



# Short History of the Centre for Hyperbaric Oxygen Therapy

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Centre for Hyperbaric Oxygen Therapy (CHBO)  
Military Hospital - Queen Astrid





# History of HBO in Belgium

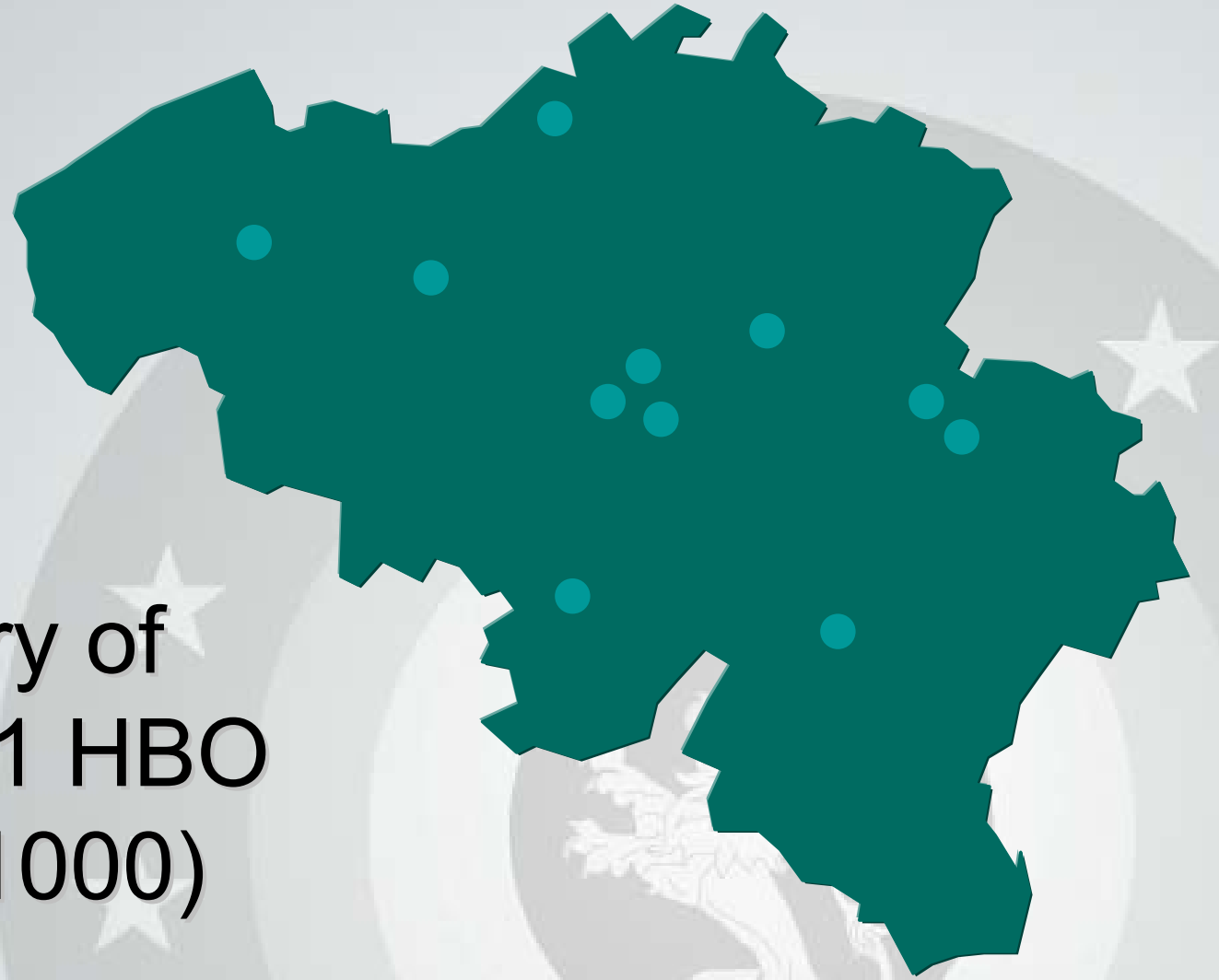
1968: Naval hyperbaric chamber in use





# History of HBO in Belgium

1968 - 1974: Ministry of Health distributes 11 HBO chambers (Dräger 1000)





# History of HBO in Belgium

1991: First multiplace  
hospital-based HBO  
chamber in Belgium





# HBO Centre Brussels, the early days

Multiplace Comex 1500 HBO chamber





# HBO Centre Brussels, the early days

“Adapted” for hospital environment





# HBO Centre Brussels, the early days

Adapted

- New command board





# HBO Centre Brussels, the early days

Adapted

- Videosurveillance





# HBO Centre Brussels, the early days

Adapted

- Fixed Air Supply





# HBO Centre Brussels, the early days

Adapted

- 3 patients simultaneously (later 4)





# HBO Centre Brussels, the early days

Adapted

- Full ICU capacity (treatment & monitoring)





# HBO Centre Brussels, the early days

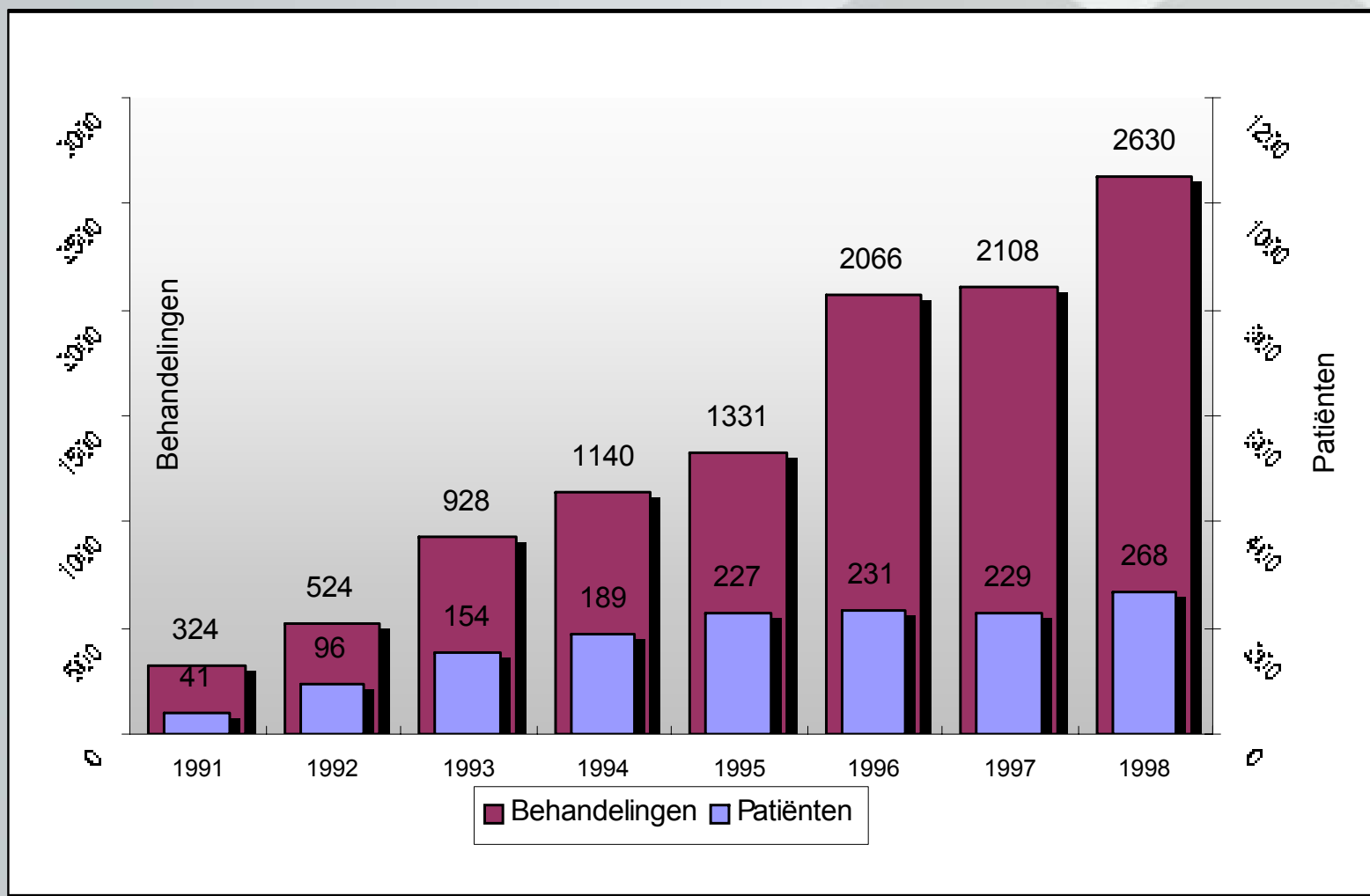
- 1 Med, 3 operators (later 4)
- Integrated in Critical Care Department (ICU, EMS, BU)
- 1st treatment on 28 februari 1991  
48 year old male patient  
with clostridial gas gangrene
- 1991: 324 treatments for 41 patients
- 1996: 2066 treatments for 231 patients



# CHBO Brussels 1996 – 2000

## necessity of a new chamber

- Larger treatment capacity





# CHBO Brussels 1996 – 2000

## necessity of a new chamber

- Safer access for patients and personnel





# CHBO Brussels 1996 – 2000

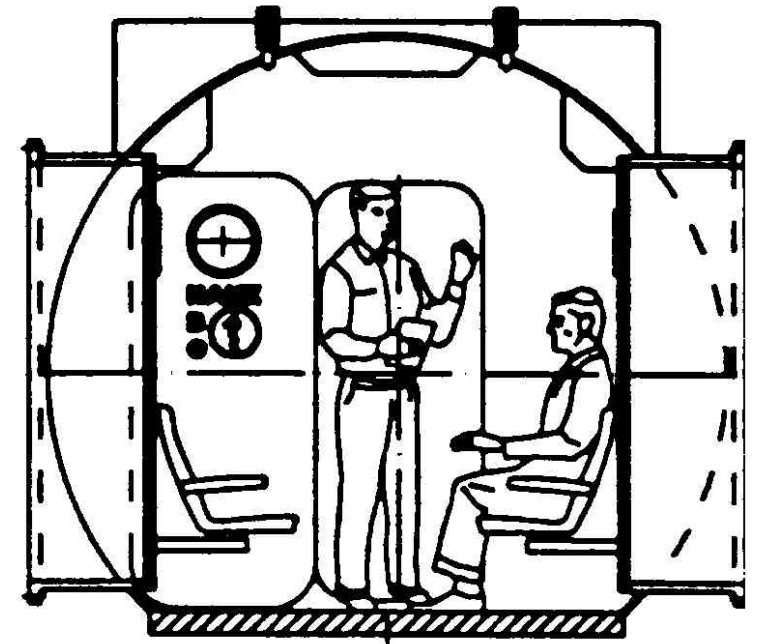
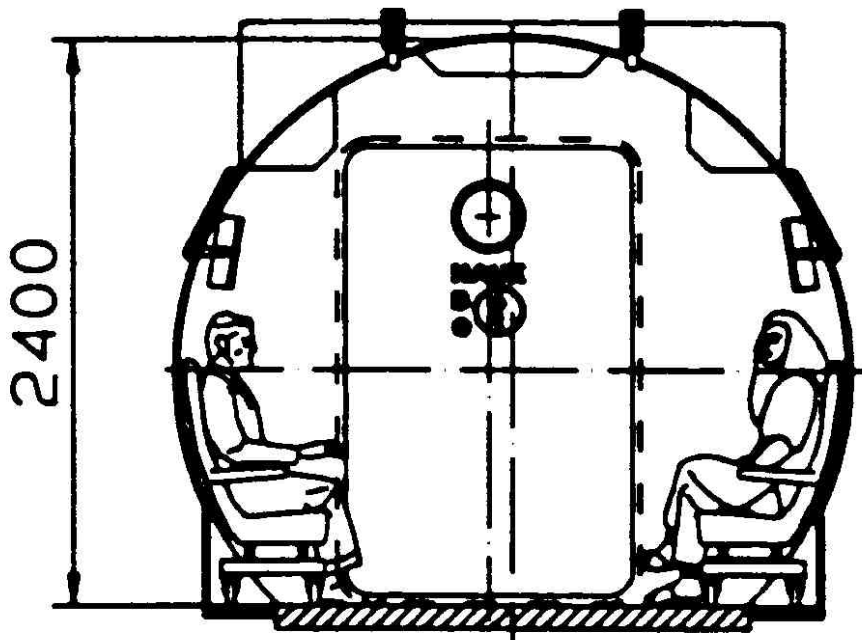
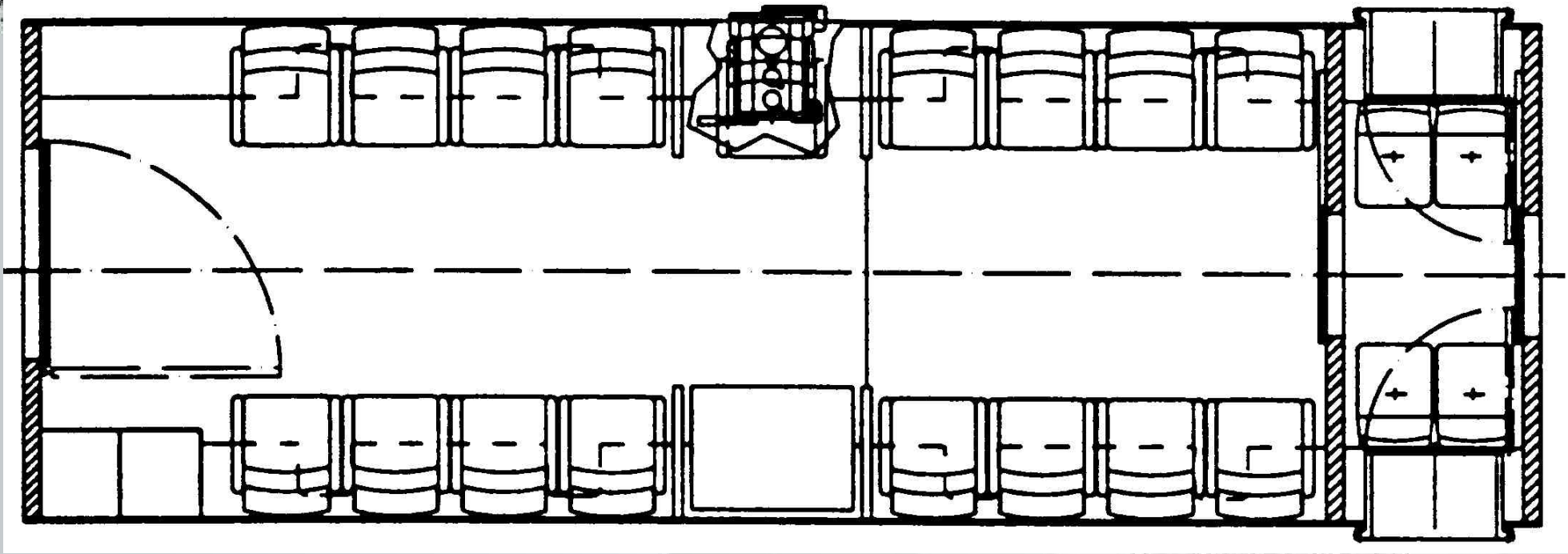
## necessity of a new chamber

- Safer treatment of ICU cases





# New hyperbaric chamber





# 2000: New hyperbaric chamber





# 2000: New hyperbaric chamber





# 2000: New hyperbaric chamber





# 2000: New hyperbaric chamber





# 2000: New hyperbaric chamber





# CHBO : the Present



- New offices and consultation rooms
- New polyvalent clinical hyperbaric chamber
  - 16 seat multiplace
  - Custom design & functionality
  - 4 (max) ICU stations
  - Computer controlled
  - Fully redundant (gases, electricity, steering)



Dimensions :  
2.8m diameter, 8m length



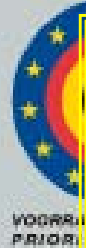


Ambulatory treatments :  
16 seats



Intensive Care treatments :  
up to 4 stations



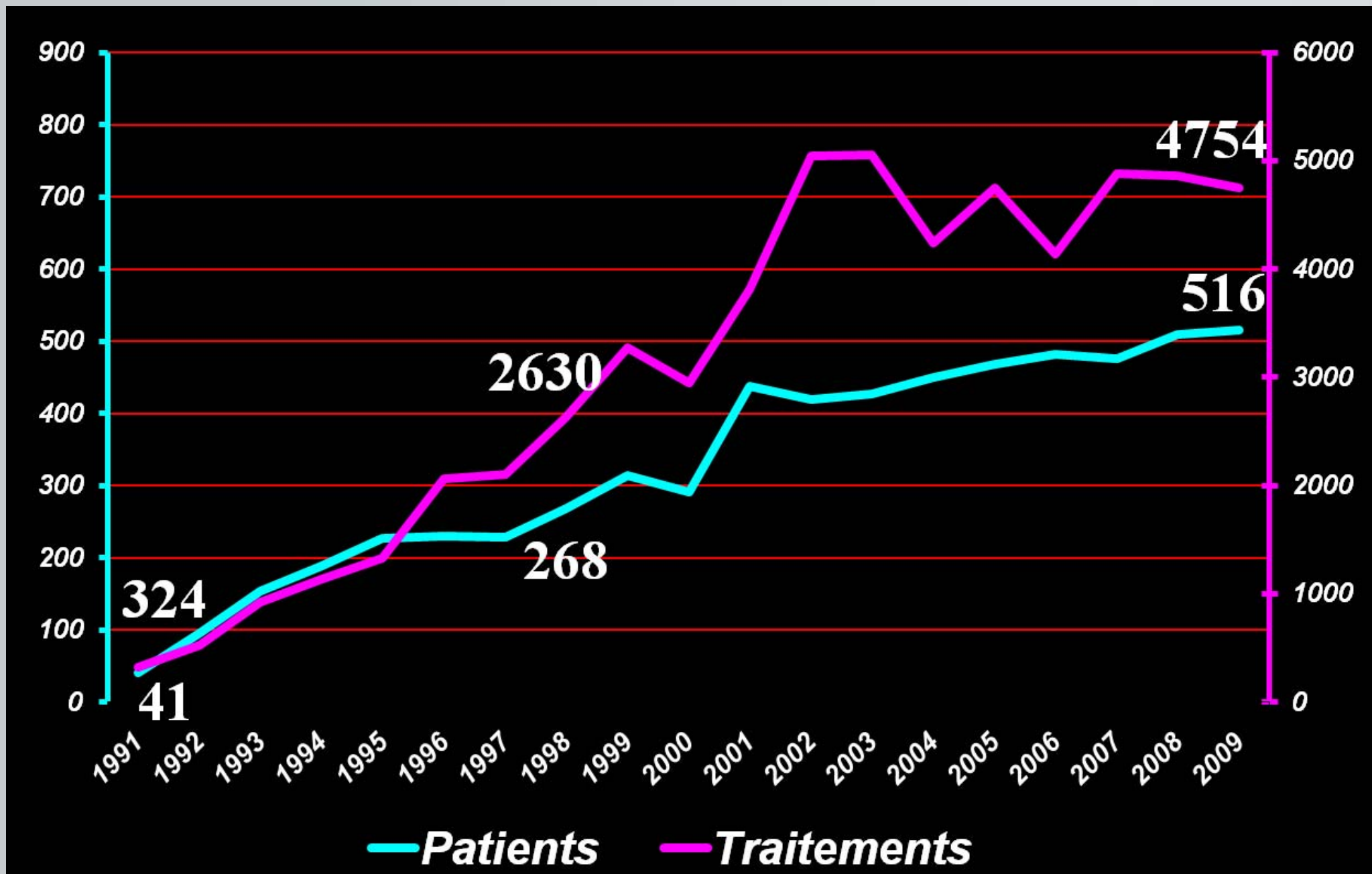


Intensive Care treatments :  
up to 4 stations





# CHBO : the Present

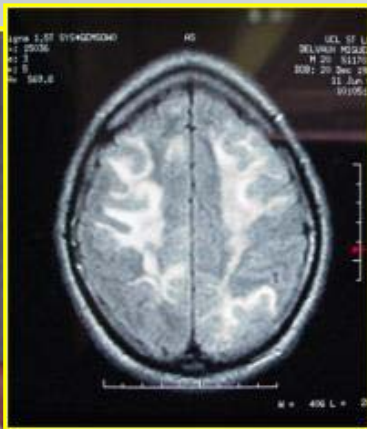




# CHBO : the Present

In 20 years time (1991 – 2010)

- 6760 patients have been treated
- 63276 treatment sessions
  - 1581 Diving emergencies
  - 2587 Carbon monoxide intoxication
  - 2828 Gas gangrene & anaerobic infections
- 350 emergency or ICU sessions yearly



- Civilian patients : agreement Min.Health 1999 for “all-in” price for ICU treatments
- International aid : transfer from Ops Theatres (Kabul, Benin, Morocco)
- Military patients : minority



# CHBO : the Present

- Specialised care (severe trauma)
- Expertise candidates divers
- International and National Hyperbaric Expertise
  - Belgian Advisory Committee for Hyperbaric Oxygen (ACHOBEL)
  - Divers Alert Network Europe
  - European Committee for Hyperbaric Medicine (ECHM)
  - Working Groups European Commission (COST-B14) – Research, Education, Safety
  - Groupe de Normalisation (CEN) Hyperbaric Chambers
- International scientific publications



# CHBO : the Present

- 6 full-time operators (CHT, ECHCO)
- 1 full-time secretary
- 4 hyperbaric medicine specialists
- 15-25 nurses and paramedical personnel for patient surveillance (attached to the centre – normal place of work = hospital wards)
- Regularly trainees (nurses, physiotherapists)



# CHBO : the Present

- Personal investment  
(work, continuous education Med-Tech)
- Strict scientific approach
- Disponibility 24/24, 7/7
- Quality Assurance





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# Hyperbaric Centre activity Carbon Monoxide Intoxication

**Thierry MOONS**, ECHCO, NCO  
Hyperbaric Operator  
Queen Astrid Military Hospital  
Brussels





# Introduction

- Frequent intoxication in Belgium
- Approximately 10 000 cases per year
- About 10 à 15% need hospitalization
- Since 1991 : 2587 patients treated



# Criteria for HBO

- Loss of consciousness
- Objectivated neurological deficit
- Angina pectoris
- Metabolic acidosis
- Pregnancy
- Prolonged exposition
- (see algorythm [www.achobel.be](http://www.achobel.be))



# Brussels HBO protocol

2.5 ATA

1 ATA

16 min

70 min O<sub>2</sub>

10 min



# Admission

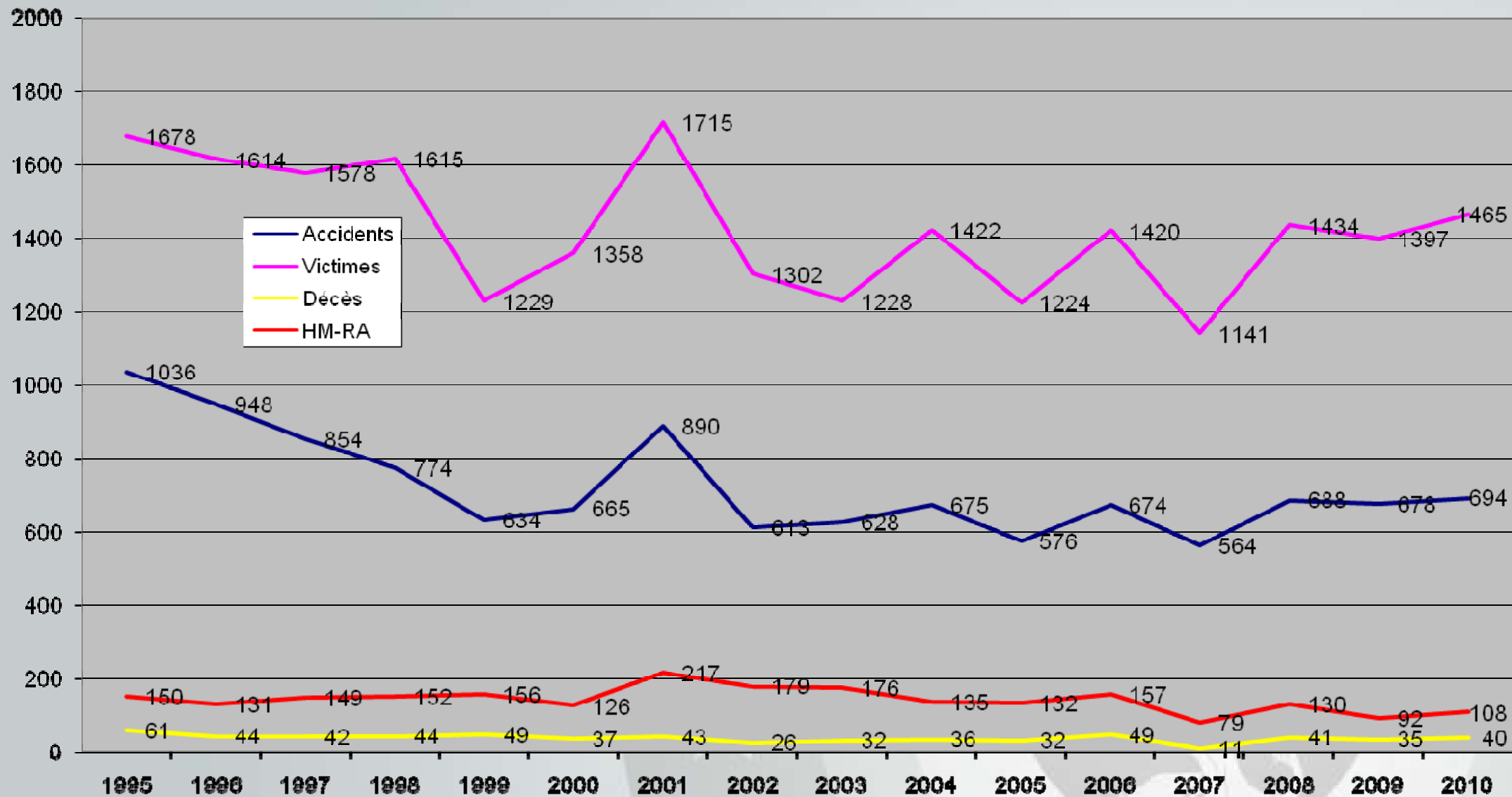
- Emergency 24h/24 – 7d/7 – 365d/year
- Contact with HBO Physician
- Decision: Transfer YES / NO
- Since 2008 : No other HBO Centre in the Brussels' region
- Yearly about 100 to 130 cases

## Total CO Intoxication





### National Report CO Intoxication





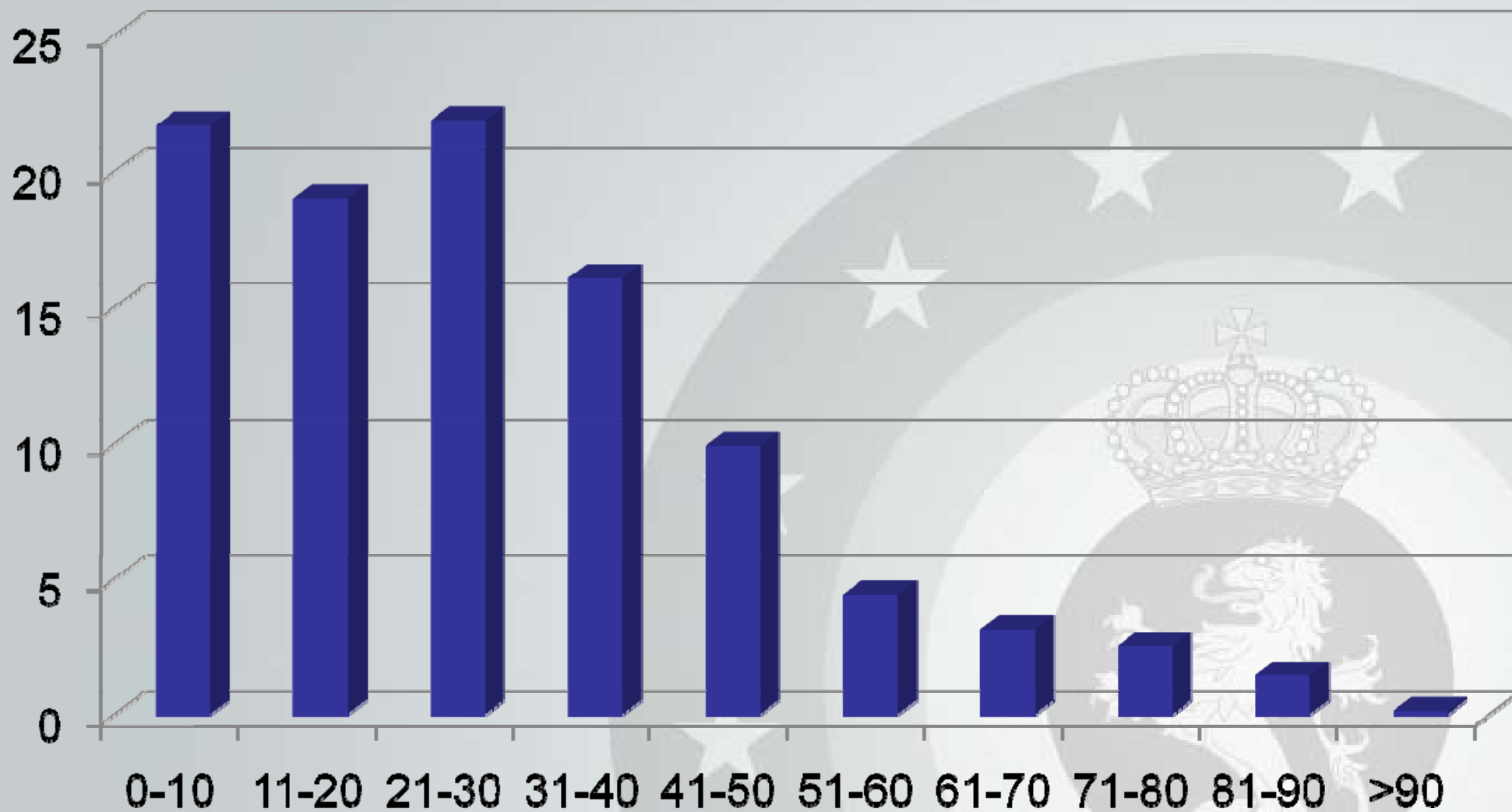
# Database

- All patient are encoded in our database
- Informations about the patient:

Age



## Age





# Database

- All patient are encoded in our database
- Informations about the patient:

Age, Sex



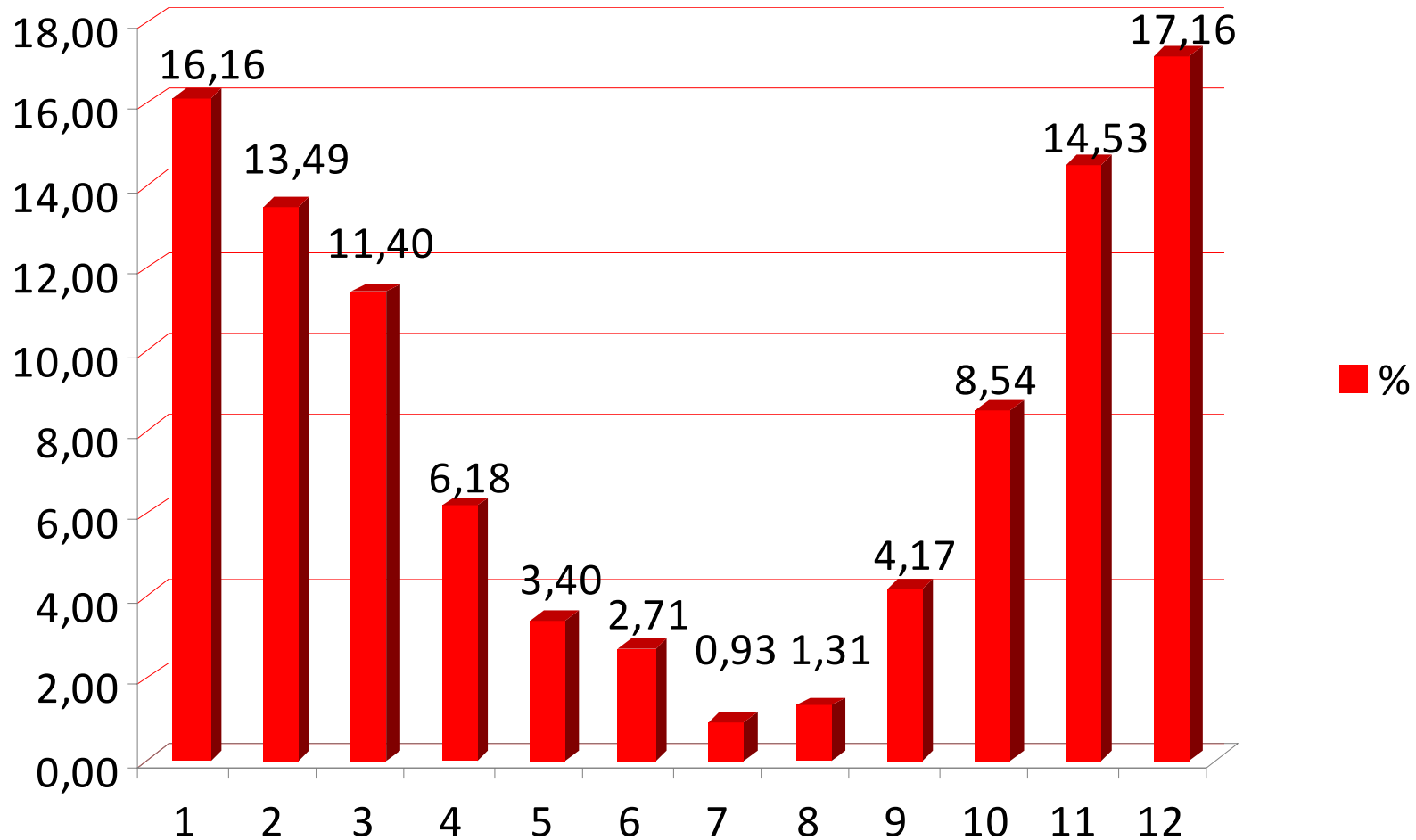
# Database

- All patient are encoded in our database
- Informations about the patient:

Age, Sex, Date,



## Monthly Distribution





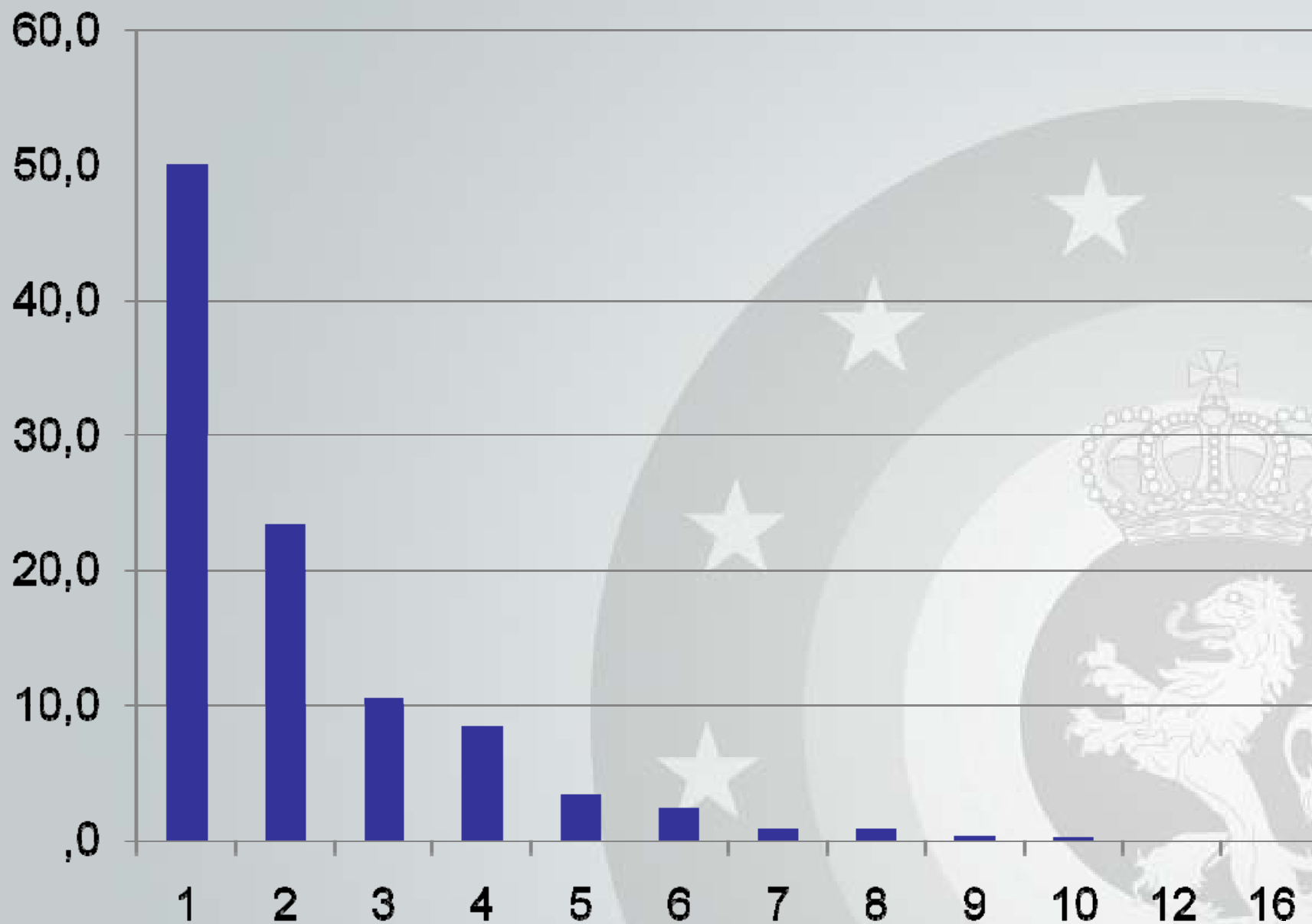
# Database

- All patient are encoded in our database
- Informations about the patient:

Age, Sex, Nb victims



## Collectiv Intoxication





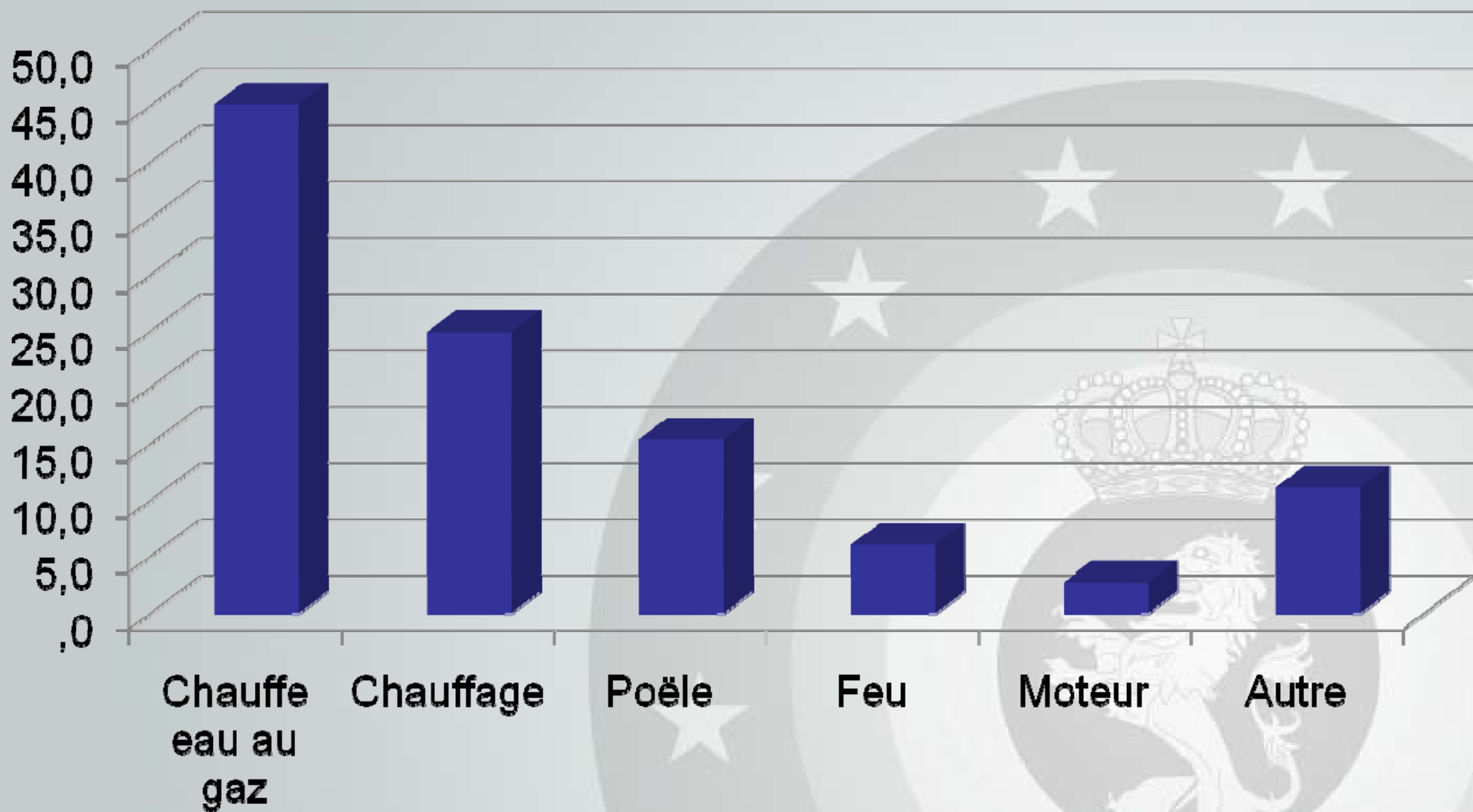
# Database

- All patient are encoded in our database
- Informations about the patient:

Age, Sex, Nb victims, Cause



## Reasons





# Database

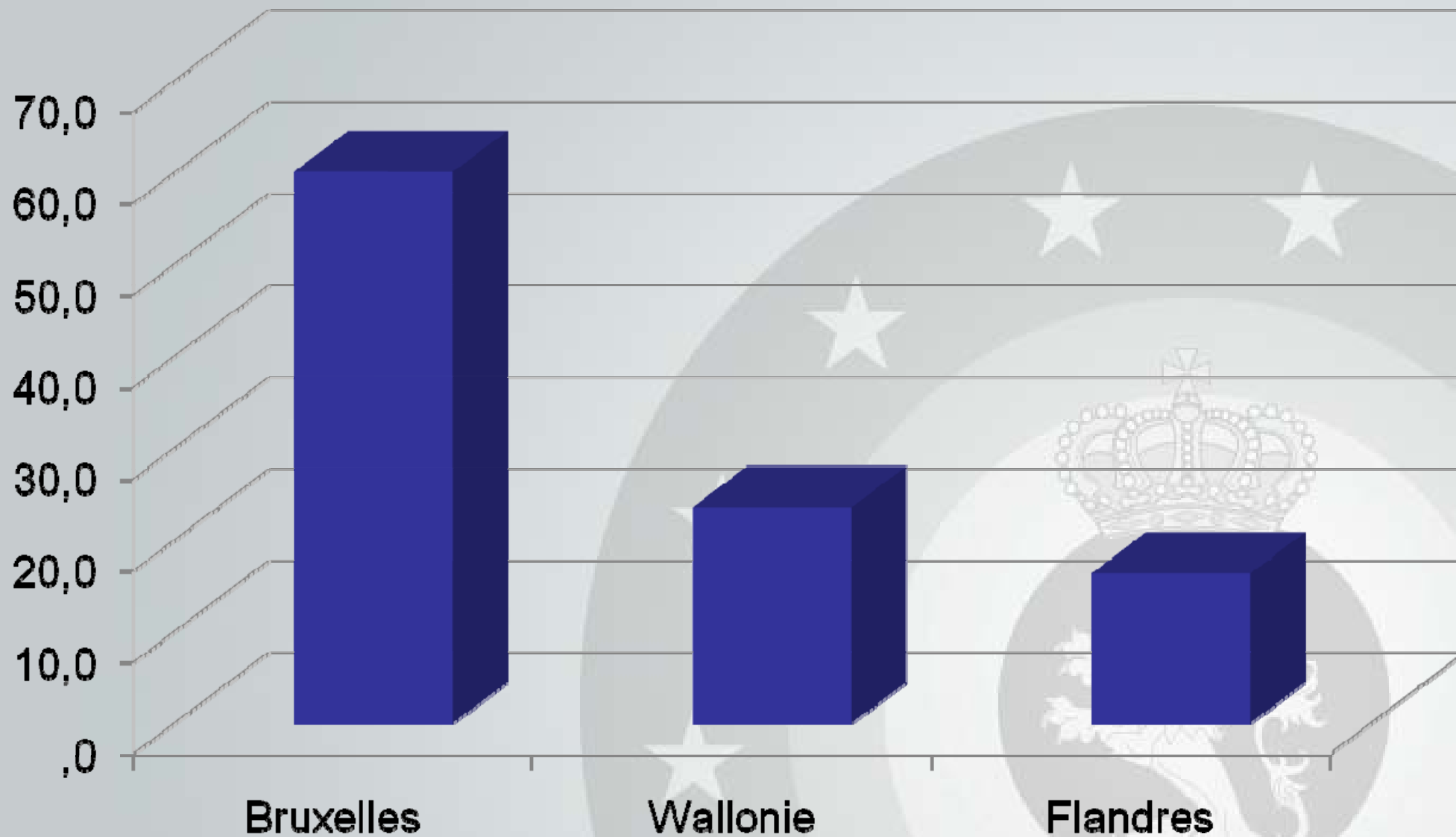
- All patient are encoded in our database

- Informations about the patient:

Age, Sex, Nb victims, Cause  
Primary symptoms, Remaining  
symptoms at hospital, Exposure  
duration, Primary CO-HB level,  
Place of intoxication, Region,.....



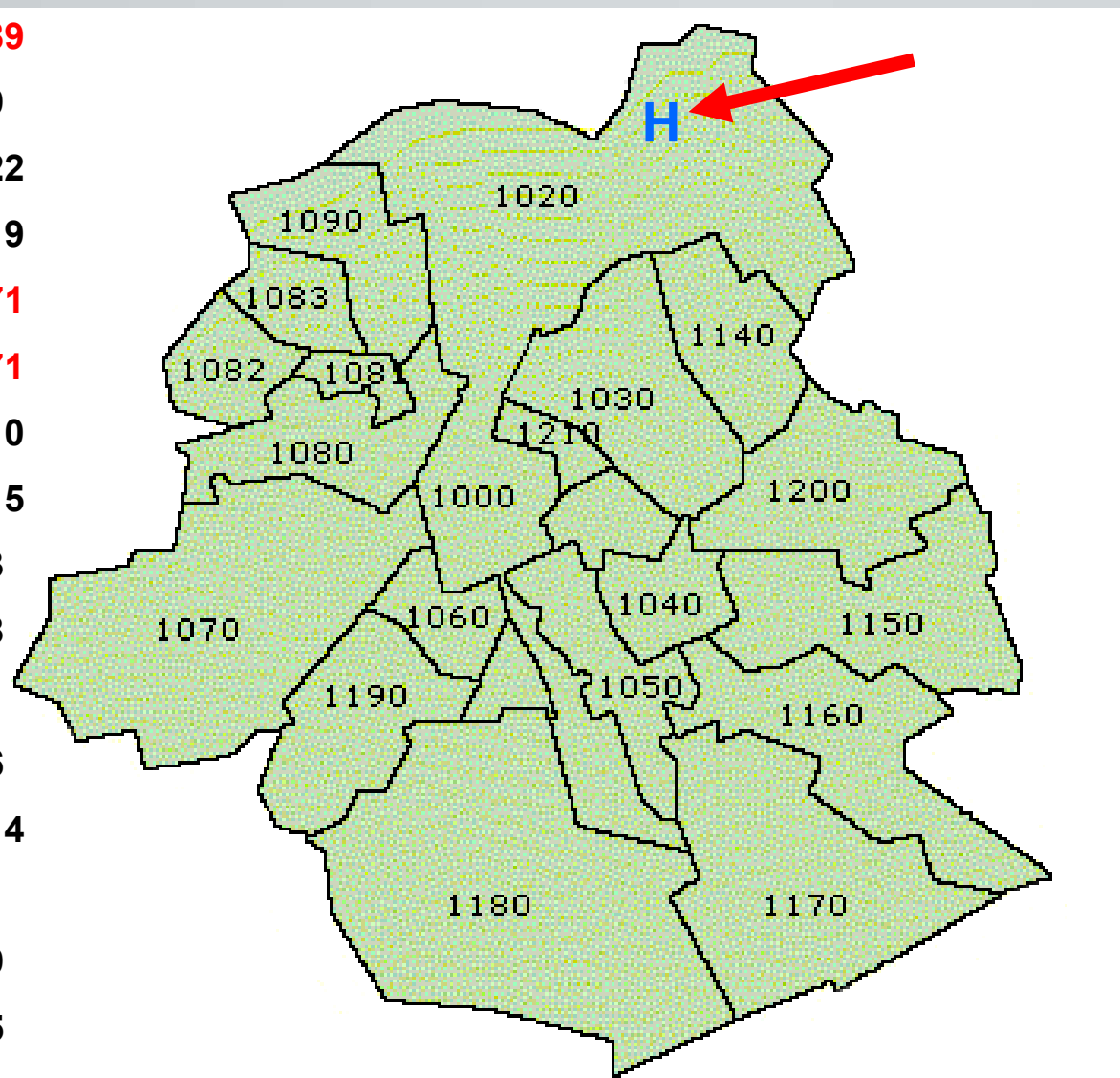
## Régions





1000 Bruxelles	36
1020 Laeken	42
1030 Schaarbeek	89
1040 Etterbeek	9
1050 Ixelles	22
1060 Saint-Gilles	19
1070 Anderlecht	71
1080 Molenbeek-Saint-Jean	71
1081 Koekelberg	10
1082 Berchem-Sainte-Agathe	15
1083 Ganshoren	3
1090 Jette	8
1120 Neder-Over-Heembeek	1
1130 Haren	6
1140 Evere	14
1150 Stokkel	1
1160 Auderghem	9
1170 Watermael-Boitsfort	5
1180 Uccle	13
1190 Forest	31
1200 Woluwe-Saint-Lambert	6
1210 Saint-Josse-ten-Noode	13

## CO Intoxication in the Brussels 2004 - 2010





# Data Base

Statistical data are shared with the National Poison Center's systematic registration, in order to help increase awareness, and improve primary prevention.

An Annual Report on Carbon Monoxide Poisoning is produced yearly by the Poison Centre.



# QUESTIONS ??

# Thank you for your Attention