

**POLITECNICO**  
MILANO 1863

# HX10S - Hypertension monitoring specialists

Course: Medical Informatics  
Academic year: 2023/2024

Team 2:  
Bertoldi Vasco  
Caridi Irene  
De Carlo Federico  
Facchini Elisa  
Farina Matteo  
Lile Aurora

# WHAT IS HYPERTENSION?



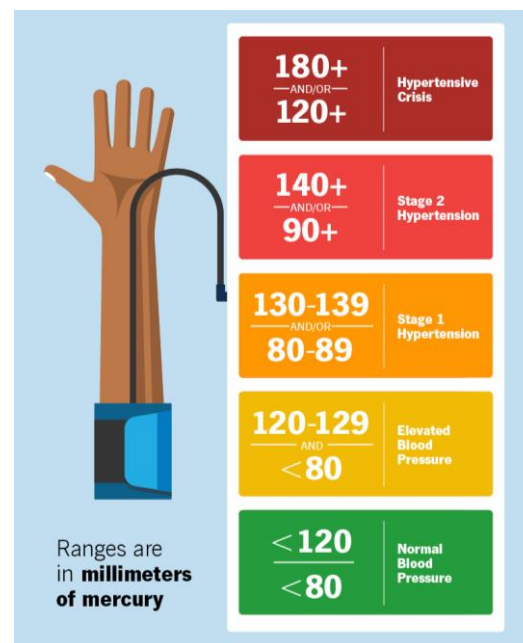
**Definition:** Hypertension is a chronic medical condition in which the force of the blood against the artery walls is elevated.

In particular, it is characterised by a systolic blood pressure (BP) of 140mmHg or higher, and a diastolic blood pressure of 90 mmHg or higher.

## Classification:

- Pre-hypertension
- Stage 1 Hypertension
- Stage 2 Hypertension

Notably, systolic BP is often considered more significant than diastolic BP in determining cardiovascular risk.



# HOME MONITORING SYSTEM FOR HYPERTENSION – KEY BENEFITS

**Comprehensive Monitoring:** allows at-home tracking and in-hospital follow-up of various biological parameters , improving the management of hypertensive patients.



**Prevention and Risk Reduction:** effective monitoring can prevent potentially lethal events, such as strokes, and reduce complications associated with hypertension.



**Patient Empowerment:** enhances patient involvement in their care, facilitating follow-ups and improving quality of life.



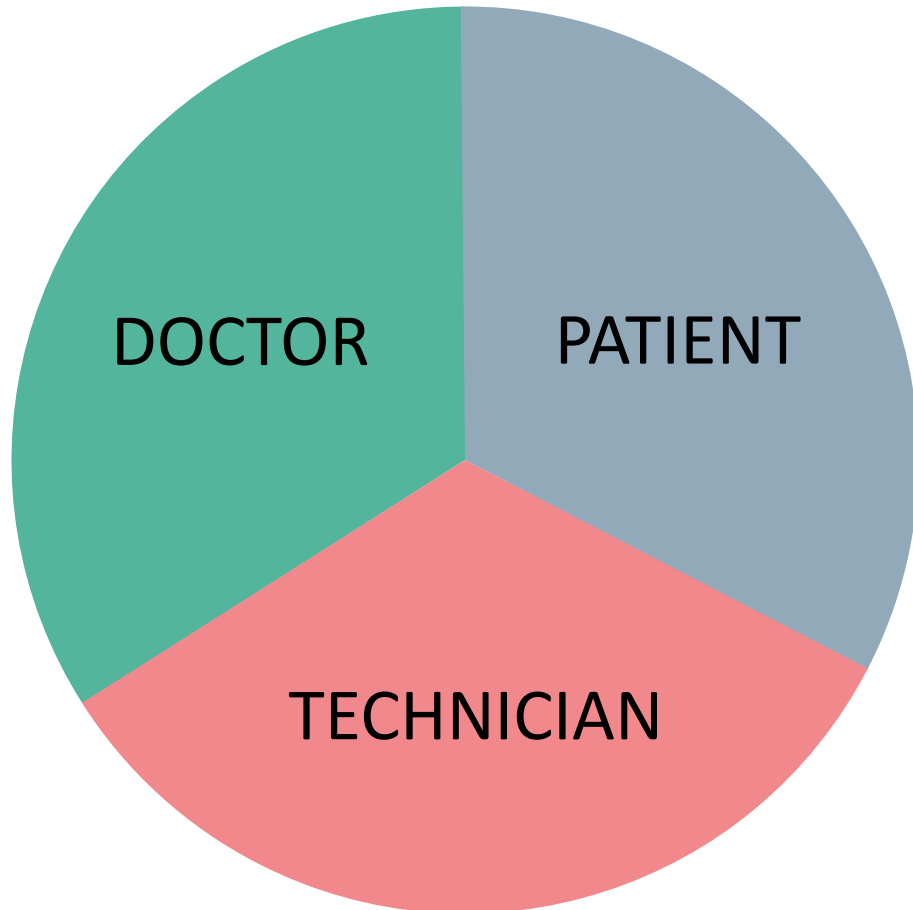
**Data Integration:** integrates with electronic health records (EHRs), allowing healthcare providers to access up-to-date patient information for better decision-making.



**Early Detection:** facilitates early detection of abnormal blood pressure patterns, enabling timely medical intervention.



# OUR SYSTEM



## WHO IS USING THE PLATFORM?


Patient

Doctor


Technician

# LOGIN


P  
A  
T  
I  
E  
N  
T



## WELCOME!



**Username**



**Password**

☐

[Forgot password?](#)



Patients will receive their login credentials from the doctor during their first medical visit.



## HOME PAGE



Daily measurement



Educational program



Request an appointment



See your treatment



View general info












Any problem?


# DAILY MEASUREMENT

P  
A  
T  
I  
E  
N  
T

## YOUR MEASUREMENTS

	Day *	<input type="text" value="30/05/2024"/>
	Blood pressure * (systolic - diastolic)	<input type="text" value="120-80, 110-75"/>
	What did you eat?	<input type="text" value="Breakfast: scrambled eggs. Lunch: grilled chicken with salad. Dinner: pasta with"/>
	Did you follow the meal guidelines? *	<input checked="" type="checkbox"/>
	Did you drink alcohol? *	<input type="checkbox"/>
	Did you smoke? *	<input type="checkbox"/>
	How long did you exercise for? *	<input type="text" value="1,5"/>
	What type of activity?	<input type="text" value="Swim"/>
	Free note	<input type="text" value="Felt a slight headache in the evening"/>

Fields marked with \* are mandatory

 [Go to home page](#)



**Parameter selection:**  
most relevant for  
hypertension monitoring

**Devices used:**  
sphygmomanometer,  
smartwatch

**Data input format**

# APPOINTMENT

P  
A  
T  
I  
E  
N  
T



## APPOINTMENT

Select a doctor

Federico De Carlo

Select an appointment

21/06/2024, 9:30

Write the reason

Medication refill



Request the appointment

Go to home page



# GENERAL INFORMATION

P  
A  
T  
I  
E  
N  
T



## GENERAL INFORMATION

Username	<input type="text" value="AuroraL"/>	Email address	<input type="text"/>
Password	<input type="text" value="0000"/>	Family medical history	<input type="text"/>
Full name	<input type="text" value="Aurora Lile"/>	Medical history	<input type="text"/>
Date of birth	<input type="text" value="12/05/1967"/>	Full name emergency contact	<input type="text"/>
Place of birth	<input type="text"/>		
Address	<input type="text"/>	Hypertension	<input type="checkbox"/>
Phone number	<input type="text" value="0"/>	Correlated diagnosis	<input type="text"/>

[Go to home page](#)



## GUIDELINE DETAILS

Title

Blood Pressure Monitoring

Description

Regularly measure your blood pressure and keep a diary to track your readings.

Show Video





## TREATMENT

Select treatment	<input type="text" value="Initial Irene"/>	▼
<input type="button" value="Check treat"/>		
Start treatment	<input type="text" value="06/05/2024"/>	
End treatment	<input type="text" value="27/05/2024"/>	
Select drug	<input type="text" value="1"/>	▼
<input type="button" value="See drug"/>		
Start intake	<input type="text" value="21/05/2024"/>	
End intake	<input type="text" value="23/05/2024"/>	
Daily quantity	<input type="text" value="1"/>	

P  
A  
T  
I  
E  
N  
T

## EMERGENCY CONTACT

**Call Doctor**

**Call Technician**

**Call Caregiver**

# LIVE DEMONSTRATION



P  
A  
T  
I  
E  
N  
T

Cerca...

Tabelle

Appointment

Doctor

Drug

EmergencyContact

GuidelineDT

Measurement

Patient

Prescription

SideEffectsAnnualRep...

Technician

Treatment

WeeklyReport

Query

Query1

Maschere

Doctor\_login

formMeasurement

HX10S

WHO IS USING THE PLATFORM?

Patient


Doctor

Technician

# LOGIN



D  
O  
C  
T  
O  
R



## WELCOME!

Username

Password

☐

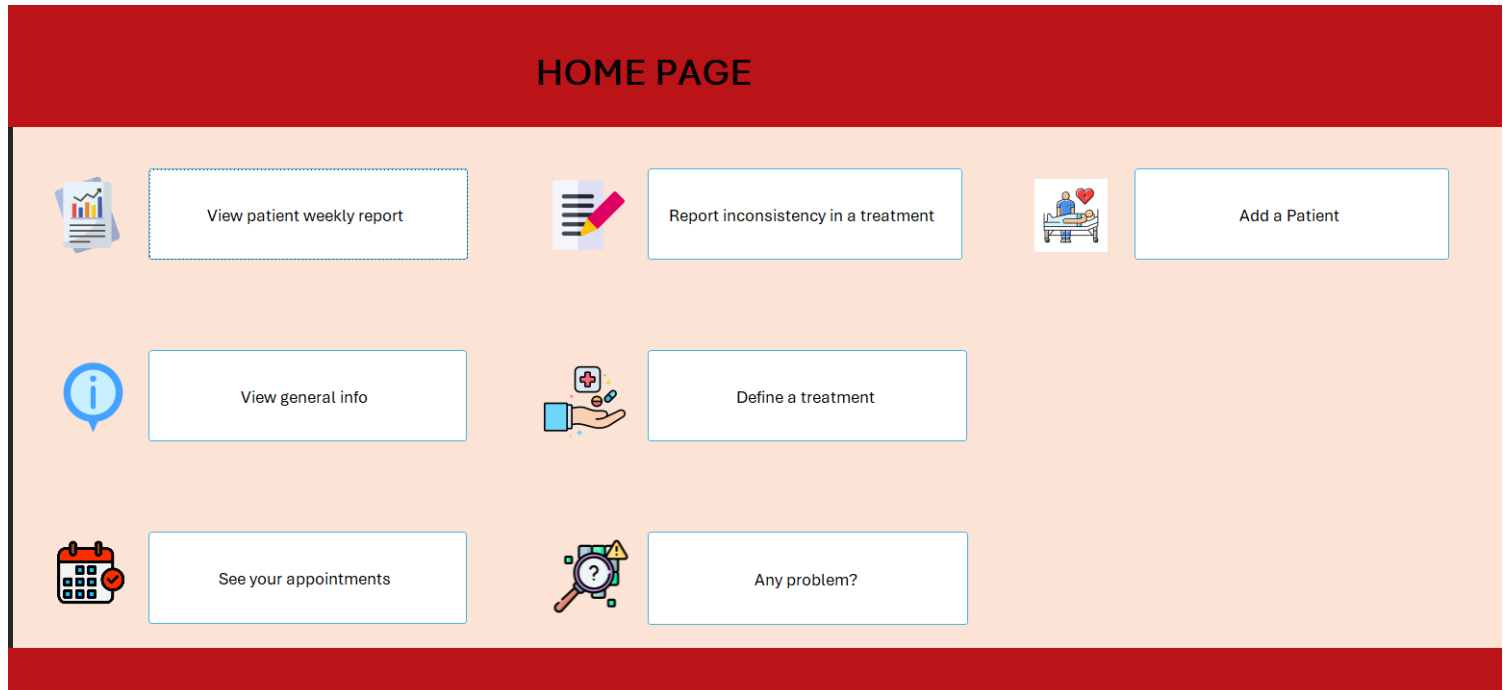
[Forgot password?](#)

Login

Cancel

Doctor will receive their login credentials from the technician





# GENERAL INFORMATION



## GENERAL INFORMATION



<b>Username</b>	<input type="text" value="FedeDC"/>
<b>Password</b>	<input type="password" value="1234"/>
<b>Full name</b>	<input type="text" value="Federico De Carlo"/>
<b>Date of birth</b>	<input type="text"/>
<b>Place of birth</b>	<input type="text"/>
<b>Address</b>	<input type="text"/>
<b>Phone number</b>	<input type="text" value="0"/>
<b>Email address</b>	<input type="text"/>
<b>Degree</b>	<input type="text"/>
<b>Hospital</b>	<input type="text"/>
<b>Unit</b>	<input type="text" value="0"/>

[Go to home page](#)

D  
O  
C  
T  
O  
R

## PATIENT SELECTION

Select patient

Aurora Lile



Select week

20/05/2024



Show report

Go to home page



# WEEKLY REPORT

D  
O  
C  
T  
O  
R



## WEEKLY REPORT

Start day of the week examiner: 13/05/2024

Write feedback

Do activity|

Save feedback

Hearth Rate mean 100

Hour mean of sleep 08:00:00

Number of meals followed\* 1

Rate of alcohol intake\* 0

Mean of time spend in activity 00:00:00

Rate of smoke\* 0

Diastolic blood pressure mean 90

Rate of smoke\* 0

Diastolic blood pressure mean 90

Systolic blood pressure mean 130

In the fields marked with \*, 1 to 5 represents the scale from 1 = bad 5=very good



Go to home page

# APPOINTMENT

D  
O  
C  
T  
O  
R



## SEE APPOINTMENTS

Select patient

The box below shows the most recent appointment



Day

Reason

Status ☒

Save appointment

Delete appointment

Go to home page

Microsoft Access

Appuntamento confermato, invio messaggio al paziente

OK

Microsoft Access



Appuntamento eliminato con successo, invio messaggio al paziente

OK

# INCONSISTENCY IN TREATMENT

D  
O  
C  
T  
O  
R



## CHECK THE PREVIOUS TREATMENT

Select a treatment

Initial Irene

Have you been consistent with your treatment?

☐

Save consistency

Select a drug

Farmaco3

View side effects

Any side effects?

headhache

Save side effect

Go to home page



# DEFINE A TREATMENT

## DEFINE A TREATMENT

### WRITE PRESCRIPTION

Code prescription	<input type="text" value="86"/>
Start intake	<input type="text" value="28/05/2024"/>
End intake	<input type="text" value="31/05/2024"/>
Drugs	<input type="text" value=""/> <span>▼</span>
Daily quantity	<input type="text" value="3"/>
Code treatment	<input type="text"/>

Save Prescription

Go to home page



D  
O  
C  
T  
O  
R

# ADD A PATIENT

D  
O  
C  
T  
O  
R



## ADD A PATIENT

userNameP	<input type="text" value="AuroraL"/>	phoneNumber	<input type="text" value="0"/>
password	<input type="text" value="0000"/>	emailAdress	<input type="text"/>
fullNameP	<input type="text" value="Aurora Lite"/>	familyMedicalHistory	<input type="text"/>
dateBirth	<input type="text" value="12/05/1967"/>	medicalHystory	<input type="text"/>
placeBirth	<input type="text"/>	fullNameEC	<input type="text"/>
address	<input type="text"/>	hypertension	<input type="checkbox"/>
		correlatedDiagnoses	<input type="text"/>
		userNameD	<input type="text" value="FedeDC"/>

[Go to home page](#)[Add](#)



D  
O  
C  
T  
O  
R


## EMERGENCY CONTACT


Call Technician


# LIVE DEMONSTRATION



D  
O  
C  
T  
O  
R

**WELCOME!**

Username

Password

☐

[Forgot password?](#)


Login

Cancel


# LOGIN




T  
E  
C  
H  
N  
I  
C  
I  
A  
N



## WELCOME!



**Username**



**Password**

☐

Login

Cancel



## HOME PAGE



Add Doctor



View general info



# ADD A DOCTOR



## ADD A DOCTOR

Username	<input type="text" value="FedeDC"/>
Password	<input type="password" value="1234"/>
Full name	<input type="text" value="Federico De Carlo"/>
Date of birth	<input type="text"/>
Place of birth	<input type="text"/>
Address	<input type="text"/>
Phone number	<input type="text" value="0"/>
Email address	<input type="text"/>
Degree	<input type="text"/>
Hospital	<input type="text"/>
Unit	<input type="text" value="0"/>



Add Doctor

T  
E  
C  
H  
N  
I  
C  
I  
A  
N

# GENERAL INFORMATION



## GENERAL INFORMATION

Username	<input type="text" value="MatteoF"/>
Password	<input type="password" value="lunapiena"/>
Full name	<input type="text" value="Matteo Farina"/>
Date of birth	<input type="text" value="15/05/2024"/>
Place of birth	<input type="text" value="pavia"/>
Address	<input type="text" value="via roma13"/>
Phone number	<input type="text" value="3476658700"/>
Email address	<input type="text" value="matteofari@gmail.com"/>

[Home page](#)

T  
E  
C  
H  
N  
I  
C  
I  
A  
N

# LIVE DEMONSTRATION



## WHO IS USING THE PLATFORM?

Patient

Doctor

Technician

T  
E  
C  
H  
N  
I  
C  
I  
A  
N

# STRENGTHS



- **Improve Patient Engagement:** Increases patient involvement in managing their own health.
- **Easy to use:** user-friendly interfaces ensuring that patients of all ages and technical skill levels can operate it with ease.
- **Convenience:** Allows frequent and convenient monitoring without the need for regular hospital visits, hence being a solution to the long waiting lists.
- **Educational Programs:** Offers educational programs to help patients understand and manage their condition better.

# LIMITATIONS



- **Accuracy and Reliability:** Home monitoring devices may be less accurate than hospital-grade equipment, leading to potential measurement errors.
- **Data Security and Privacy:** Raises concerns about the security and privacy of health data, as sensitive information could be vulnerable to breaches.
- **Cost:** The initial cost of the devices and technology can be high, potentially limiting access for some patients.

# FUTURE PERSPECTIVES



- **Integration with AI and Machine Learning:** Implement advanced algorithms to to analyze data and provide predictive analytics and related graphigs about the trend of these data, offering personalized treatment recommendations.
- **Gamification and Incentives:** Incorporate gamification elements and reward systems to motivate patients to engage consistently with their health monitoring routines.
- **Community and Support Features:** Create community forums and support groups within the app to foster peer support and shared experiences among patients with hypertension.
- **Research and Development:** Use aggregated and anonymized data to support clinical research and contribute to the development of new treatments and management strategies for hypertension.





**POLITECNICO**  
MILANO 1863

SCUOLA DI INGEGNERIA INDUSTRIALE  
E DELL'INFORMAZIONE



# THANK YOU FOR THE ATTENTION

Bertoldi Vasco – [vasco.bertoldi@mail.polimi.it](mailto:vasco.bertoldi@mail.polimi.it)  
Caridi Irene – [irene.caridi@mail.polimi.it](mailto:irene.caridi@mail.polimi.it)  
De Carlo Federico – [federico1.decarlo@mail.polimi.it](mailto:federico1.decarlo@mail.polimi.it)  
Facchini Elisa – [elisa1.facchini@mail.polimi.it](mailto:elisa1.facchini@mail.polimi.it)  
Farina Matteo – [matteo3.farina@mail.polimi.it](mailto:matteo3.farina@mail.polimi.it)  
Lile Aurora – [aurora.lile@mail.polimi.it](mailto:aurora.lile@mail.polimi.it)