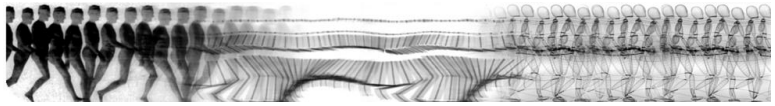


Inserm U1093

Cognition, Action, et
Plasticité Sensorimotrice

Centre Hospitalier Universitaire Dijon

Physical Medicine and Rehabilitation

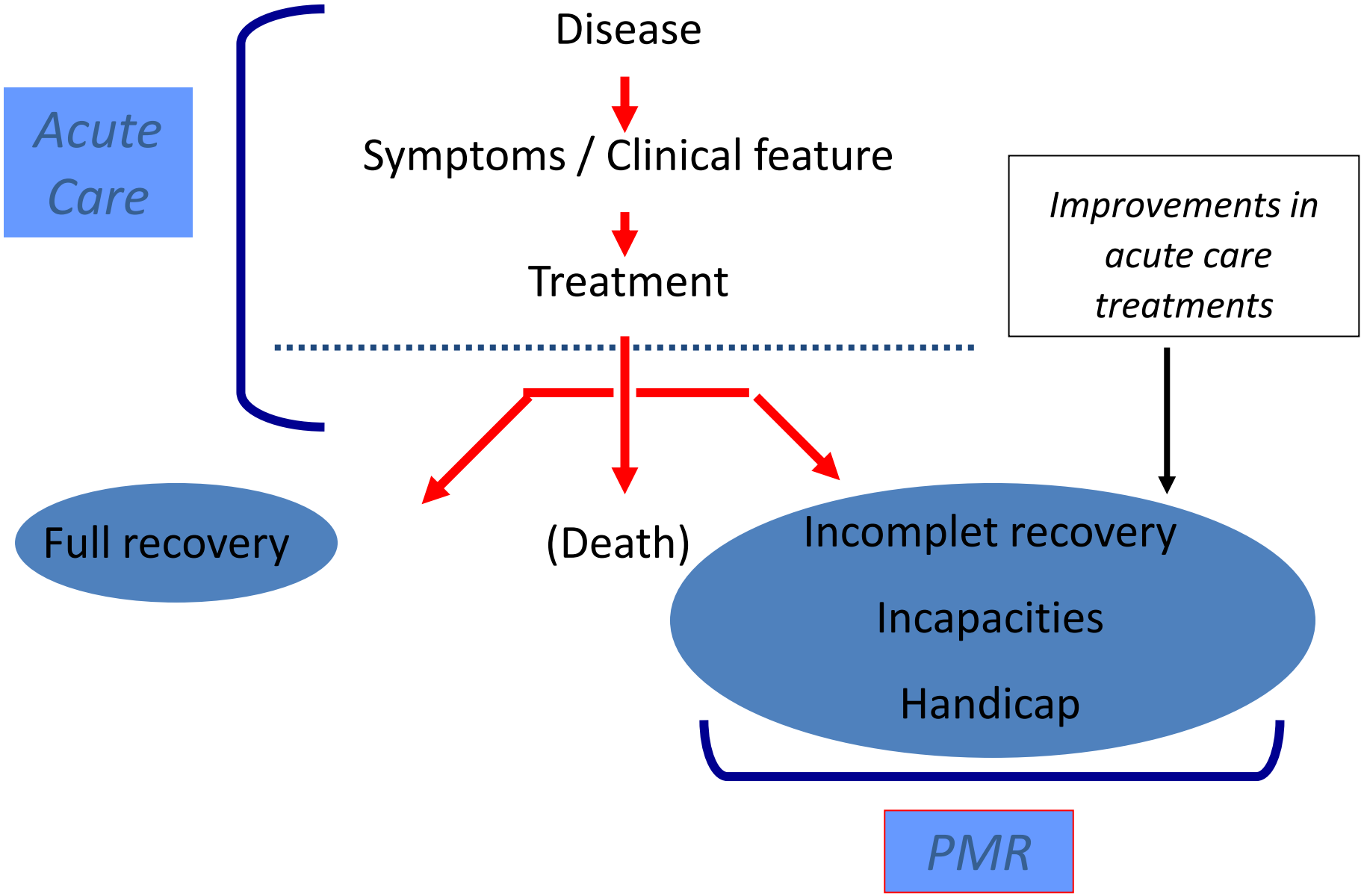
Rehabilitation of the PAD patient and beyond

Pr Vincent Gremeaux

Pôle Rééducation-Réadaptation CHU Dijon

Plateforme d'Investigation Technologique - Centre d'Investigation Clinique Plurithématique INSERM U803

PMR in Care pathway ?



So, why referring PAD patients to PMR?

Let's remind main our goals in PAD patients management…

- **Decrease morbidity and mortality**
  - Drugs
  - Surgery
  - Regular Exercise → **Exercise training**
  - Cardiovascular risk factors control → **Patient Education**
- **Improve quality of life** → **Rehabilitation Reinsertion**
  - Decrease symptoms
  - Improve exercise tolerance
  - Socio-professional (re)insertion

= MAIN GOALS OF PMR

But remains under prescribed in PAD…

So, why referring PAD patients to PMR?

Multiple caregivers….

.PMR Dr

.Nurse

.Physiotherapist

.Occupational therapist

.Physical activity teacher

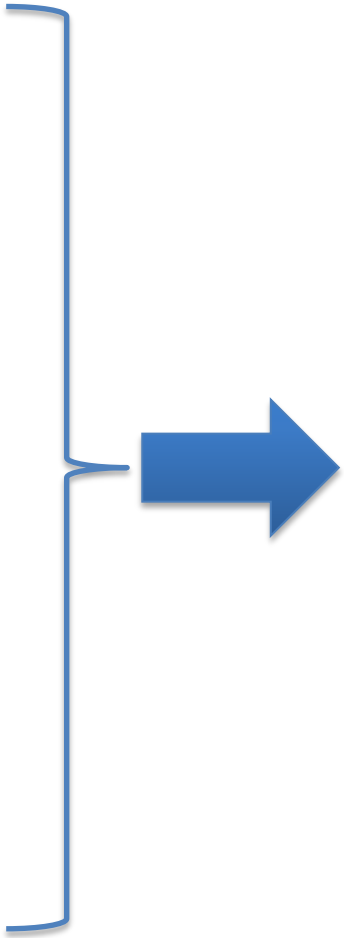
.Dietician

.Social worker

.Neuropsychologist

.Cardiologist

+ network with Psychatrist, Diabetologist, angiologist, vascular surgeon…



- Exercise:
evaluation + training

- Education

- Reinsertion

- Management of other vascular diseases

- Amputation: *healing, pain prevention, prosthetic fitting*

So, why referring PAD patients to PMR?

PMR Dr

Nurse

Physiotherapist

occupational therapist

Physical activity teacher

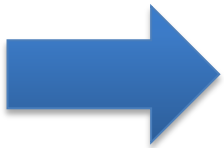
Dietician

Social worker

Neuropsychologist

Cardiologist

+ network with Psychatrist, Diabetologist, angiologist, vascular surgeon…



GLOBAL MULTIDISCIPLINARY COMPREHENSIVE APPROACH

- **FUNCTIONNAL EVALUATION EXPERTISE**
- **TRAINING DEVICES**
- **EDUCATION SKILLS**
- **SPECIFIC MEDICAL CARES**

Evaluation – Physical capacity / Risks

- Multiple devices available in PMR unit
- Tailored to functionnal status
  - Treadmill
  - Cycloergometer
  - Arm cranking

- 1- Other cardiovascular conditions screening
- 2- Exercise capacity ?
  - → Prognosis
  - → Functionnal Status : Initial and Absolute claudication distance
  - → Global Training objectives: HR / Power / RPE / Speed

Functionnal Evaluation: Walk tests

Self-paced walk test: Initial / Absolute Claudication Distance

More reliable than self-estimated distance

6MWT +++

Highly reliable

Self-selected speed = best energetic efficiency

Related to functional / haemodynamic severity of PAD

Montgomery PS, J Am Geriatr Soc. 1998

Often used to assess functionnal decline

Garg PK, Circulation 2009

Treadmill 6 MWT

Treadmill walk distance Continuous / Graded (Gardner)

Global Exercise training

« Endurance/aerobic training » → =large muscle masses working

- Indoor / Outdoor walking
- Treadmill ++ (↓ triceps surae work)
- cycloergometer, stepper
- Arm cranking: Cross effect

Best modalities ?

Usually intermittent

Intensity : Stop before pain?

Passive / Active recovery?

Main Barrier = Longterm compliance > intensity problem….

Analytic Exercise training = **Resistance training**

→Manual resistance / training machines

→Auto-exercises

1/ determination of n° of reps to cramping (N)

2/ Exercises : 70 % of N

Additionnal Physiotherapeutic technics

- **Low frequency electric stimulation**
  - Improves muscular metabolism and perfusion
  - Improves walk distance

Anderson SI, Eur J Vasc Endovasc Surg 2004

= in addition to active training or alternative if pain, or major deconditionning

Additionnal Physiotherapeutic technics

- Manual draining if veno-lymphatic edema

- Passive stretching in cutaneous / muscular / tendon retractions (diabetes)

Respiratory physiotherapic technics (COPD)

Education

Education ≠ Information

. Educational diagnosis: disease knowledge + readiness to change
. **Shared goals setting**
. Implementation
. Re-evaluation

→ **Multidisciplinarity**

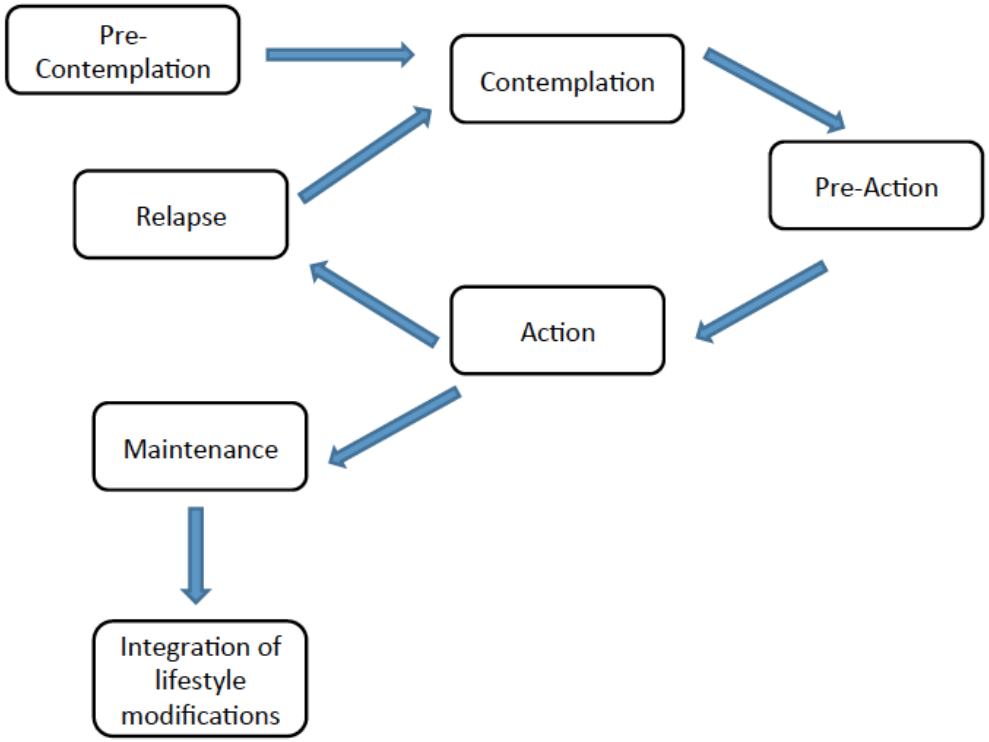
≈ Same education as CAD patients

But lower compliance to lifestyle modifications …

. Specific psychological profile : « Type D »
. Frequent cognitive decline

Education

Using Prochaska Model of motivation for change can help in developping strategies to induce motivations for lifestyle modifications



- Tobacco cessation
- Drug compliance
- Regular exercise
- Mediterranean diet

Amputation – Rehabilitation program

- Main Goal : **Autonomy**

- Control of stump viability : TcPO2

- **Early prosthetic fitting +++**
  - Improves scar healing
  - Decreases neuropathic pain
  - Improves body scheme recovery
  - Allows early verticalisation

Amputation – Training program

- **High energetic cost of prosthetic walking**
  - Thigh amputation : VO2 = + 50%
  - Leg amputation : VO2 = + 10 – 30%

Waters RL. J Bone Joint Surg 1976

. Associated conditions leading to low fitness: CAD, COPD, sedentarity…

→ **need for exercise training +++, whatever its type**

Amputation – Rehabilitation program

- **Early prosthetic walking ++ = early functionnal exercise training**

- Same framework as PAD with claudication
  - + balance training
  - + **education** for prosthesis self-fitting

- **Functionnal evaluation = walk tests ++**
  - 2 MWT = best functionnal test in this specific population

Gremeaux V, Prosthet Orthot Int. 2012

CONCLUSION – Rehabilitation programs for PAD

- **Goals : EXERCISE + EDUCATION**

- **Same material that CAD rehab**
- **Specific exercise technics and educationnal aproaches**

- **Needs to be be more prescribed and integrated in a health care network to optimize long term compliance**

SO, WHO EVER MAY LEAD A VASCULAR CENTER….

CARDIOVASCULAR PMR UNIT APPEARS TO BE AN OPTIMAL PLACE TO IMPLEMENT COMPREHENSIVE MULTIDISCIPLINARY SUPERVISED PROGRAMS FOR PAD …

Thank you

To be continued at 5:15 pm….