

# Training on pulmonary hypertension designed by a collaborative pharmacy practice

## CONTEXT

The management of pulmonary hypertension (PH), a rare and complex disease, requires specific knowledge from physician and pharmacist residents. However, the average knowledge of residents about PH is often limited and this lack of specific knowledge at their arrival could influence PH patient care.

## OBJECTIVE

To design, implement, assess and evaluate an educative program on pulmonary hypertension for pharmaceutical and medical residents before their arrival, in order to optimize patient care

## STUDY DESIGN

From February to June 2011, an e-learning program was designed using Learning Management System (LMS) Dokeos. Web accesses were sent to the residents two weeks prior to their arrival. Qualitative evaluation for e-learning was performed by interviewing residents regarding its form and content. An evaluation on the type of formation was also performed during two semesters.

## RESULTS

TYPE	NOM	TAILLE	DATE
01	Editorial_1.pdf	28.07K	0 mos, 2 semaines
02	Editorial_2.pdf	52.20K	0 mos, 2 semaines
03	Hypertension artérielle pulmonaire: de nouveau concept pour une "vieille" maladie	4.03M	0 mos, 2 semaines
04	Atelier du PH	4.03M	0 mos, 2 semaines
05	Hypertension artérielle pulmonaire	154.42K	0 mos, 2 semaines
06	Atelier_2.pdf	122.22K	0 mos, 2 semaines
07	Généralité de l'HTAP: données récentes et applications pratiques	258.02K	0 mos, 2 semaines
08	Atelier_3.pdf	162.46K	0 mos, 2 semaines
09	Evolution des modalités de l'HTAP	187.37K	0 mos, 2 semaines
10	Atelier_4.pdf	181.13K	0 mos, 2 semaines
11	Signification cellulaire et physiopathologie de l'HTAP	226.85K	0 mos, 2 semaines
12	Atelier_5.pdf	162.25K	0 mos, 2 semaines
13	HTAP associée aux connectivites		
14	Atelier_6.pdf		
15	HTAP des cardiopathies congénitales		
16	Atelier_7.pdf		
17	Hypertension post-pulmonaire		
18	Atelier_8.pdf		
19	Imagerie de l'HTAP		

## E Learning tool design

**Context**

CHU Antoine Bécère is a national reference center for the treatment of pulmonary arterial hypertension (PAH). The pulmonology department therefore welcomes patients from all over France with this disease. The strong collaboration that unites the residents of the two services causes them to be frequently confronted with issues related to the specific treatment of this disease.

**Objectives**

The overall objective of this module is to give you general information about the Pulmonary Hypertension, to make you feel operational when you arrive in your department.

At the end of training, you will be able to:

- Define the PAH
- Explain its mechanism
- Recognize the symptoms of the disease
- Describe the tests used to diagnose it
- Know the medicines commonly prescribed
- Link the symptoms to the treatment

**Public**

This module is designed for the future medical residents of Pulmonology department of Professor Simonneau, and the future pharmacist residents of the Pharmacy department of Dr. Rioubert before they arrive in their respective service.

HTAP à l'hôpital Antoine Bécère

DEPLACER LIENS

- 1. Site anglophone sur l'HTAP
- 2. Le site de l'association des patients atteints d'HTAP

The  is the first step to explain to the patient suffering from PAH.

High altitude and transport by air should be avoided because they represent a risk situation likely to increase the .

Pregnancy is strongly discouraged. The use of contraception is required,  oral contraception is theoretically against-indicated because of its prothrombotic activity which may aggravate the disease.

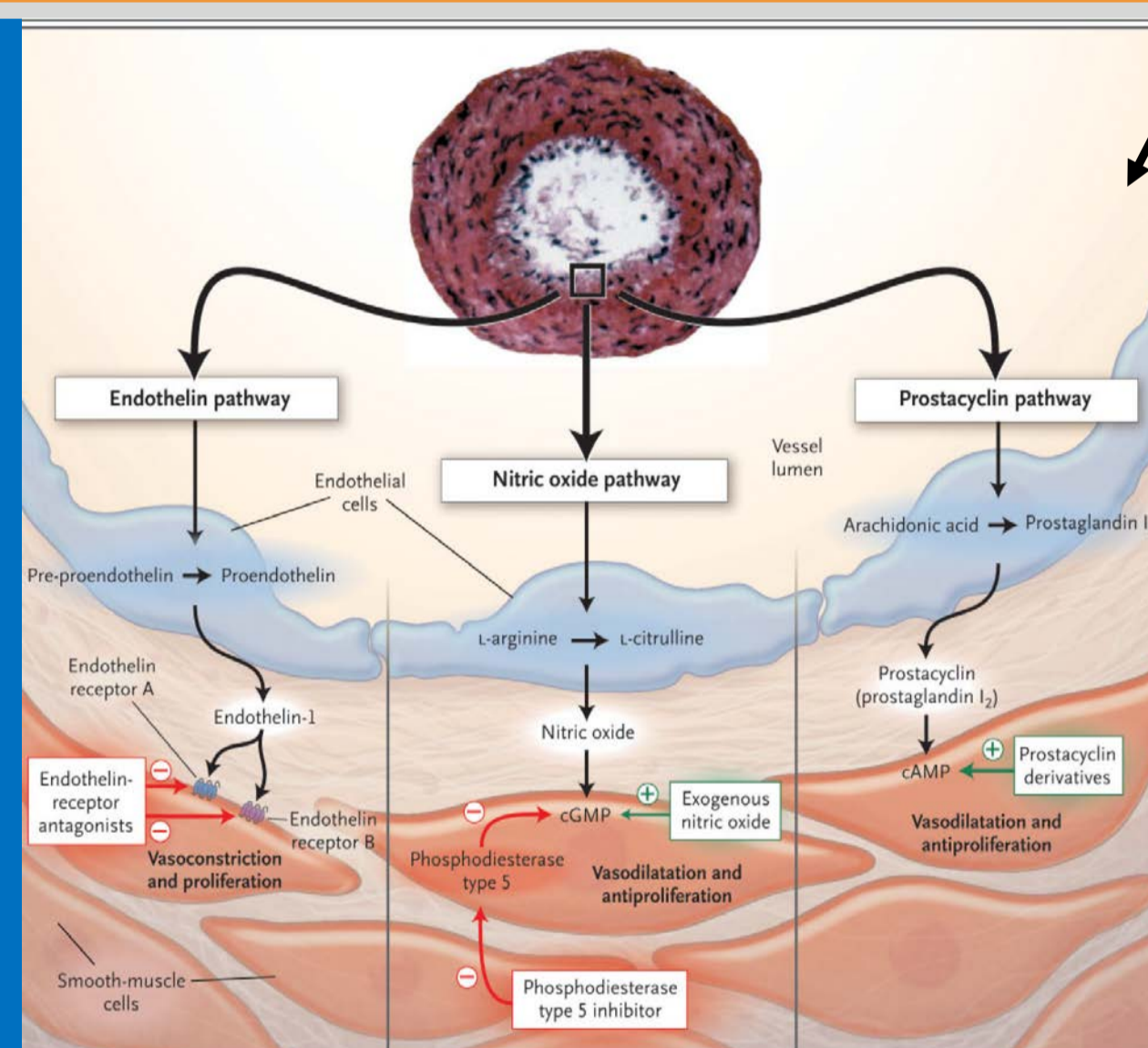
Anticoagulant therapy seeks an  between 1.5 to 2.5.

The  is prescribed when there is hypoxemia (PaO<sub>2</sub> < 80 mmHg); the objective is mainly symptomatic.

Documents Description Modules

Links Quizzes Glossary

Chat Notebook Forums



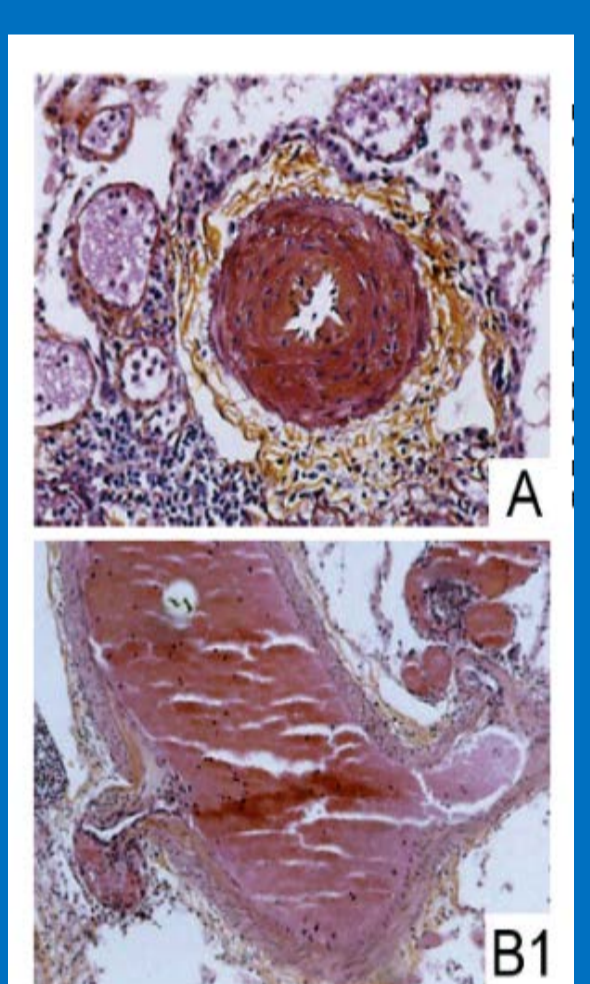
### Cardiac Catheterization

A more invasive test in which the physician inserts a "catheter" into a patient's blood vessel and passes the tube toward the heart.

The cardiac catheterization measures important pressures in the heart and lungs.

**Table 4 Updated clinical classification of pulmonary hypertension (Dana Point, 2008<sup>1</sup>)**

- Pulmonary arterial hypertension (PAH)**
  - Idiopathic
  - Heritable
    - BMPR2
    - ALK1, endoglin (with or without hereditary haemorrhagic telangiectasia)
    - Unknown
  - Drugs and toxins induced
  - Associated with (APAH)
    - Connective tissue diseases
    - HIV infection
    - Portal hypertension
    - Congenital heart disease
    - Schistosomiasis
    - Chronic haemolytic anaemia
  - Persistent pulmonary hypertension of the newborn
- Pulmonary veno-occlusive disease and/or pulmonary capillary haemangiomatosis**
- Pulmonary hypertension due to left heart disease**
  - Systolic dysfunction
  - Diastolic dysfunction
  - Valvular disease
- Pulmonary hypertension due to lung diseases and/or hypoxia**
  - Chronic obstructive pulmonary disease
  - Interstitial lung disease
  - Other pulmonary diseases with mixed restrictive and obstructive pattern
  - Sleep-disordered breathing
  - Alveolar hypoventilation disorders
  - Chronic exposure to high altitude
  - Developmental abnormalities
- Chronic thromboembolic pulmonary hypertension**
- PH with unclear and/or multifactorial mechanisms**
  - Haematological disorders: myeloproliferative disorders, splenectomy.
  - Systemic disorders: sarcoidosis, pulmonary Langerhans cell histiocytosis, lymphangioleiomyomatosis, neurofibromatosis, vasculitis
  - Metabolic disorders: glycogen storage disease, Gaucher disease, thyroid disorders
  - Others: tumoural obstruction, fibrosing mediastinitis, chronic renal failure on dialysis



## Evaluation

### Content

- Relevant and suitable tool regarding pedagogical objectives
- Flexible : Despite an erratic knowledge on PH , all residents learnt something new
- Interactive tool

### Form

- Clear tool and easy to use
- Learning duration : satisfactory (100%)

### Type of formation

- All residents were convinced by this type of formation
- E-learning offers more freedom than a conventional formation
- All residents think that e-learning could be use as a complement of traditional courses

N = 10 residents  
4 pharmacists  
6 pneumonologists

E-learning facilitated resident integration in the pneumology department in 90 % of cases

## DISCUSSION - CONCLUSION

The e-learning tool designed in this pilot study by a collaborative pharmacy practice approach improved the resident learning process on PH. Distance learning should be a part of health care professional education in France and could represent in a near future 20-30% of each pharmacist's continuous professional development. As already demonstrated, this paper evidenced the interest of implementing E. learning in association with conventional training.\*

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\* Maisonneuve H, Chabot O. Internet-based continuing medical education: as effective as live continuing medical education. Presse Med. 2009