

ACHOBEL

Coordinating HBO care on a national level.

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CHR Citadelle LIEGE

ACHOBEL

Advisory Committee for Hyperbaric Oxygen in Belgium

- History
- Targets
- Occupations
- National financing – INAMI
- Future and Conclusion

I. HISTORY (1)

- Founded in december 1993
- Number of members : 9 in 1993, 15 in 2011
- Converted into a « ASBL » in December 1995
- Head office : 9, St Anne st - 7880 FLOBECQ

I. HISTORY (2)

- 1974 : European Underwater and Baromedical Society



- 1985 : European Committee for Hyperbaric Medicine



- 1996 : Advisory Committee for Hyperbaric Medicine in Belgium



I. HISTORY (3)

Hôpital - Hospitaal	N° TF 24/24 Hrs	N° Fax	Type de chambre Type van kamer	Remarques Opmerkingen
AALST				
OLV Ziekenhuis Spoedgevallendienst 164 Moorselbaan 9300 AALST	053 72 42 48 053 72 43 48	053 72 45 94	Multi	10 assis OU 2 couchés 10 zittende OF 2 liggende
ANTWERPEN				
ZNA Stuivenberg- Erasmus Dienst Intensieve Zorgen Lange Beeldkensstraat 267 2060 ANTWERPEN	03 217 75 75 03 217 75 87	03 217 75 74	Multi	5 assis OU 1 couché 5 zittende OF 1 liggende
UZ Antwerpen Spoedgevallendienst Wijnstraat 10 2650 EDEGEM	03 821 38 06 03 821 30 55	03 829 12 88	Multi	12 assis OU 2 couchés 12 zittende OF 2 liggende
ARLON				
Cliniques du Sud Luxembourg Service Anesthésie Réanimation 6700 ARLON	063 23 16 81	063 23 16 82	Mono	1 couché 1 liggende
BRUGGE				
AZ Sint Jan Spoedgevallendienst A.Z. St.Jan Ruddershove 10 8000 BRUGGE	050 45 20 00	050 45 20 38	Multi	7 zittende OF 2 liggende 7 assis OU 2 couchés
BRUXELLES _ BRUSSEL				
Hôpital Militaire Centrum Hyperbare Zuurstoftherapie Militair Hospitaal "Koningin Astrid" Bruynstraat, 200 1120 BRUSSEL	02 264 48 48	02 264 48 61	Multi X 2	20 assis ET/ OU 4 couchés 20 zittende EH/OF 4 liggende

Hôpital - Hospitaal	N° TF 24/24 Hrs	N° Fax	Type de chambre Type van kamer	Remarques Opmerkingen
CHARLEROI				
CHU de Charleroi Site Vésale Service des Urgences Rue de Gazeé, 706 6110 Montigny-le-Tilleul	071 92 34 61 071 92 34 62	071 923467	Multi	12 assis OU 2 couchés 12 zittende OU 2 liggende
GENK				
Ziekenhuis Oost Limburg (ZOL) Schiepsebos 2 3600 GENK	089 32 50 50 (vragen *01/5555)	089 32 79 11	Multi	12 zittende OF 2 liggende 12 assis OU 2 couchés
LIEGE				
CHR La Citadelle Service des urgences Bvd du XII de ligne, 1 4000 LIEGE	04 225 60 41 04 225 69 54	04 225 64 44	Multi	5 assis OU 2 couchés 5 zittende OF 2 liggende
CHU Sart Tilman Service des Urgences 4000 LIEGE	04 366 77 11	04 366 82 76	Mono	1 couché 1 liggende

Grand Duché du Luxembourg - Groothertogdom Luxemburg

Centre Hospitalier Emile Mayrisch Rue E. Mayrisch L 4240 Esch - Alzette Grand Duché de Luxembourg	+352 57 111 (N° centrale)	+352 57 1173859	Multi	6 assis OU 3 couché 6 zittende OF 3 liggende
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II. TARGETS (1)

« Development of hyperbaric oxygen therapy as a combined treatment with emergency and intensive care units. »

- Code of Good Practice in HBO therapy 2003
 - Hospital
 - Multiplace chamber
 - Combined with ICU and/of ECU
 - Specific staff (Doctor, Nurse, CM)
- Interdisciplinary
- Acute – subacute – chronic pathology

II. TARGETS (2)

« Development of specific treatments with hyperbaric oxygen and appropriate refund into the hospital context. »

- Identifications of the HBO indications.
- KCE report & Evidence Base Medicine. (§4)
- INAMI financing. (§4)

II. TARGETS (2)

HBO Indications

1. Air or Gas Embolism
2. Carbon Monoxide Poisoning (incl. CO Poisoning Complicated by Cyanide Poisoning)
3. Clostridial Myositis and Myonecrosis (Gas Gangrene)
4. Crush Injury, Compartment Syndrome and other Acute Traumatic Ischemias
5. Decompression Sickness
6. Arterial Insufficiencies (Central Retinal Artery Occlusion, Enhancement of Healing In Selected Problem Wounds)
7. Severe Anemia
8. Intracranial Abscess
9. Necrotizing Soft Tissue Infections
10. Osteomyelitis (Refractory)
11. Delayed Radiation Injury (Soft Tissue and Bony Necrosis)
12. Compromised Grafts and Flaps
13. Acute Thermal Burn Injury



II. TARGETS (3)

« Integration of the hyperbaric oxygen therapy into a specific training of the EMS and ICU nurses. Specific diploma. »

- At least one HBO doctor by centre (part-time work).
- After training, specific HBO diploma for the nurses of the centre.
Training cycle Achobel (§ 3).
- Caisson Master

II. TARGETS (4)

« Harmonious development of multiplace chambers in EMC departments of Belgian's hospitals. »



Preference to multiplace chambers



III. OCCUPATIONS (1)

- Reflection and definition.
- Information.
- Integration.

III. OCCUPATIONS (2)

Reflection and definition.

- Definition of HBO indications authenticated during a consensus conference.
- Suggestions of structural and functional standard for hospital hyperbaric centers.
- Suggestions for adaptation of INAMI reimbursement (§ 4).
- Suggestions for Occupational Medicine.
- Database "Safety" and "Technique".

III. OCCUPATIONS (3)

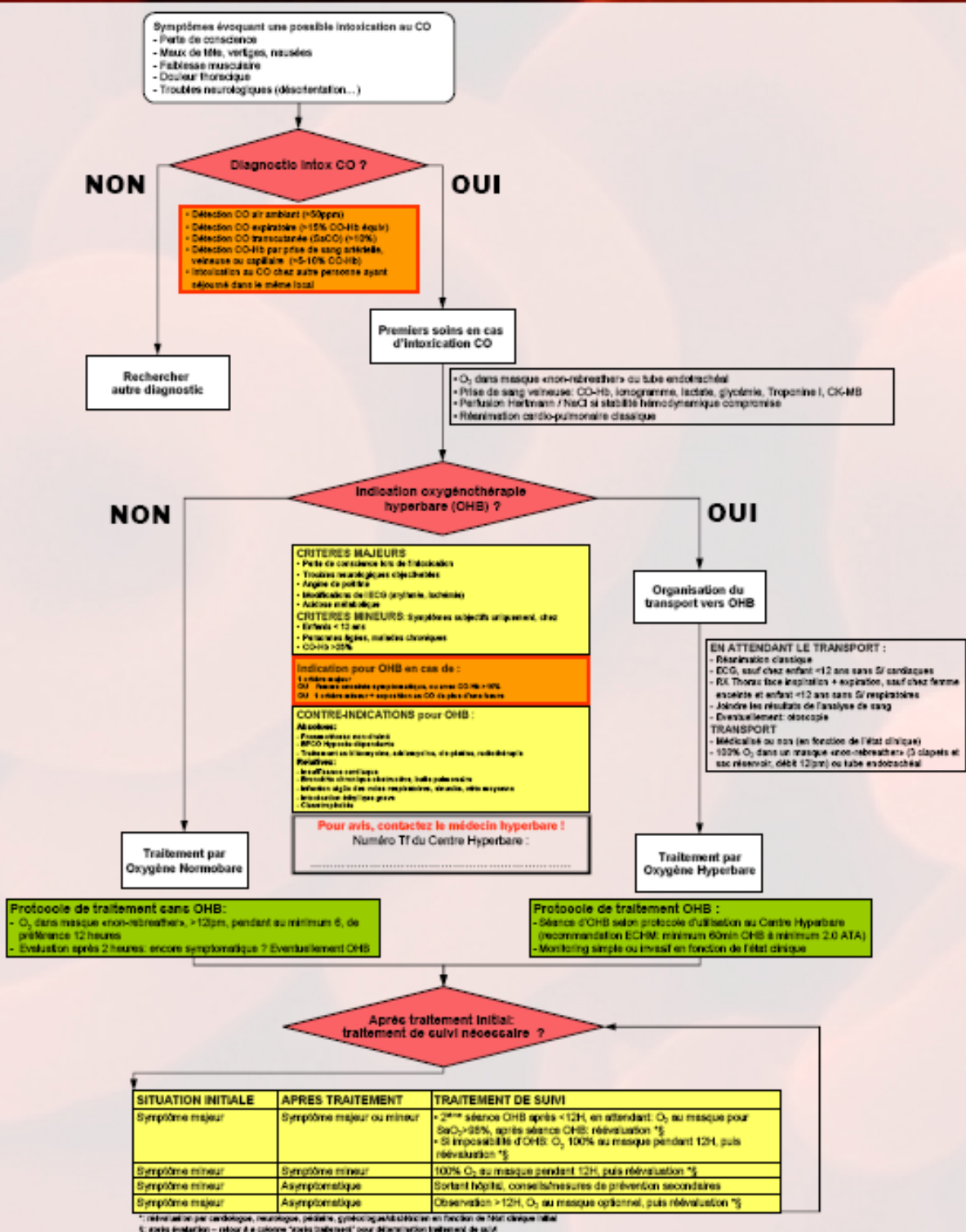
Information

- Congress about CO Intoxication (collaboration with Poison centre and Area Bruxelles-Capital)
- Diffusion of booklets and posters "CO Intoxication treatment" to EMS department in Belgium.
- Basis training for nurses and technicians in HBO centre.
- Continuous training for doctors / nurses / technicians in HBO centre (Safety Course in Hyperbaric Environment).
- Diploma for nurses / technicians in HBO centre.

Arbre décisionnel et algorithme pour la prise en charge de l'intoxication au monoxyde de carbone

(pré-hospitalier – hôpital primaire – hôpital OHB)

Poster ACHOBEL « CO Intoxication: treatment algorithm »



Basis training

« Paramedical HBO personnel »

Common module for nurse and technician in HBO centre

Theory: 16 h
Practice: 16 h

Specific module Technician in HBO centre

Theory: 16 h
Practice: 32 h

Specific module Nurse in HBO centre

Theory: 16 h
Practice: 32 h

Specific module ICU nurse in HBO centre

Théorie: 8 h
Pratique: 32 h

III. OCCUPATIONS (4)

Integration

- Belgian representative in European Committee for Hyperbaric Medicine (ECHM).
- Councillor for the Working Group "Hyperbaric Oxygen Treatment" of National Committee for Hospital Establishment.
- Development of procedures for combined treatment in ICU.
- Development of a patient satisfaction questionnaire.

IV. National financing -INAMI



Cost

INAMI

Profit

IV. National financing-INAMI

Present situation

Since 1972...

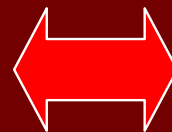
- First day: 64,63 €
- Second day: 48,47 €
- Third day and ...: 0 €

Amount

In 2006 = 83 000 €

Condition

Patient at risk of death



- Fitting out the offices
- Purchase of material
- Maintenance
- Training of the staff
- Salaries
- WE and night duty
- ...

IV. National financing-INAMI

ACHOBEL suggestions (1)

To allow a treatment with optimal conditions of security, it is necessary to obtain an appropriate reimbursement:

- Management of the HBO centre by a trained staff with its main activity in the centre.
- Selection and follow up of the patients by trained doctors. At least one doctor must have a half-time occupation in the centre.
- Optimal adaptation and maintenance of the material.

Staffing of HBO centres in Belgium (04/09)

Dedicated staff at hyperbaric centres in Belgium				
	Med	Nurse	CHT	Remarks
Arlon	0	0	0	Monoplace chamber in EMS setting, no dedicated nurse or Med
Aalst	0	0	0	Multiplace chamber in EMS department, EMS nurses operate chamber
Antwerpen UZA	0	2x 1/2	0	Multiplace chamber in EMS department, 2 nurses dedicated to HBO
Antwerpen Stuyvenberg	0	0	0	Multiplace chamber in ICU department, ICU nurses operate chamber
Brugge	0	1/2	0	Multiplace chamber in EMS department, 1 nurse dedicated to HBO
Brussel StPierre	0	0	0	Monoplace chamber in EMS setting, now closed
Brussel UZ	0	0	0	Monoplace chamber in EMS setting, now closed
Brussel	4 x 1/2	0	6	4 1/2FTE Med, 6 FTE CHT
Charleroi	0	0	2	Multiplace chamber in EMS department, 2 CHT dedicated to HBO
Genk	0	0	0	Multiplace chamber in EMS department, EMS nurses operate chamber
Liège Citadelle	0	1/2	0	Multiplace chamber in EMS department, 1 nurse dedicated to HBO
Liège CHU	0	1/2	0	Monoplace chamber in EMS setting, 1 nurse dedicated to HBO

Methods of financing for HBO centres (04/09)

Dedicated staff at hyperbaric centres in Belgium				
	Med	Nurse	CHT	Remarks
Arlon	0	0	0	Monoplace chamber in EMS setting, no dedicated nurse or Med No extra funds
Aalst	0	0	0	Multiplace chamber in EMS department, EMS nurses operate chamber Agreement with service provider for extra payments
Antwerpen UZA	0	2x 1/2	0	Multiplace chamber in EMS department, 2 nurses dedicated to HBO Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Antwerpen Stuyvenberg	0	0	0	Multiplace chamber in ICU department, ICU nurses operate chamber Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Brugge	0	1/2	0	Multiplace chamber in EMS department, 1 nurse dedicated to HBO Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Brussel StPierre	0	0	0	Monoplace chamber in EMS setting, now closed
Brussel UZ	0	0	0	Monoplace chamber in EMS setting, now closed
Brussel	4 x 1/2	0	6	4 1/2FTE Med, 6 FTE CHT Budget of Ministry of Defense
Charleroi	0	0	2	Multiplace chamber in EMS department, 2 CHT dedicated to HBO Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Genk	0	0	0	Multiplace chamber in EMS department, EMS nurses operate chamber Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Liège Citadelle	0	1/2	0	Multiplace chamber in EMS department, 1 nurse dedicated to HBO Systematic consultation fee (anesthesiology) + Non-reimbursable fee
Liège CHU	0	1/2	0	Monoplace chamber in EMS setting, 1 nurse dedicated to HBO Systematic consultation fee (anesthesiology)

IV. National financing-INAMI

ACHOBEL suggestions(2)

Adaptation of the INAMI reimbursement with
ECHM recommendations (2004)

■ ACUTE INDICATIONS

Indication	N° of sessions	Fee level
Serious CO intoxication	max three times	Monoplace chamber: First day: N96
Decompression disease	max seven times	Second and following day: N72
Arterial gas embolism	max seven times	Multiplace chamber: First day: N192
Anaerobic myonecrosis	max seven times	Second and following day: N168

N = 0,673 €

IV. National financing-INAMI

ACHOBEL suggestions(2)

Adaptation of the INAMI reimbursement with ECHM recommendations (2004)

■ CHRONIC INDICATIONS

Indications	N° of sessions	Fee level
Chronic critical ischemia: <ul style="list-style-type: none">▪ in case of diabetes<ul style="list-style-type: none">○ when transcutaneous oxygen measurement >100 mmHg when inhaling 100% O₂ at 2.5 ATA▪ in case of arteriosclerosis<ul style="list-style-type: none">○ when transcutaneous oxygen measurement > 50 mmHg when inhaling 100% O₂ at 2.5 ATA	Max 40 times in two years	
Radionecrosis: <ul style="list-style-type: none">▪ Treatment of osteoradionecrosis of head and neck or▪ Soft tissue radionecrosis (except for radiation-enteritis)	Max 40 times	K45
Osteomyelitis: <ul style="list-style-type: none">▪ Chronic osteomyelitis, refractory after more than six weeks antibiotics therapy and after at least one surgical intervention; or▪ Osteomyelitis of skull base or sternum	Max 30 times during two years	
Sudden deafness, refractory for classical drug therapy	Max 15 times during five years	
Crush trauma or compartment-syndrome of the limbs, post-traumatic reperfusion syndromes or compromised skin grafts or myocutaneous flaps	Max 10 times	

K = 1,077 €

IV. National financing-INAMI

ACHOBEL suggestions (2)

Adaptation of the INAMI reimbursement with ECHM recommendations (2004)

■ HBO DIAGNOSIS: PTcO2

Service	N° of sessions	Fee level
Transcutaneous oxygen measurement under hyperbaric oxygen inhalation Only in consideration of starting therapeutic HBOT for chronic critical ischemia in case of diabetes or arteriosclerosis	Only once per two years	K156

K = 1,077 €

IV. National financing-INAMI

ACHOBEL suggestions (2)

Budgetary consequences of the ACHOBEL suggestions about refinancing.

- Budgetary impact : N 1.476.000 making 993 348 €
- Budget 2010 for the Social Security
 - Total = 24,2 billion €
 - Medical fees = 6,7 billion €



IV. National financing-INAMI

« *The KCE torpedo in 2008* » (1)



Centre fédéral d'expertise
des soins de santé

Public interest organization founded at the federal level. KCE must publish reports of studies to help the persons in charge to take decisions about the most efficient allocation of available resources for different treatment. The target is to assure the biggest accessibility to all users and to preserve the highest level of healthcare.

IV. National financing-INAMI

« The KCE torpedo in 2008 » (2)

CONCLUSIONS OF KCE

- The number of HBO centres is sufficient.
- There is no Scientific Proof to prop up the use of HBO for the « accepted » indications.
 - **Diving accidents:** large consensus, « historically » proven efficiency.
 - **CO intoxication:** a few ECR studies, but mediocre in quality.
 - **Others indications:** no ECR.

ABSENCE OF PROOF = INEFFICIENCY !?!

IV. National financing-INAMI

« The ACHOBEL answer to KCE » (1)

- The absence of ECR studies is compensated by the RECOMMENDATIONS published during Consensus Conferences.
- Without Scientific Proof Gr1, « EBM » approach means « best available evidence ».

CONDITION	ACCEPTED		
	Level of Evidence		
	A	B	C
Type I			
CO intoxication		X	
Crush Syndrome		X	
Prevention of Osteoradionecrosis (dental extraction)		X	
Osteoradionecrosis (mandible)		X	
Soft Tissue Radionecrosis (cystitis)		X	
Decompression Accident			X
Gas Embolism			X
Anaerobic or Mixed Bacterial Anaerobic Infections			X
Type II			
Diabetic Foot Lesion		X	
Compromised Skin Graft and Musculocutaneous Flap			X
Osteoradionecrosis (other bones)			X
Radio-induced Proctitis / Enteritis			X
Radio-induced Lesions of Soft Tissues			X
Surgery and Implant in Irradiated Tissue (preventive action)			X
Sudden Deafness			X
Ischemic Ulcer			X
Refractory Chronic Osteomyelitis			X
Neuroblastoma Stage IV			X
Type III			
Post-anoxic Encephalopathy			X
Larynx Radionecrosis			X
Radio-induced CNS Lesions			X
Post-vascular Procedure Reperfusion Syndrome			X
Limb Re-implantation			X
Burns >20 % of Surface Area and 2nd degree			X
Acute Ischemic Ophthalmologic Disorders			X
Selected Non-healing Wounds secondary to Inflammatory Processes			X
Pneumatosis Cystoides Intestinalis			X



Conditions where the use of HBO₂ was supported by level A, B or C evidence were considered as accepted indications.

- Level A : At least 2 concordant, large, double-blind, controlled randomized studies with no or little methodological bias.
- Level B : Double-blind controlled, randomized studies but with methodological flaws; studies with only small samples, or only a single study.
- Level C : Consensus opinion of experts.

IV. National financing-INAMI

« The ACHOBEL answer to KCE » (2)

- Requested conditions to develop « ECR studies » about Hyperbaric Medicine:
 - Population of patients with \pm uniform and determined pathology.
 - Consensus about « classical » and « experimental » treatment (study in several centres)
 - Available staff to assure recruitment, collection and analysis of the data.
 - Level 1 EBM: nearly impossible.

V. FUTURE AND CONCLUSION (1)

- New research need to be conducted:
 - But not always under the « ECR shape »
 - The « EBM analysis » must take care of the « level of proof »
- The financing of this research is mainly in relation with a correct funding of HBO. This correct funding depends on conditions of working.

V. FUTURE AND CONCLUSION (2)

- The conditional reimbursement as proposed by ACHOBEL is the best way to promote a « professional » HBO in Belgium.
- KCE, to tell the truth, has really stopped the harmonious development of HBO in Belgium.

**THANK YOU
FOR
YOUR ATTENTION !!!**



Any
questions ???