



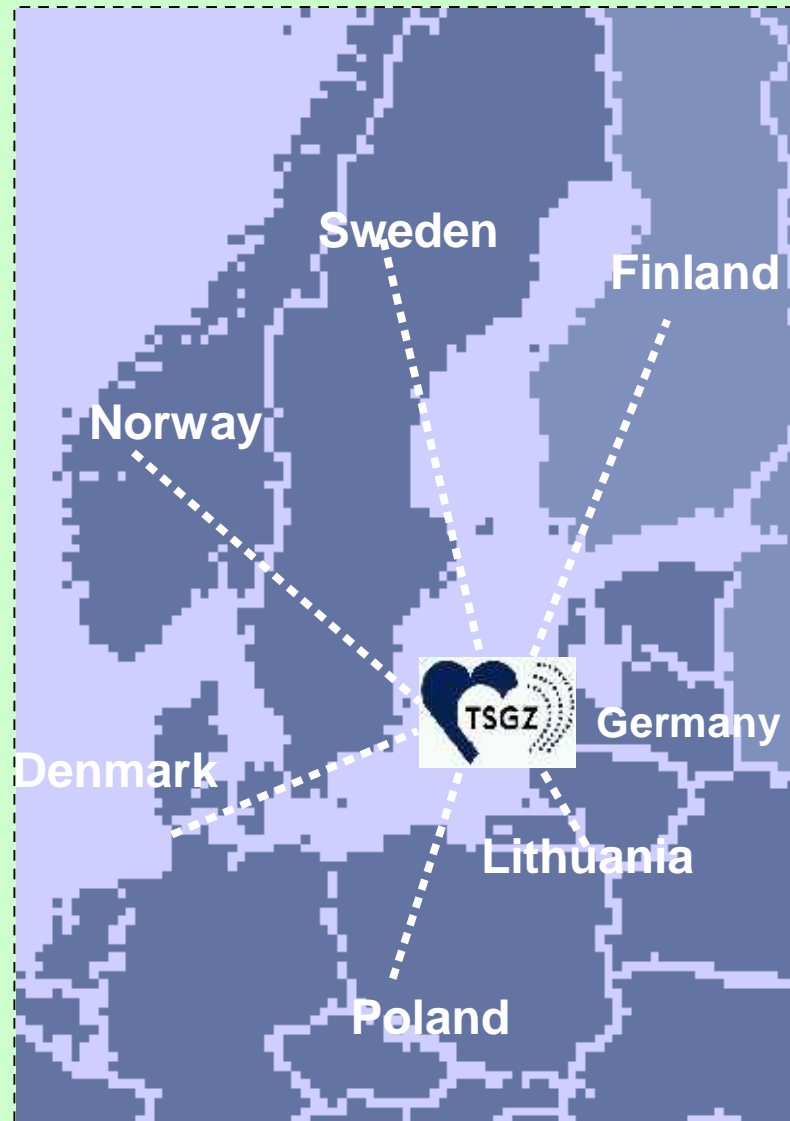
# Transnational Telemedicine pilots

- Acute decision (12 lead ECG)
- Second opinion (ECG network)
- Managing chronic disease patients (CHF)



# Transnational Telemedicine network

## INTERREG III B



- 17 partner from 7 baltic sea states
- Remote hospital and a national heart centre building a network
- Common use of the telematic platform Bad Segeberg
- Second opinion transnational



# Telemedicine acute diagnostic



- A possible acute MI can safely diagnosed by te ECG and verbal communication.

The patient can take by him self several actions :

- Recording the ECG at any location
- Transmit the ECG over any telephone
- Consult a cardiac call centre at any time



# Telemedicine

## The 12-lead ECG device



- **Only 3 external leads**  
The device is placed on three different chest positions.  
**digital storage**  
**Acoustic transmission**



## Step 1 record ECG



- Place 3 external electrodes
- Record ECG in 3 Pases



## Step 2 Transmit the ECG

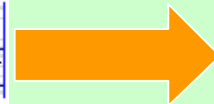
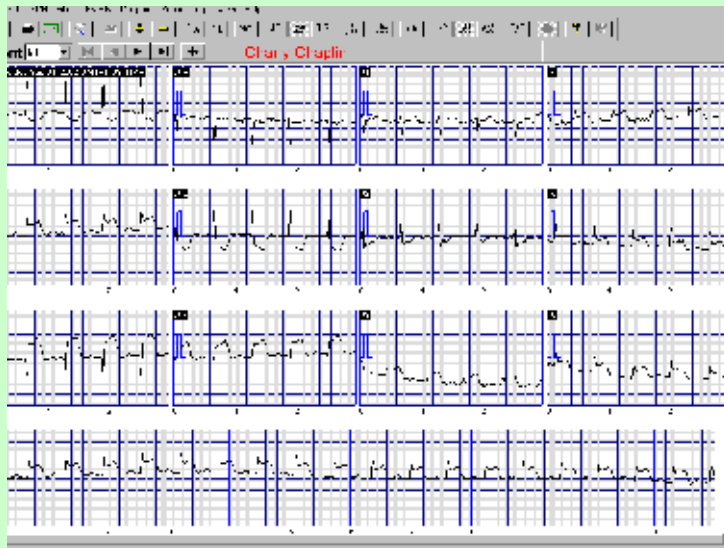


- **Call the multilingual server**
- **Enter the PIN**
- **Tranmit acusticaly**



## Step 3 Forward the ECG

- The ECG is automatically forwarded to one or more treating heart centre by e-mail attachment.

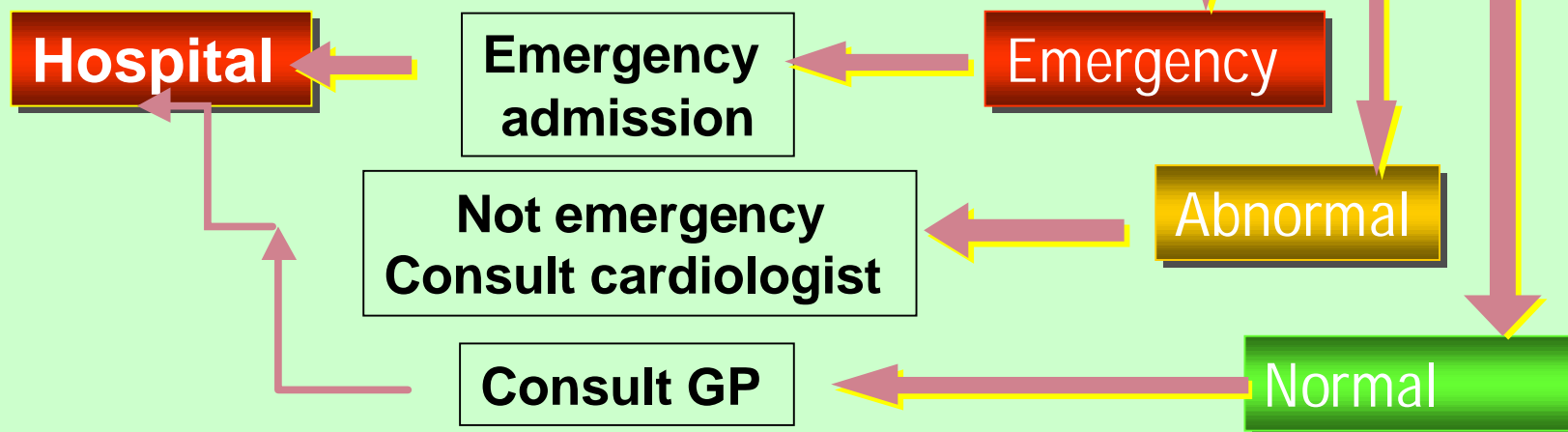




## Step 4 verbal communication

A second call to the treating heart center.

The cardiologist compare new symptoms and new ECG with history and reference ECG

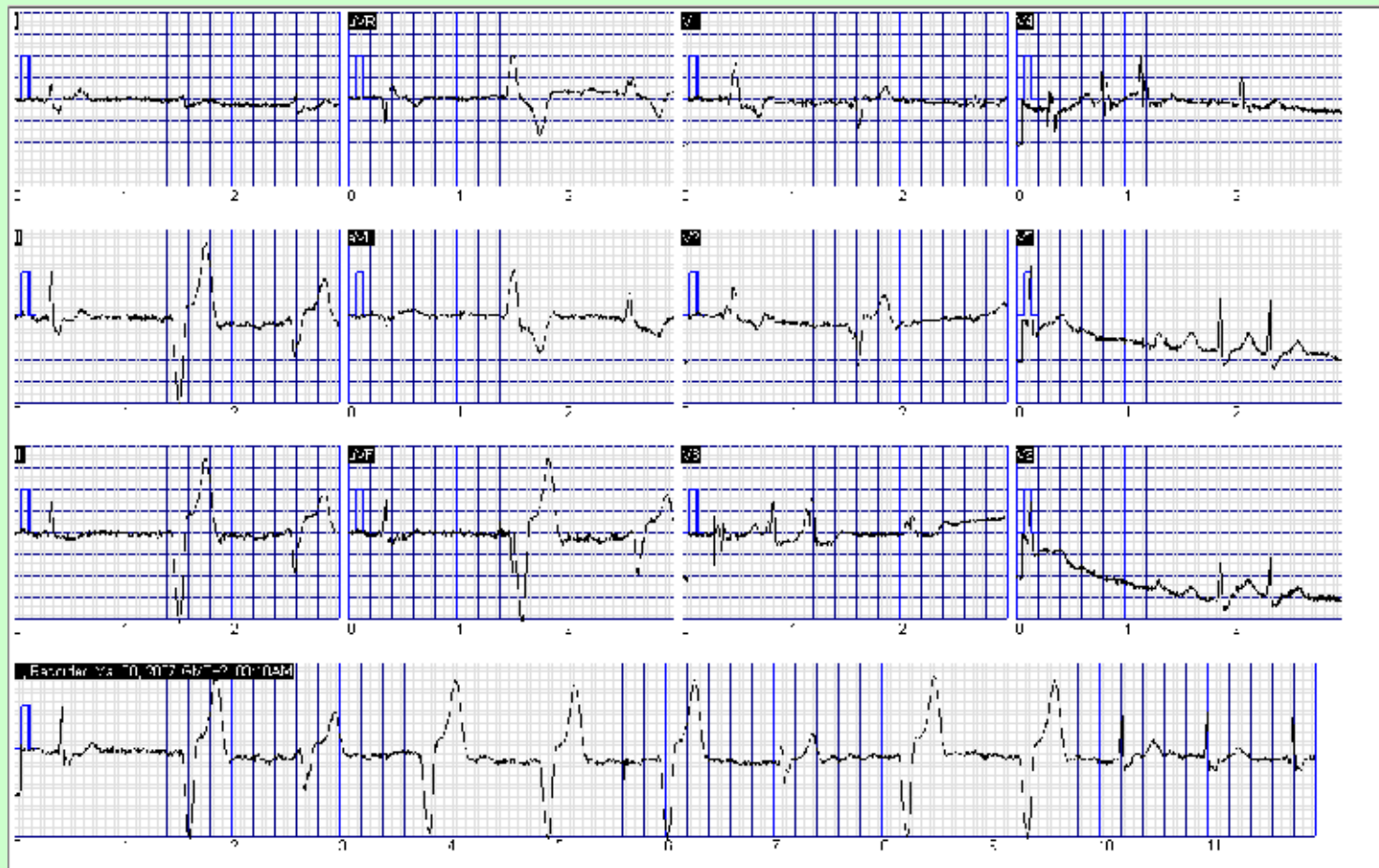




# Case Tom Sawyer

send on 30.03.2007 at 03:18

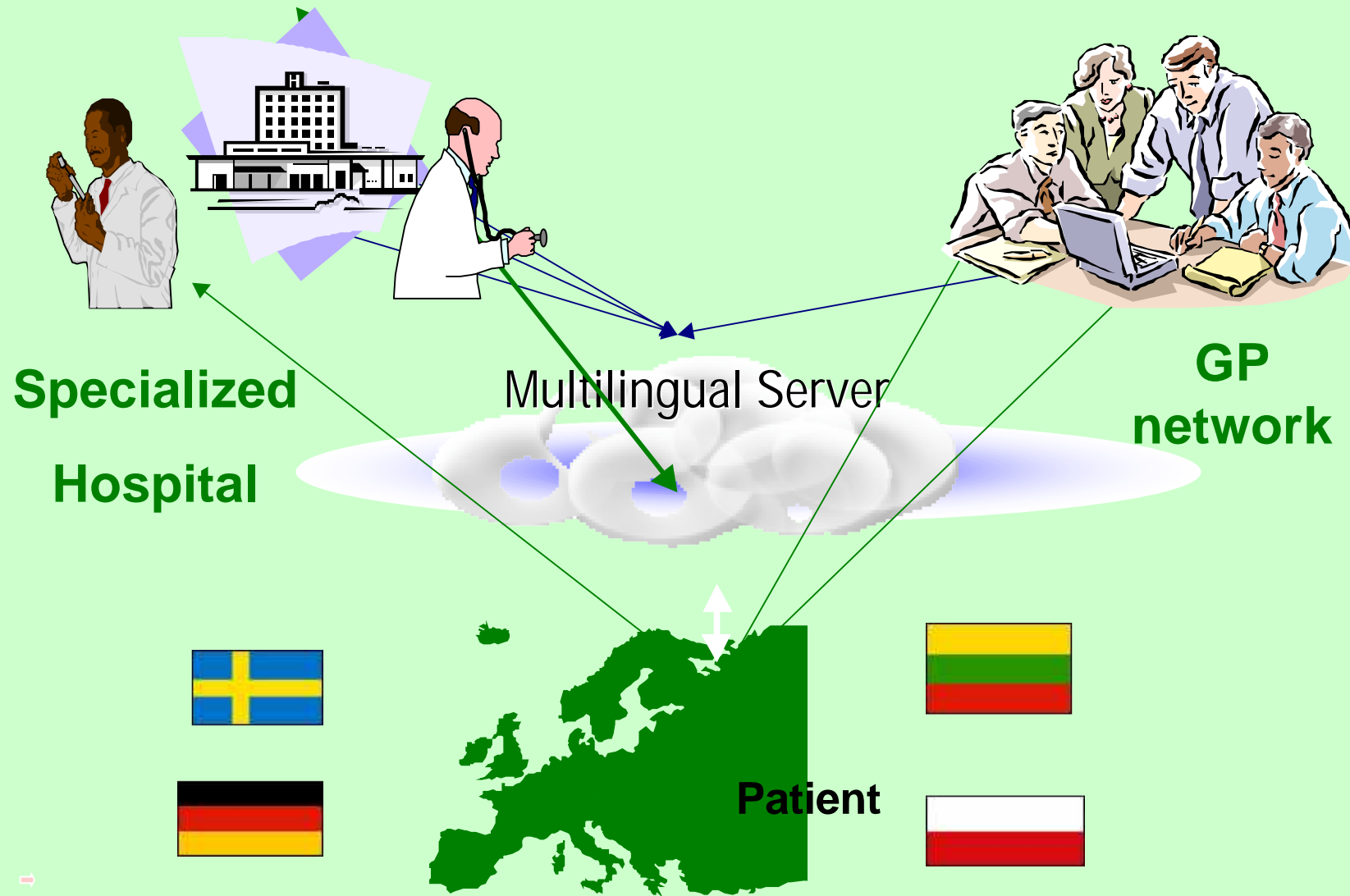
Not emergency but need cardiologist





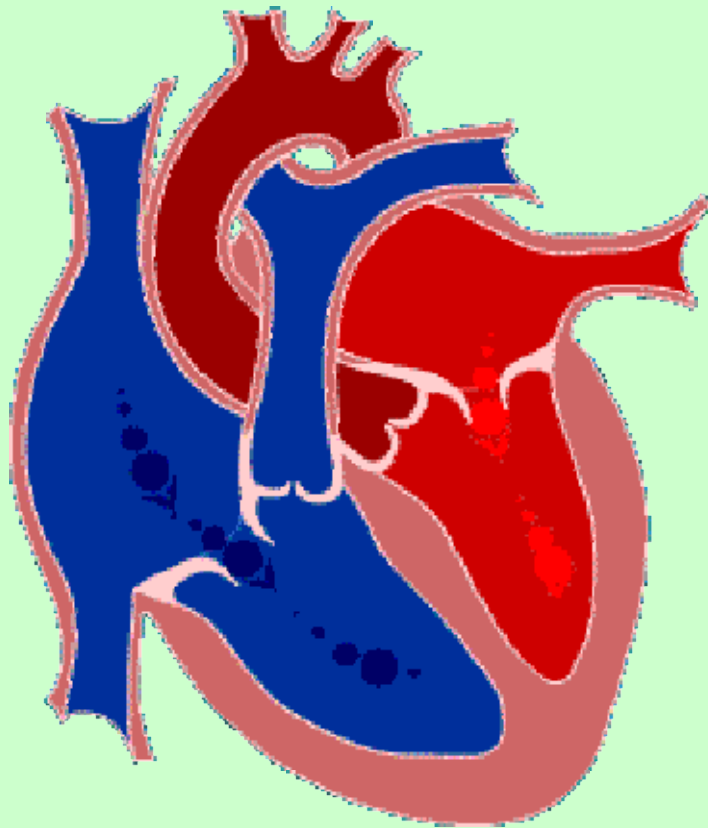
# Second opinion

**Move the data not the patient!**



# Telemonitoring

## Chronic heart failure



Left heart

High pressure site

-pump blood through the  
body

Right heart

Low pressure

-pump blood into the lung

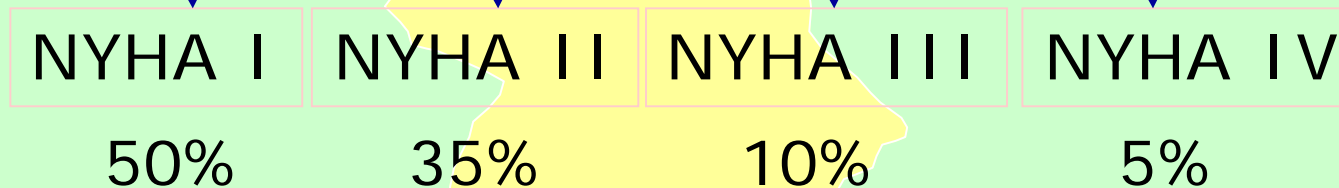


# CHF in Germany

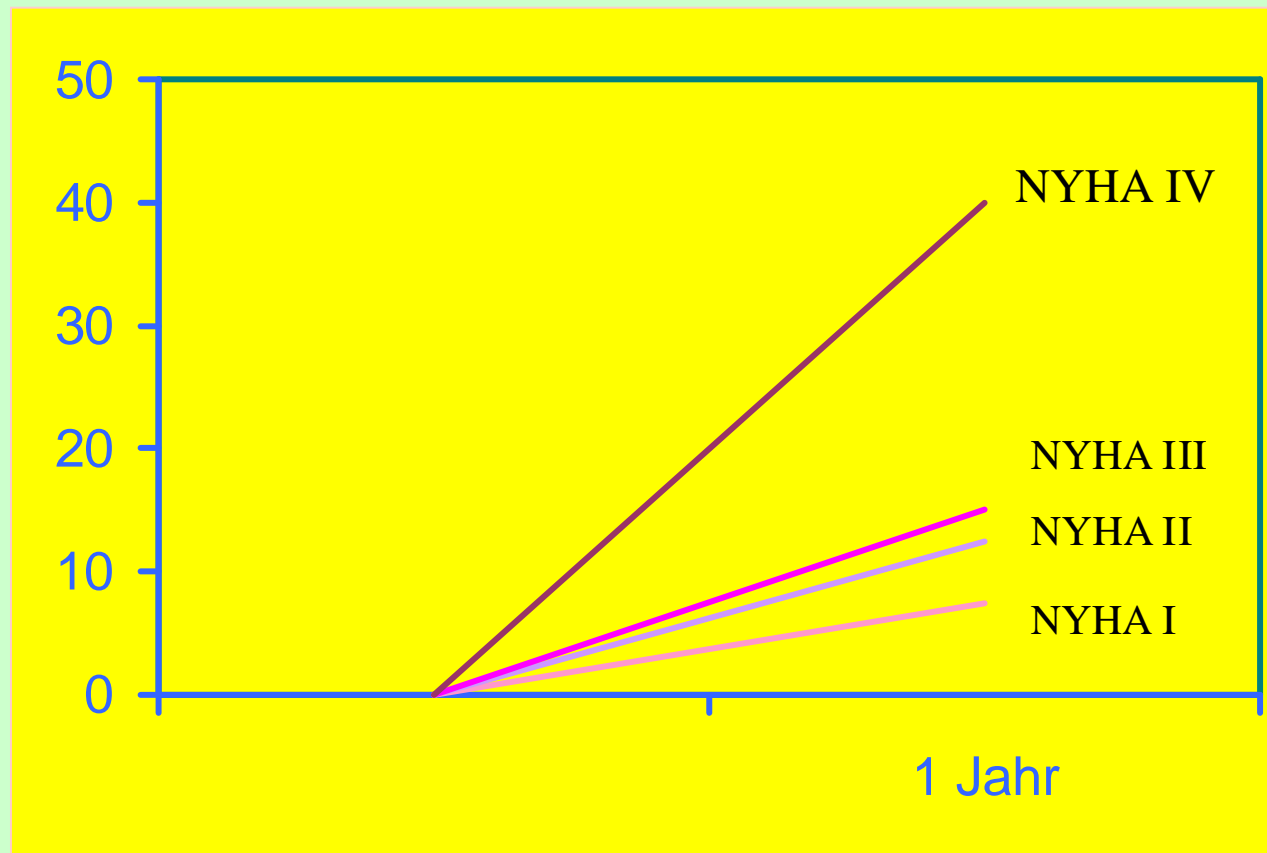
New cases per year : ~ 130 000

CHF patients : ~ 1,6 Millionen  
Abut 8 million in Europe

(2% of population)



# CHF prognosis



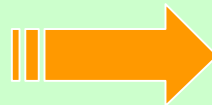
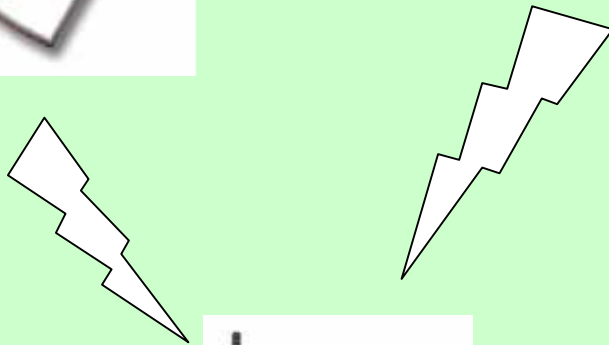
*Worther as most cancer cases*



# Chronic Heart Failure



Self  
measurement of  
body weight,  
blood pressure  
and ECG



Device to Gateway via RF

Gateway to Centre via phone line



Ø daily weight and pressure

Ø weekly ECG

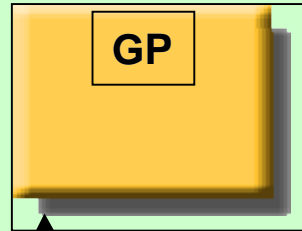
Ø Storage on a central data base  
igns

Ø The centre check transmission and  
the limits

**Patient**



**Patient guiding**



**Patient**

Tägliche Messung



- Inform patient
- send protocol to GP
- GP update the centre

**If Alarm limit exeed**



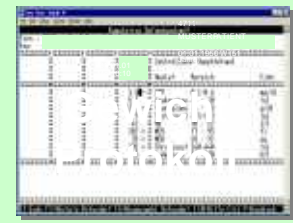
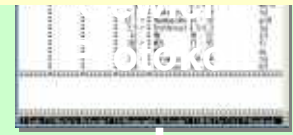
**GP**

## If critical

- GP transfere patient to specialist
- Specialist heart echo

**Cardio  
logist**

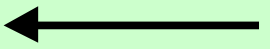
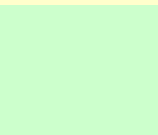
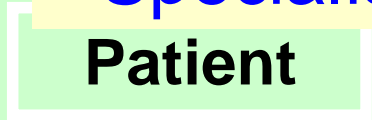
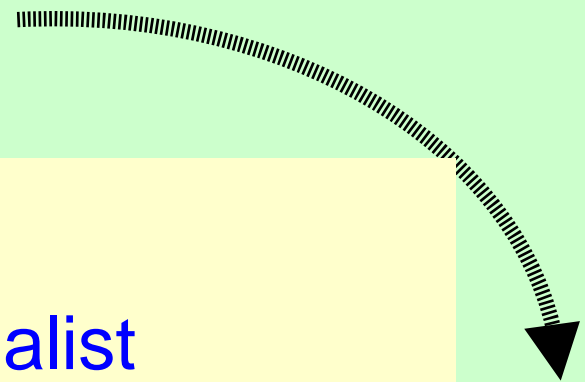
**Patient**



**Centre**

**Doppler echo  
report**

Tägliche Messung





# Patient Report



## Patient Information

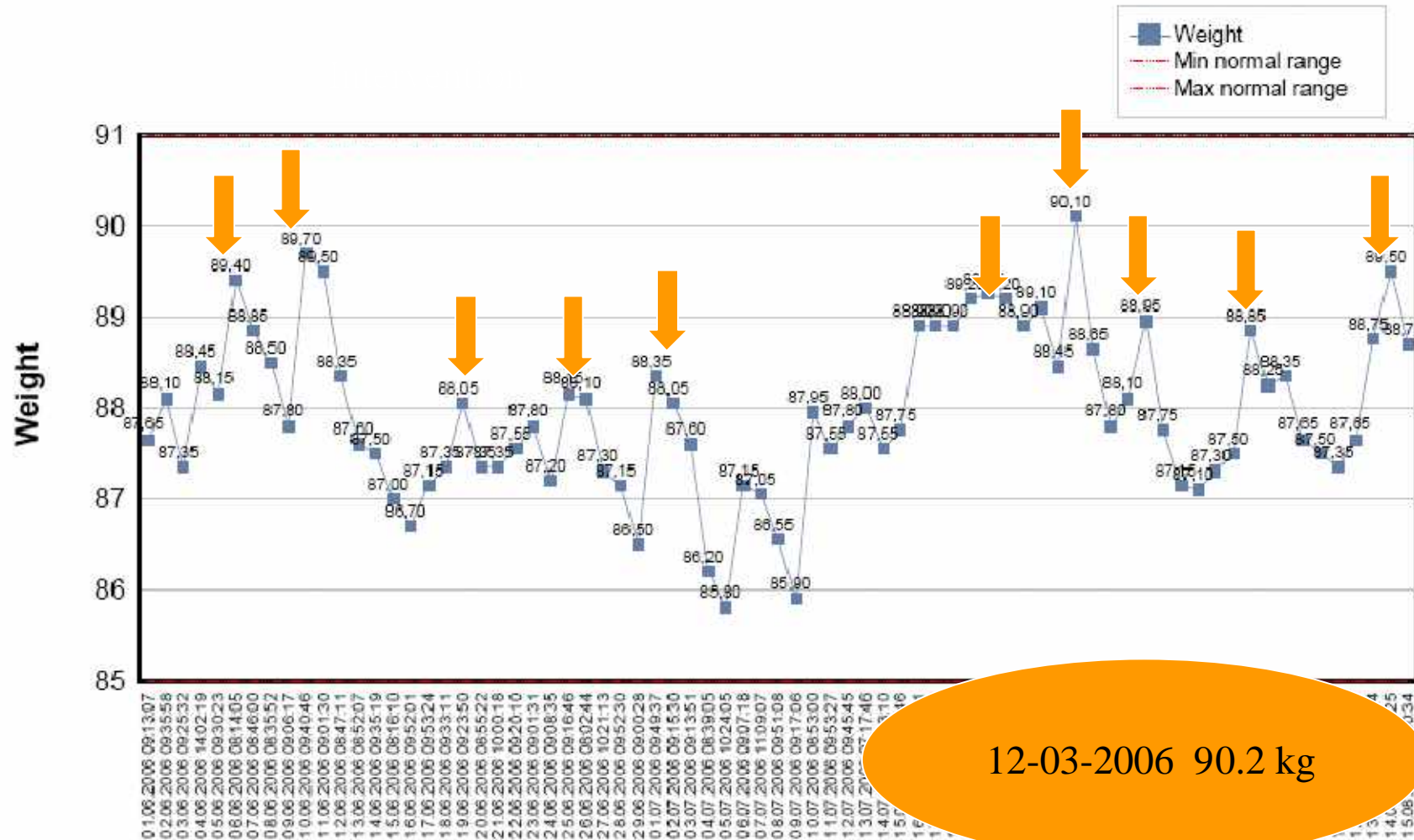
**Patient ID** 8043  
**Full Name** ER SIEGFRIED  
**Gender** Male  
**Age** 78,00  
**Height** 176  
**Weight** 93  
**Phone At Home** 49-4532-  
**Phone At Work**  
**Cellular Phone**  
**Fax Number**  
**E-Mail**  
**Remarks** 21.8. EKG zur Kenntnis ab HA 09.08. EKG zum HA,24.7. EKG an HA 23.5. Neig.zu Tachykar

**Country** Deutschland  
**Region** Schleswig-Holstein  
**City** Bargteheide  
**Street** St  
**House Number** 8  
**Apartment**  
**Zip Code**  
**P.O.Box**

# Weight(KG)

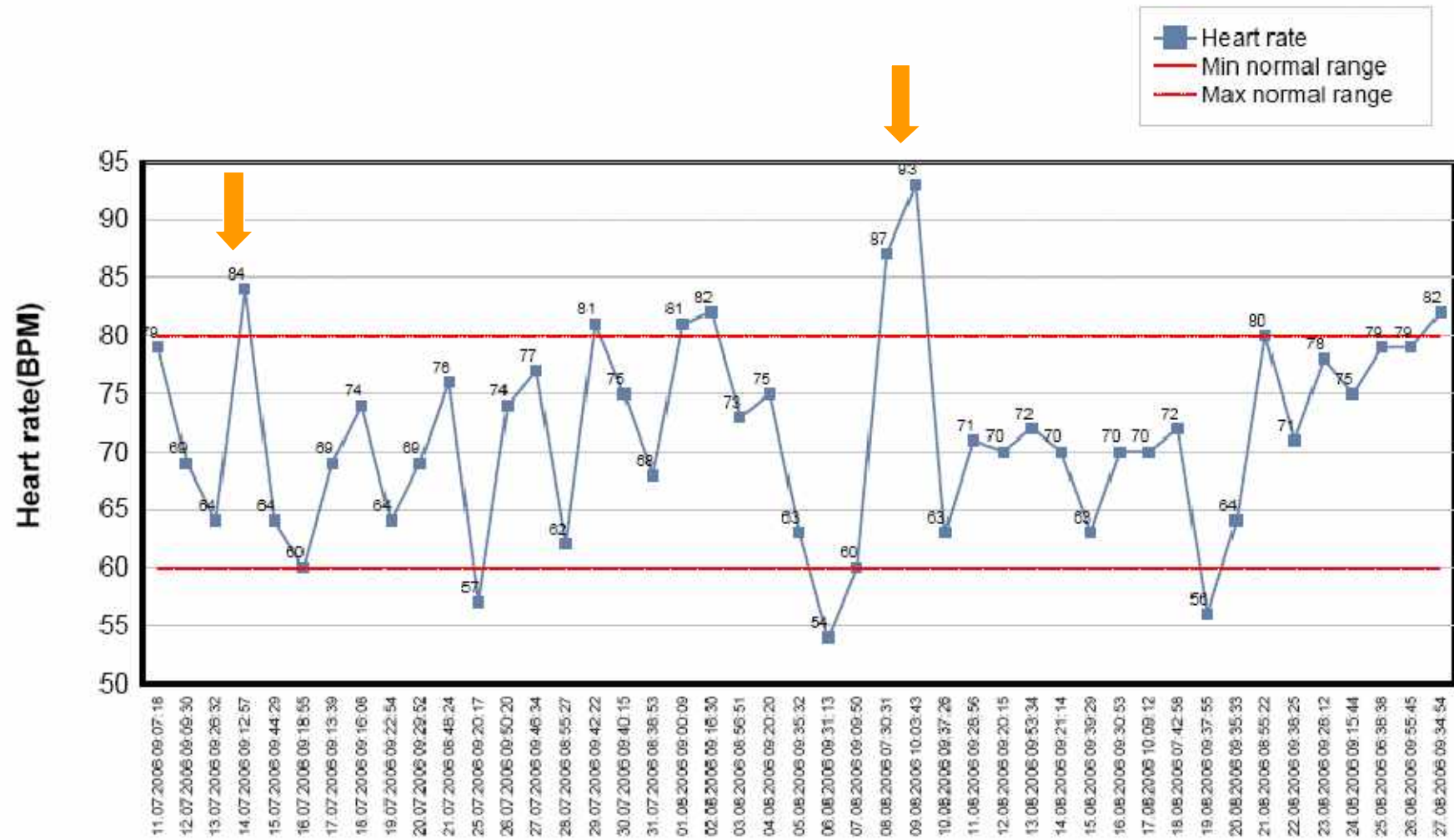


0





# Heart Rate

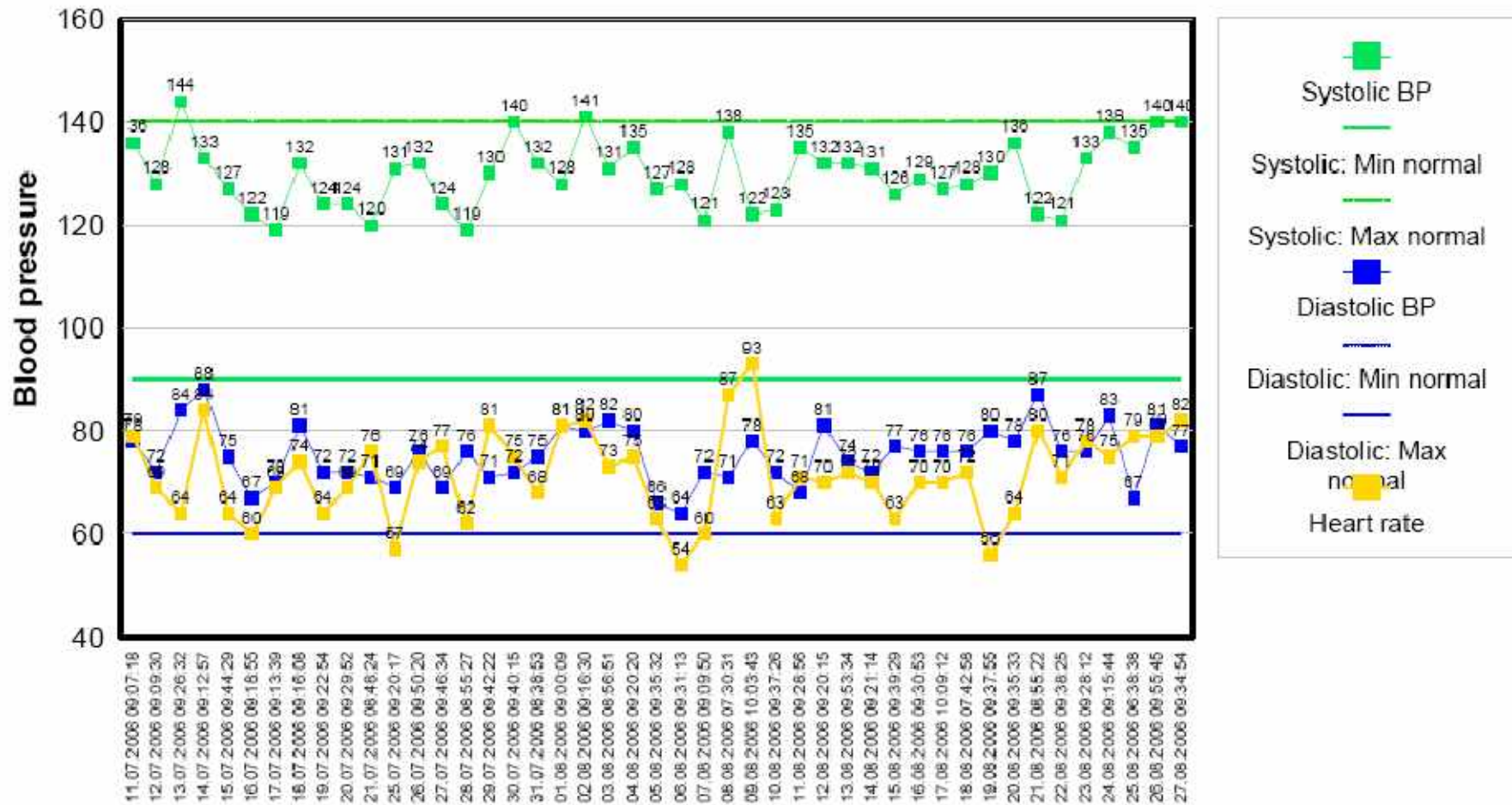


Date

Heart Rate

Regularity

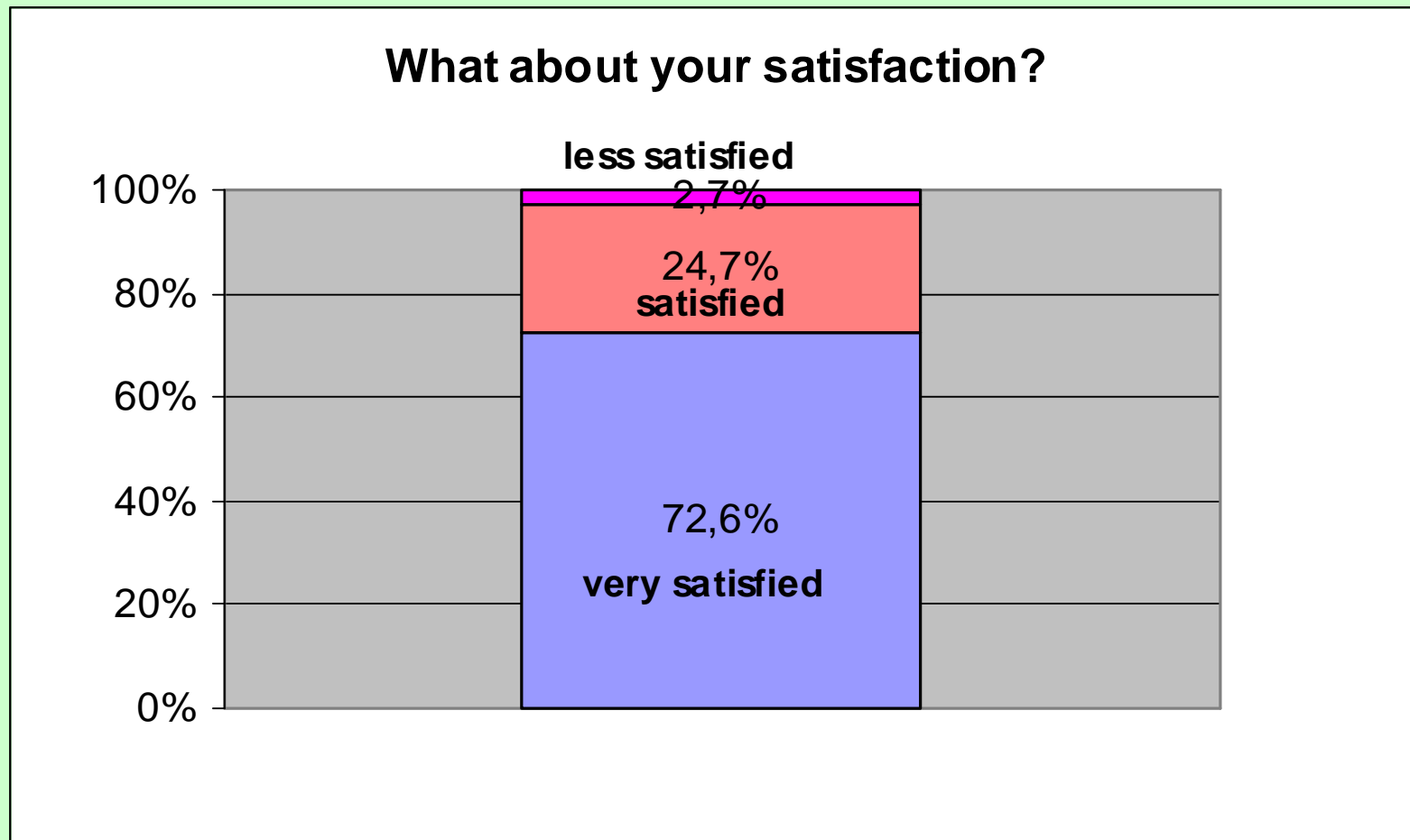
# Blood Pressure



Date	Blood Pressure	Heart Rate
1 27.08.2006 09:34:54	140.00 / 77.00	82

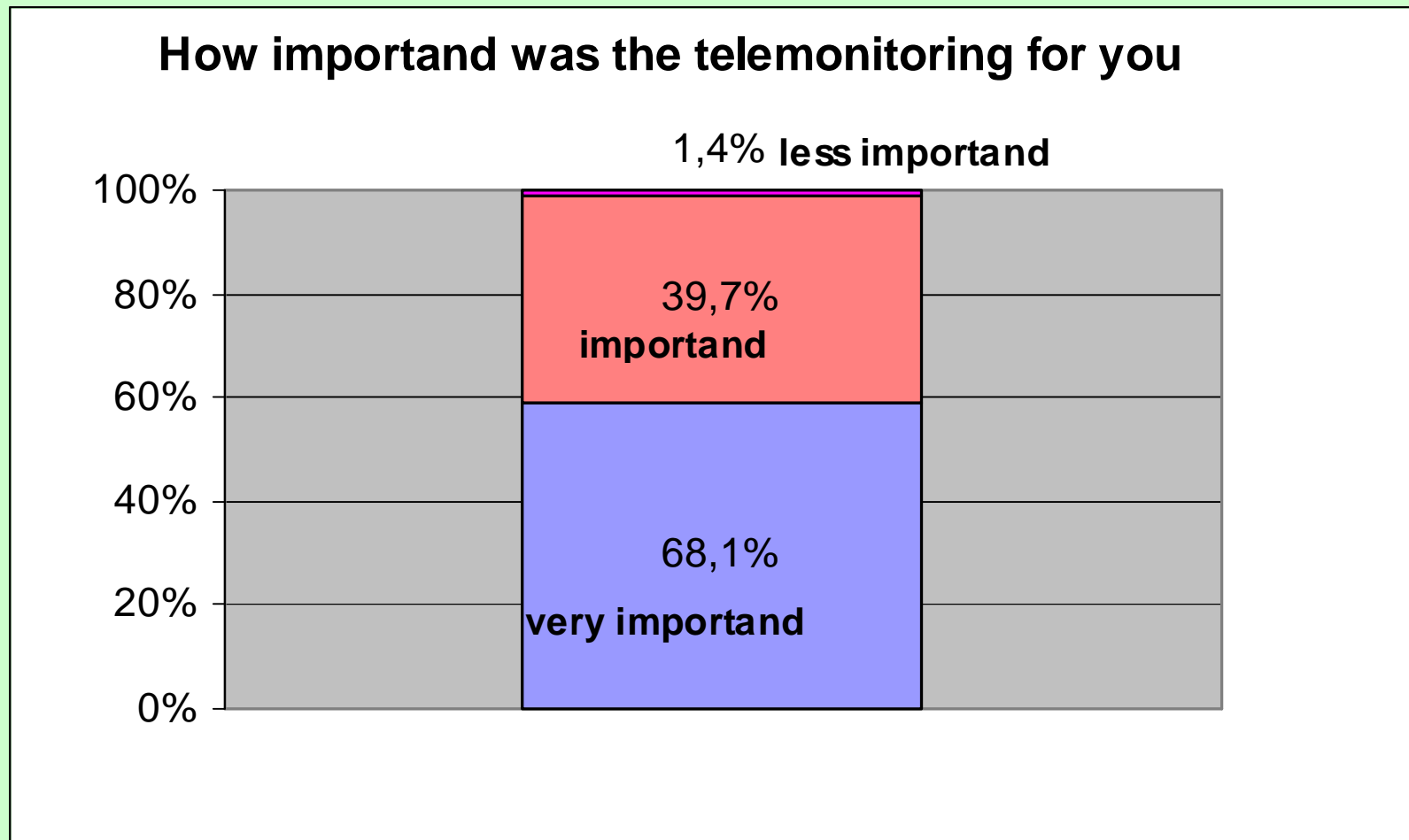


# Telemonitoring results



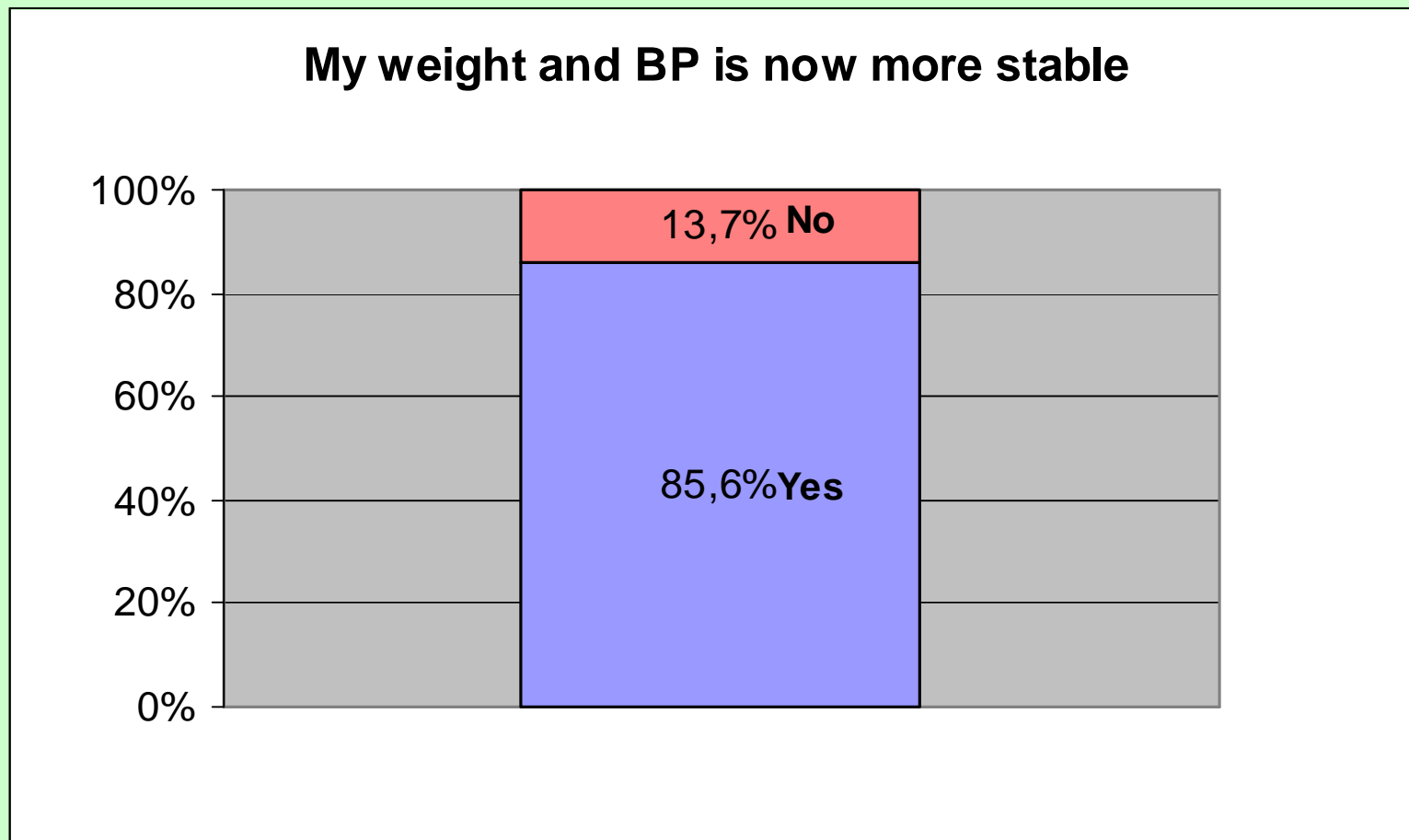


# Telemonitoring results





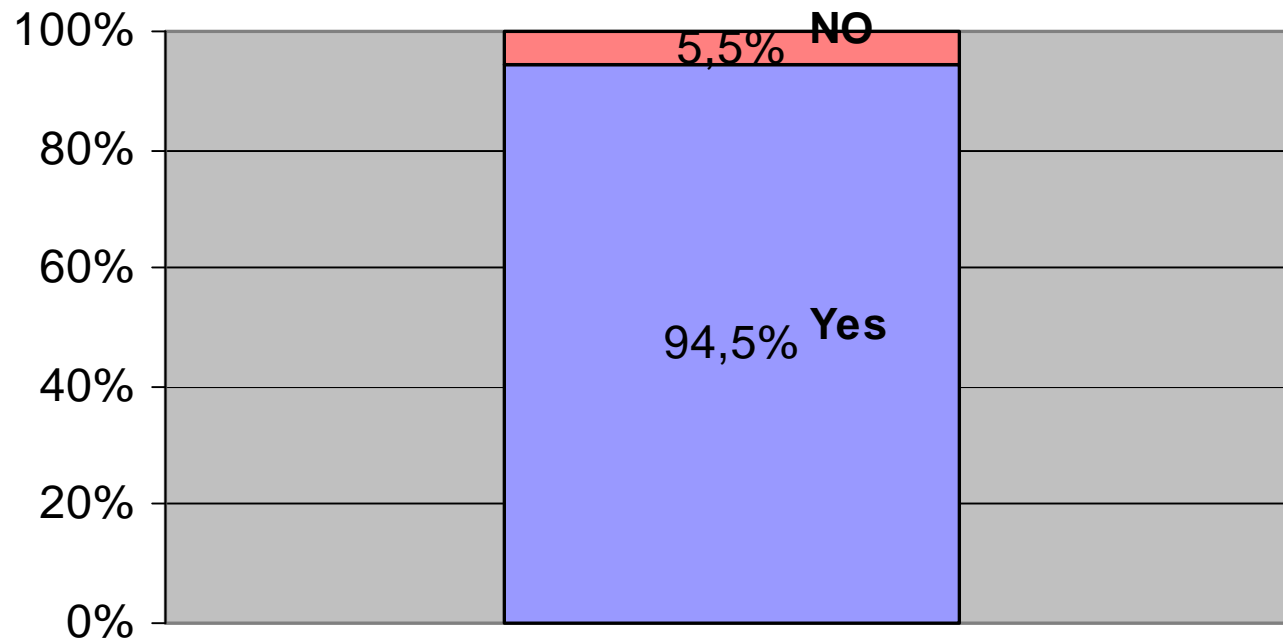
# Telemonitoring results





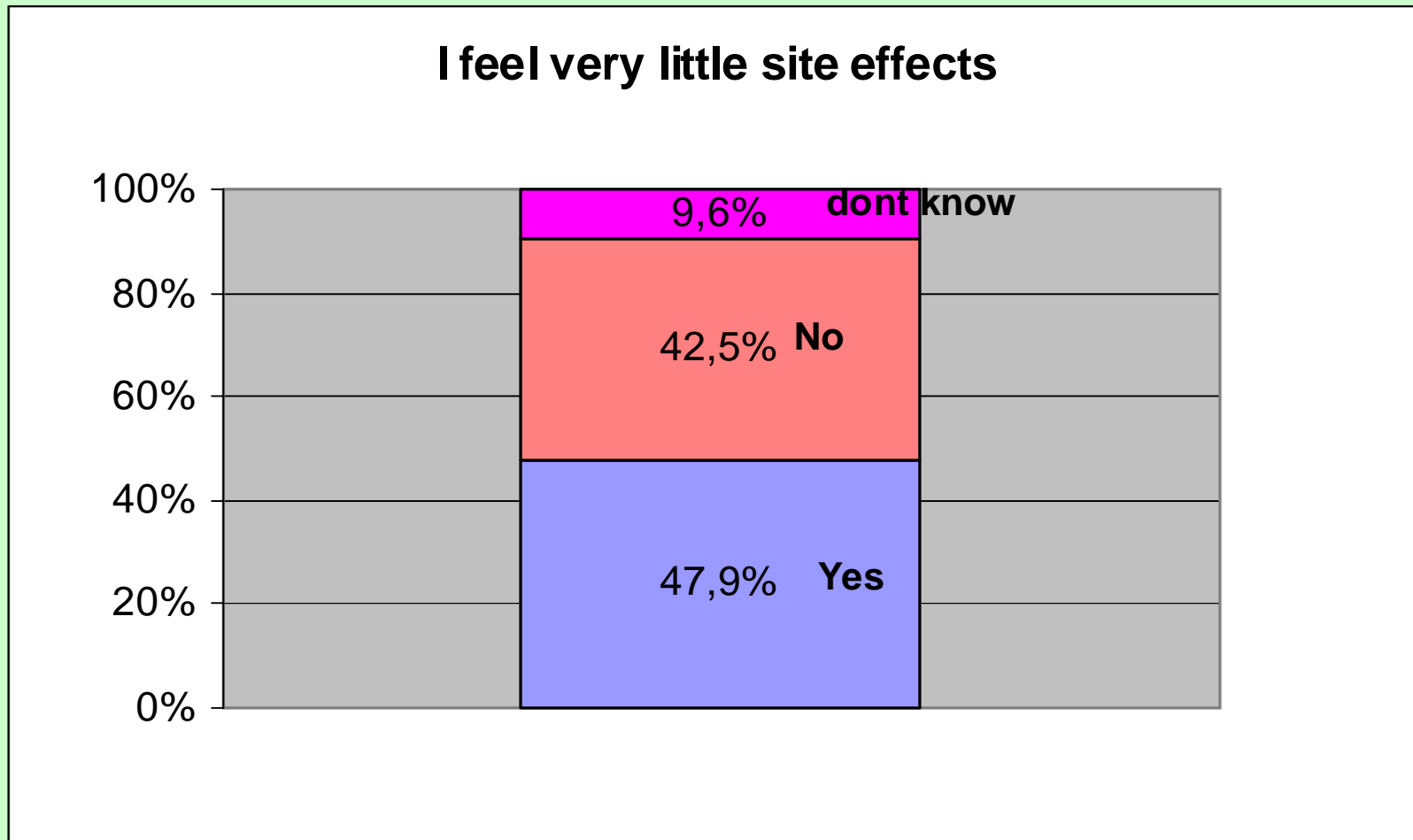
# Telemonitoring results

**I take my drugs as prescribed by my physician**





# Telemonitoring results





**Thank you  
for your attention**