application has been configured using statistical data from medical literature (prevalence and incidence rates) where such data exists or could be found. However, it is designed to benefit from supervised learning, which means that it is able to evolve and enrich itself from its own experience under the supervision of a doctor. To do this, it needs feedback for each patient assessed and therefore needs to automatically collect the final diagnosis made by the hospital, and only by a hospital after additional tests have been carried out, in the form of ICD-10. Diagnoses made outside this hospital pathway cannot be used for self-learning.
  - Free access or protected by username and password,
  - Identification of the type of population to which the person belongs based on age and gender, and whether she is pregnant.
  - Selection of the main symptom (or main reason for consultation)
  - Selection of other symptoms (or secondary reasons for consultation)
  - Presentation of a number of pages containing a series of questions to be answered at the user's convenience by clicking on radio buttons or checkboxes.
  - Request for information varying according to the modules, on the medical environment
  - Display of initial conclusions (diagnostic hypotheses, opinions and advice)
  - Option to conduct a more in-depth interview following these initial conclusions.
  - Option to download a printable, storable and shareable PDF report.
  - Option to find out more about the various diagnoses mentioned by clicking on encyclopaedic links.

	Description
Brand name	MedVir
Version	1.0
Manufacturer	Medical Intelligence Service
Address of manufacturer	9 avenue d'Italie 75013 Paris - FRANCE
Class of the device	Class I under Directive 93/42/CEE
UDI	3770034642008

**This user manual can be requested in paper format by writing to the following address:**

[contact@medvir.fr](mailto:contact@medvir.fr)

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## 2 SUPPORTS & INDICATIONS

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The MEDVIR application is accessible on all types of devices:

- White label website
- Smartphone
- Touchscreen tablet
- Interactive terminal
- Any type of device using a tablet

Les navigateurs compatibles sont :

- Opera
- Mozilla Firefox
- Chrome
- Safari
- Microsoft Edge

Note: In the event of malfunctioning depending on the version of certain browsers, which must be updated for optimal performance, it is recommended that you report this to [contact@medvir.f](mailto:contact@medvir.f).

Based on symptoms reported by the patient following a questionnaire, and based on any measurements transmitted by a medical device (e.g. blood pressure monitor or thermometer), MEDVIR provides several pieces of information:

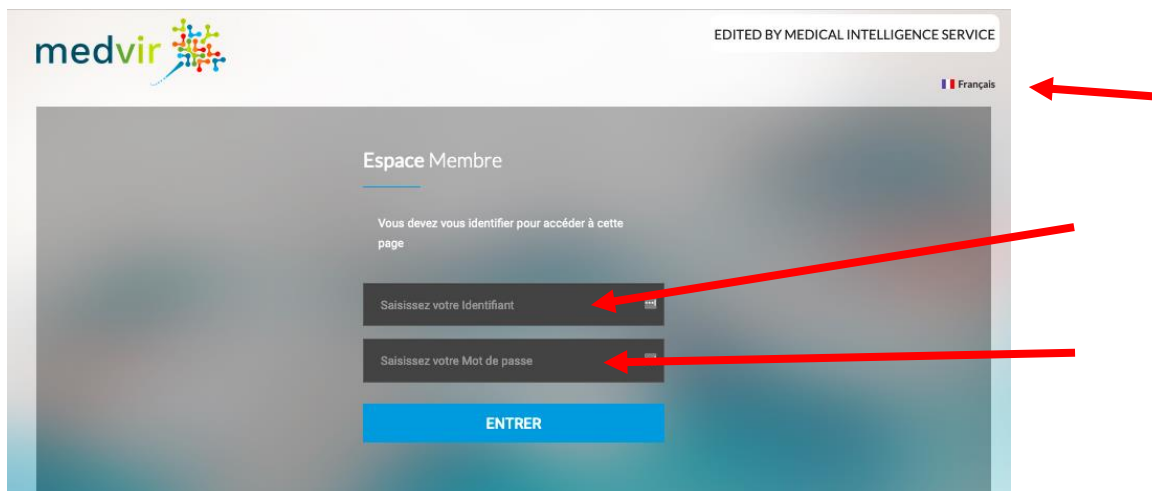
- Guidance on the potential urgency of the medical situation
- Diagnostic hypotheses with their respective probabilities
- Recommendations and advice for immediate action relating to the reported symptoms

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### 3 ACCES TO RIGHTS

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The MEDVIR application visualisation interface is available at [www.healthcenter.mismedvir.com](http://www.healthcenter.mismedvir.com). You will need to enter the username and password provided to you.



- a. Language choice
- b. Identifiant
- c. Password

The choice of language will determine all commands and comments that will be displayed.

Error message in case of mismatch between username and password:

Login failed.

Please check your login details.

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### 4 HOW IT WORKS

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#### 4.1 Step 1 : Determination of the population

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ACCUEIL → MÉDECINE D'URGENCE → PROFIL

**Age (en années)**



49

**Durée des signes (en jours)**



1

**Sexe**



**Cas particulier**

Actuellement enceinte

Récemment accouchée

Ni enceinte, ni récemment accouchée

**SUITE**

#### 4.1.1 Age et sexe

- For age, you can either move the circular slider or type it in using the keyboard.
- For gender, choose male or female. For females aged between 12 and 50, you can choose a specific category (pregnant, recently given birth, or none of the above).

These choices help define which population group the person belongs to.

Error message (if the age entered is not greater than zero): Please set your age.

#### 4.1.2 Duration of signs

This concept is specific to MEDVIR Emergency and General Medicine.

It is important to know how long the symptoms have been present, as this determines whether the situation is an emergency

- Up to and including 4 days, the interface considers that the situation is a potential emergency (350 possible diagnoses)
- Beyond 4 days, it is considered a general medicine case (see General Medicine). (750 possible diagnoses).

In the study with DMH, as we are testing the solution for emergencies, the duration of symptoms should be set to 1 day, and if changed, should not exceed 4 days (otherwise it will be considered a general medicine case).

Validation completes at step 2

## **4.2 Step 2 : Determination of the main symptom**

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### **4.2.1 preamble**

The main symptom, regardless of the interface or module, is a mandatory step in MEDVIR.

This step is absolutely fundamental and determines the proper use of MedVir.

In order to function, the neural network needs to know the reason for the patient's consultation.

There are two modes of symptom search:

Word search: the search bar allows you to intuitively find words whose location is not obvious (fever, tremors, chills, etc.).

- This interface contains more than 20,000 words and expressions that point to one or other of the 176 symptoms.
- For example, typing 'chest' will return all symptoms where the word chest is used. Similarly, "pain" or 'ache' will return results, the number of which decreases as you type more letters.
- This type of search is particularly useful for distinguishing between certain words (e.g. 'spinning' will return results for dizziness, while 'loss of balance' will return results for balance disorders).
- It is important to keep your search limited. For example, 'chest pain radiating into the left arm' will return no results, while 'chest pain' will return the symptom 'chest discomfort'.
- Similarly, typing 'headache with dizziness' will not be recognised: you should only search for one symptom at a time. You can use everyday words (pissing all the time) or medical terms (pollakiuria).
- If a word is not found, which can happen, try to express it with a synonym.
- Search by symptom type (pain, discharge, bleeding, etc.), of which there are 10. This search can be quick for all symptoms that are easy to locate on the human body. For other symptoms (disorders, general problems, skin problems, etc.)

Please note that this type of search is less effective than the search function, and it is better to use keyword searches. However, it is still worth browsing through.

Before the trial so that you fully understand what the 176 MedVir symptoms are.

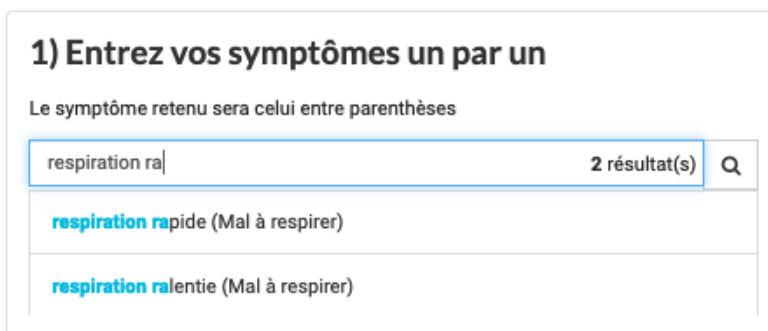
Some symptoms may appear in several places (for example, sweating is in the skin item but also in the general problem item).

The user can enter as many symptoms as they wish and in any order they wish. The order in which they are entered does not affect the calculation.

## 4.2.2 Search tool

When a word is typed, it appears in a drop-down list:

The typed word appears first and the word in brackets corresponds to the symptom that will be selected.



**1) Entrez vos symptômes un par un**

Le symptôme retenu sera celui entre parenthèses

respiration ra | 2 résultat(s) 🔍

- respiration rapide (Mal à respirer)
- respiration ralentie (Mal à respirer)

Please note: if you enter a common expression in the search field, check that the associated symptom that appears is correct.

For example: discomfort or discomfort with loss of consciousness?

You must tick the correct associated symptom in brackets.

Is it simple discomfort or discomfort with loss of consciousness?

Click on the correct option. The information is stored in two baskets, A and B.

### 1) Entrez vos symptômes un par un

Le symptôme retenu sera celui entre parenthèses

### 2) Symptômes sélectionnés

Quel symptôme vous gêne ou vous inquiète le plus ?

Mal à respirer

---

### 3) Informations complémentaires

respiration rapide

**SUITE**

- Basket A: corresponds to the symptom selected (selected symptoms)
- Basket B: corresponds to the characteristic of the symptom if this characteristic exists in the glossary (additional information)

If this feature does not exist, only basket A will be filled:

### 1) Entrez vos symptômes un par un

Le symptôme retenu sera celui entre parenthèses

 17 résultat(s)
 

- fièvre (Fièvre)
- fiévreux (Fièvre)
- poussée de fièvre (Fièvre)
- fiévreuse (Fièvre)
- accès de fièvre (Fièvre)
- fièvre élevée (entre 38°5 et 40°) (Fièvre)
- fièvre très élevée (entre 40 et 41°) (Fièvre)
- fièvre sévère (au dessus de 41°) (Fièvre)

### 2) Symptômes sélectionnés

Quel symptôme vous gêne ou vous inquiète le plus ?

Mal à respirer

---

### 3) Informations complémentaires

respiration rapide

**SUITE**

### 1) Entrez vos symptômes un par un

Le symptôme retenu sera celui entre parenthèses

### 2) Symptômes sélectionnés

Quel symptôme vous gêne ou vous inquiète le plus ?

Mal à respirer

Fièvre

---

### 3) Informations complémentaires

respiration rapide

**SUITE**

You can store as many as you want in the two baskets and delete them using the red bin.

It is possible to enter medical history or treatments (however, MedVir does not recognise all drug names). These items will appear in basket B.

### 4.2.3 Choice of main symptom

It is then necessary to choose the main symptom from among all the symptoms in the basket, which will serve as the starting point, and click on CONTINUE at the bottom. In any case, all the symptoms selected in the basket will be included in the questionnaire along with the main symptom as soon as you click on CONTINUE (hence the need to choose them carefully).

**1) Entrez vos symptômes un par un**  
Le symptôme retenu sera celui entre parenthèses

Rechercher un symptôme

**2) Symptômes sélectionnés**  
Quel symptôme vous gêne ou vous inquiète le plus ?

Mal à respirer

Fièvre

Toux

**3) Informations complémentaires**

respiration rapide

toux sèche

SUITE

Note 1: In our example, cough is chosen as the main symptom, but difficulty breathing and fever are retained as part of the clinical picture.

The same applies to rapid breathing and dry cough, which are characteristics of these symptoms.

Note 2: The main symptom chosen determines the rest of the medical reasoning insofar as it defines the possible diagnoses.

Example : if we have four symptoms at the outset (difficulty breathing, fever, cough and urinary problems), we will not be able to diagnose pneumonia if we take urinary problems as the main symptom. However, we may be able to diagnose pyelonephritis as well as pneumonia if we take fever as the main symptom.

**Error message (if the main symptom is not selected): Please define your main symptom.**

### 4.3 Step 3 : Entering accompanying signs

This is done by ticking boxes (multiple choices). Confirm by clicking on NEXT.

These accompanying symptoms are calculated based on the symptoms already ticked in step 2.

Notes: You are under no obligation to enter a symptom. Similarly, you should only tick the boxes that correspond to what the patient says or to their answers to the questions. It is therefore perfectly normal not to tick any boxes.

**medvir** EDITED BY MEDICAL INTELLIGENCE SERVICE

ADMINISTRATION DÉCONNEXION

ACCUEIL → MÉDECINE D'URGENCE → FEMME JEUNE 31 ANS → TOUX → EVALUATION SANTÉ ÉTAPE 1

#### Signes d'accompagnement

Si vous avez d'autres symptômes, cochez-les parmi la liste suivante.  
Ne cochez que les cases qui correspondent à votre cas.

<input type="checkbox"/> Crachats	<input checked="" type="checkbox"/> Mal à la tête
<input type="checkbox"/> Cyanose (peau bleutée)	<input type="checkbox"/> Mal au dos
<input type="checkbox"/> Éternuement	<input checked="" type="checkbox"/> Mal partout
<input type="checkbox"/> Mal à la gorge	<input type="checkbox"/> Modification de la voix
<input type="checkbox"/> Mal à la poitrine	<input type="checkbox"/> Nez qui coule

**SUITE**

Note 1: Not ticking an accompanying sign permanently removes it from the scenario.

Note 2: When there are many symptoms requested, they appear classified as below in boxes that can be opened:

### Signes d'accompagnement

Si vous avez d'autres symptômes, cochez-les parmi la liste suivante.  
Ne cochez que les cases qui correspondent à votre cas.

- Douleurs ▲
- Écoulement ▲
- Gonflement localisé ▲
- Peau ▲
- Troubles ▲
- Manifestations psy ▲
- Problème général ▲
- Problème localisé ▲

Rien de tout cela

As a precaution, it is best to open each box to check that there are no symptoms not yet requested.

### Signes d'accompagnement

Si vous avez d'autres symptômes, cochez-les parmi la liste suivante.  
Ne cochez que les cases qui correspondent à votre cas.

- Douleurs ▼
- Écoulement ▲  
 Écoulement par les yeux
- Gonflement localisé ▼
- Peau ▼
- Troubles ▼
- Manifestations psy ▼
- Problème général ▼
- Problème localisé ▼

Rien de tout cela

## 4.4 Step 4 Response to the questionnaire

It is important to be rigorous: a proposed symptom is a symptom that has been selected beforehand. It is therefore necessary to carefully open the question boxes.

**Décrivez vos symptômes**

Ouvrez bien toutes les questions pour ne pas en rater

Ne cochez que les cases qui correspondent à votre cas

**Toux**

La toux est : ▲

Sèche 🗨️

Grasse 🗨️

Sifflante

Rien de tout cela

La toux survient ▼

La toux provoque : ▼

Les accès de toux se produisent : ▼

Failing to ask a question is equivalent to answering “no” to the questions asked, which can significantly affect the final diagnosis.

This step is the longest, as it considers:

- The characteristics of the symptoms
- The patient's medical history
- Epidemiological concepts

Regardless of the interface and module, the pages scroll and you answer as you wish by ticking boxes or radio buttons. It is entirely possible not to tick anything.

## 4.5 Step 5 : Medical environment

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### Environnement médical

Y a-t-il dans votre ville un service médical de garde 24h sur 24 ?

oui
  non
  je ne sais pas

Votre médecin traitant peut-il se déplacer dans l'heure ?

oui
  non
  je ne sais pas

Y a-t-il dans votre ville un hôpital où vous pouvez vous rendre en moins d'une heure ?

oui
  non
  je ne sais pas

SUITE

This page allows you to determine the most appropriate decision based on the medical environment.

Error message (if either of the requirements is not met) Please define your medical environment.

## 4.6 Step 6 : Displaying results

---

Regardless of the interface, you can click on tabs:

Our opinion: Assesses the severity (on a scale of 5) and suggests solutions for calling for help with timeframes.

Analysis: Provides the probability for each possible diagnosis.

Advice: Provides personalised advice based on the boxes ticked during the questionnaire.

Medication: Advice on medication.

What to watch out for: Advice while waiting for emergency services.

In addition, you can click on each diagnosis. A new window will open, taking you to an encyclopaedic explanation page.

The text includes help bubbles for all complex words or words that require explanation.

The page offers:

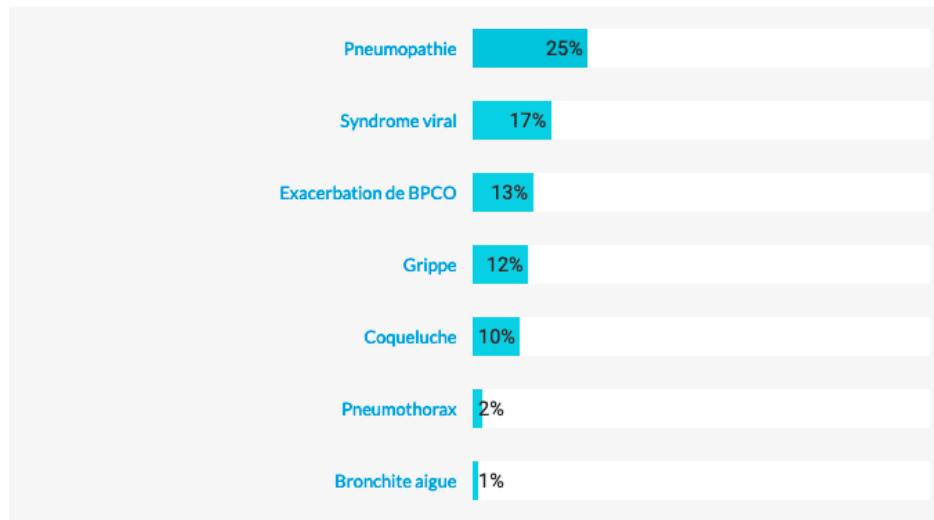
An opinion corresponding to a pre-diagnosis.



Le problème nécessite a priori qu'un médecin vienne examiner la personne à domicile rapidement (Délai idéal : 1 heure. Maximum 3 heures). Si le médecin traitant n'est pas disponible, faites appel au service médical de garde. En cas de suspicion de Covid 19, prenez contact avec le 15.

- Analysis: diagnostic hypotheses with their respective probabilities. Each diagnosis is clickable and links to the corresponding encyclopaedia page.

### Analyse



Tailored advice based on the boxes ticked during the questionnaire.

Medicines: Suggestions for self-medication if necessary, or for re-medication.

What you need to watch out for: Advice on what to do while waiting.

From this page, you can either:

Stop there.

Or continue with the assessment (the system refines the proposed diagnoses and checks whether any other diagnoses have been ruled out prematurely).

[Approfondir l'évaluation](#)

[Télécharger le rapport](#)

Either download the report (OMV). (Step 8) This option is available here and also after further study.

Or consult the encyclopaedia for one of the selected diagnoses.

## 4.7 Step 7 : Further study (optional)

Clicking this button continues the questionnaire in the same way as in step 4.

At the end of the questions, the medical environment is not asked again and you arrive at step 6, which will have taken into account the data collected during the in-depth assessment.

## 4.8 Step 8 : Medical observation manufacturing (MOM)

It is obtained after clicking on "download report". The result is:



Code postal : **99999**  
 Date de l'entretien : **13/02/2023 15:45**  
 Durée de l'entretien : **3m. 33s.**

Femme jeune 31 ans

Niveau d'urgence : **4**

Toux

Très récent (24h-48h maxi)

### Caractéristiques

#### Toux

- La toux provoque une douleur dans un seul poumon
- Toux sèche

### Signes d'accompagnement

#### Fièvre

- Température entre 37°5 et 38°5

#### Mal à respirer

- Respiration accélérée

#### Mal à la tête

#### Mal partout

### Constantes

- Chiffres actuels de tension artérielle : Normaux

Saving the file on your computer allows you to send it as an email attachment to the remote doctor.

Note: MedVir uses a 5-level classification equivalent to the CCMU (Common Classification of Emergency Medicine).

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## **5 RECOMMENDED USE (PLEASE READ CAREFULLY)**

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Search:

Enter the elements present in the observation into the search field. They will appear in the first basket. It is therefore possible (within the limits of the glossary) to enter all the elements present in the observation. If they do not appear, search for a logical synonym.

The symptom that will be taken into consideration is the one in brackets in the list. For example, the word 'vertigo' can mean dizziness or balance disorder. Choosing one does not mean that the other is also chosen.

Do not use negative signs (e.g. no fever: simply do not tick or type fever in the search).

The more symptoms recognised by MedVir in the observation, the shorter it will be.

You can enter details of medical history or treatment that appear in the second basket. However, MedVir does not take into account the results of physical examinations (auscultation, palpation, etc.). This is because MedVir was designed for medical regulation over the telephone (i.e. without physical examination data).

You cannot enter vital signs. However, you can indicate whether blood pressure is high, normal or low, the range within which temperature, saturation or pulse fall, etc.

Carefully select the main symptom, which should normally correspond to the reason described in the observation.

Open all the boxes provided. Some questions will be asked in a different way from the observation, so tick the corresponding boxes if this applies.

Other questions will be asked that are not present in the observation, but whose presence is logical. Not ticking a question that is logical in relation to the scenario is tantamount to saying that this symptom does not exist. Example: Chest pain radiating into the arm logically requires you to also tick arm pain.

The application uses the intuitive mode of reporting by a patient rather than a doctor, for example: a patient does not talk about radiation (doctor's language), so instead of 'chest pain radiating to the arm', the patient will naturally tick 'chest pain' and 'arm pain'.

If a diagnosis does not appear during the first pass (steps 1 to 6), proceed to step 7 (further investigation), as only the questions that enable the fastest diagnosis are asked first, with the further investigation questions being refinement questions.

Some diagnostic terms may differ between the observation diagnosis and the diagnostic hypothesis provided by MedVir. For example, ophthalmic migraine will correspond to Migraine in MedVir, or pulmonary carcinoma to lung cancer. These are preliminary diagnoses. These are preliminary diagnoses. For example, it is not possible to distinguish between viral and microbial causes of tonsillitis, or between different types of meningitis, without a lumbar puncture.