

Role of Rehabilitation Staff in Comprehensive Preoperative Pulmonary Rehabilitation

Hiroyuki Michihiro¹, Junichi Nakao¹, Miyako Yamasaki¹, Masanori Yasumoto¹, Yoshinori Yamashita², Hiroaki Harada², Kiyomi Taniyama³, Takashi Sugita⁴, Wataru Kamiike⁵

Departments of ¹Rehabilitation and ²Respiratory Surgery, ³Institute for Clinical Research, ⁴Vice President, and ⁵President, National Hospital Organization Kure Medical Center and Chugoku Cancer Center, Kure, Japan



Introduction

To date, there is no established protocol, worldwide, for preoperative pulmonary rehabilitation for lung cancer patients. In our hospital, we began conventional preoperative pulmonary rehabilitation (CVPR) in 2006, and comprehensive pulmonary rehabilitation (CHPR) in 2009 for lung cancer patients to reduce the postoperative complications and the risk of morbidity, and to improve the pulmonary function and the general status before surgery.

CHPR is conducted prospectively for two to five weeks through a multidisciplinary team approach. The CHPR protocol consists of multiple appointments with the physical therapists including rehabilitation staff and the registered dieticians. Intensive nutritional support was supplied with branched-chain amino acids (BCAAs) and Chinese herbal medicine supplements.

To date, CHPR has appeared to substantially improve pulmonary function, and decrease the morbidity among patients with poor preoperative conditions.

In the present paper, we introduce the activities of rehabilitation staff in the CHPR program.

Physical therapy programs

High intensity exercise (modified Borg Index 4~5)
•40 minutes / one session
•Twice or more / week



Fitness exercises

- Leg strengthening
- Muscular endurance training using cycling ergometer
- Stretching

Pulmonary exercises

- Inspiratory muscle training using Incentive Spirometers
- Sputum expectoration training using active cycle breathing technique (ACBT)

Education

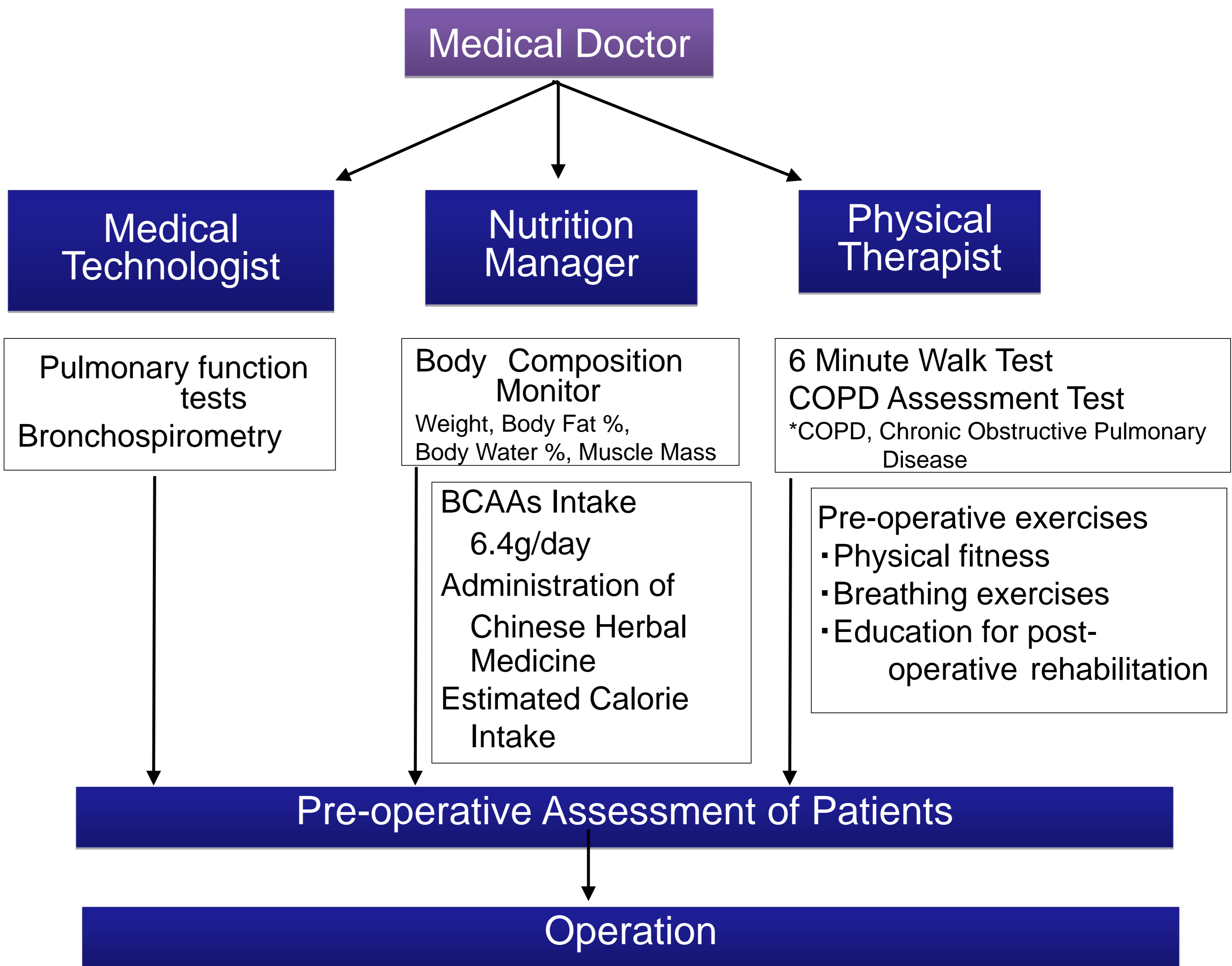
- Pre-operative education on recovery following surgery



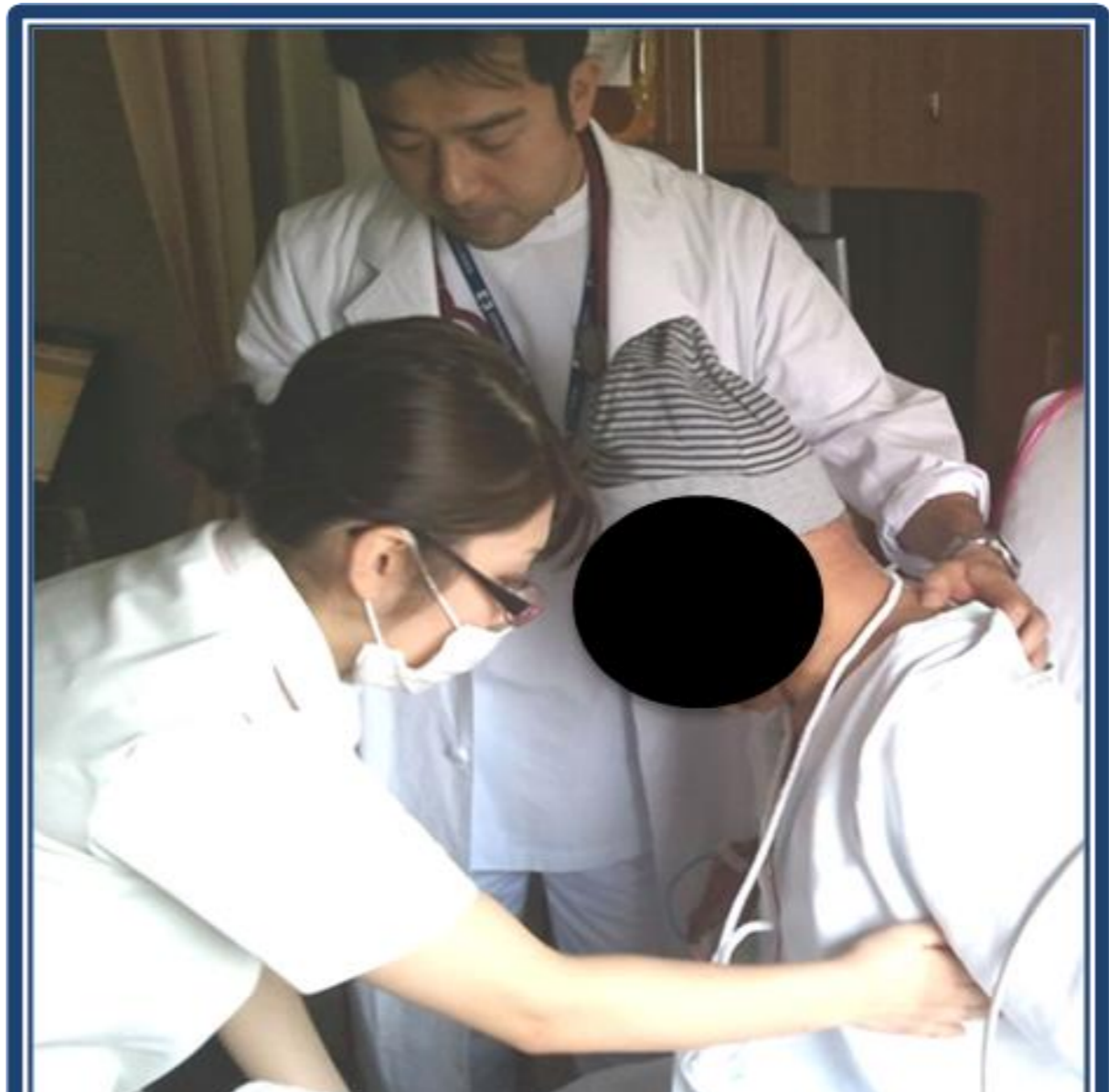
Six Minute Walk Test measuring the distance walked during 6 minutes with wireless analysis system
Star Product LTD WristOx₂™ 6MW Ver. 2.02



Multidisciplinary team



Post-operative protocols



Early Post-operative Ambulation to reduce the incidence of post-operative complications, such as atelectasis, hypostatic pneumonia, gastrointestinal discomfort, and circulatory problems. Patient starts the ambulation with help of nurses and doctors several hours after the surgery.



Physical Therapist Assisted Sputum Expectoration After Surgery

Effect of CHPR

	Before CHPR	After CHPR	p
	6MWD(m)	6MWD(m)	
All Patients (n=33)	377	402.1	0.043
≥70 yr (n=30)	336.2	392.3	0.02
%VC<80% (n=9)	303.8	346.6	n.s.
FEV1%<70% (n=12)	367	395.8	n.s.
≤90% of Ideal Body Weight (n=7)	367.4	396.2	n.s.

Satisfaction of Patients for Pre-operative Rehabilitation

