TABLE II
Diagnostiques comparatives entre les études de 1993 et 2002

1993	n= 67	%	**2002**	n=146	%
Tuberculose	31	46.3%	Tuberculose	78	53.4%
Pneumonie	19	28.4%	Pneumonie	38	26.0%
Pneumonie *Pn. car.*	2	3%	Pneumonie *Pn. Car.*	14	9.6%
Embolies pulmonaires septiques	1	1,5%	Embolies pulmonaires septiques	4	2.7%
Empyème	2	2,9%	Abcès pulmonaire	1	0.7%
			Bronchite aigue	4	2.7%
			Bronchectasies	4	2.7%
			Bronchiolite	2	1.4%
Pathologie non-infectieuse	14	20.9%	Pathologie non-infectieuse	15	10.3%
VIH+	13/48	27.1%	VIH+	87	71.9%

Chez le groupe de patients de l'étude de 1993 on a trouvé une pourcentage semblable de pneumonies (28,4%), mais seulement en deux situations (3%) on a fait le diagnostique de pneumonie par *Pneumocystis carinii* (Table II).

Le diagnostique de tuberculose a été établi en 46,3 % des patients et la pathologie non infectieuse en 20,9 % des malades .

On a détecté une infection liée au VIH en 27,5 % des patients avaliées.

Nous pensons pouvoir conclure que la pathologie infectieuse est la responsable pour la majorité des admissions et quant aux numéros de 1993, la principal différence est un accroissement significatif des malades infectées par le VIH, qui conduit a l'élévation de l'incidence de pneumonies opportunistes et probablement des cas de tuberculose.

COPD: Transplantation or volume reduction surgery

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Emphysema is defined in anatomic terms as enlargement of alveoli and destruction of their walls, causing them to become confluent and to form grossly oversized air spaces. Emphysema is usually distinguished from chronic bronchitis, the other form of chronic obstructive pulmonary disease (COPD).

Expiratory air flow obstruction occurs late in the course of the disease and is reflected in decrements of the forced expiratory volume in one se-cond (FEV_1), when this value falls below 30% of the predicted normal value, the survival rate is approximately 87% at 1 year, 72% a 2 years and 59% at 3 years[1].

Medical therapy may reduce symptoms, slow disease progression, and improve survival, but it can do little to restore lung function and does not halt the slow downhill course of the disease. When the disease has progressed to a degree that the patient's quality of life has become unbearable, the surgical options of "Lung Volume Reduction Surgery

(LVRS)" or "Lung Transplantation (LTx)" may be considered. The major difficulty facing surgeons lies in appropriate selection of patients for either procedure.

It is important to differentiate two types of emphysema, with prognostic implications in the surgical treatment: the Panacinar emphysema, more often affects the lower lobes and is usually encountered in patients with alpha-1 antitrypsin deficiency. It is the homogeneous type with no regional or only minor differences in the severity of emphysema. And Centriacinar emphysema, the pattern most frequently associated with smoking, most commonly involves the upper lobes and may be quite focal; it is the heterogeneous emphysema where a distinct regional difference in the severity of emphysema is present; in the heterogeneous emphysema we find the named "target areas", they are the portions of the lung mostly affected for emphysema, and we have to identify and resect them during LVRS.[2]

LVRS has become an accepted procedure for palliative treatment of diffuse, non bullous emphysema. Peripheral segmental wedge resections of the most destroyed areas of the lungs are performed, in order to decrease hyperinflation and restore diaphragmatic function.

In the 1950s Brantigan performed wedge resections of emphysematous lungs, but the 18% operative mortality prevented against the procedure[3]. In 1991 Wakabayashi rekindled the interest with the use of the laser by unilateral thoracoscopy, but he did not get stimulate colleagues in the same way[4].

In 1994 Cooper and his colleagues modernized Brantigan's operation by resecting areas of severe emphysematous change in both lungs through a median sternotomy[5]; they proposed that the removal of diseased and functionless lung may improve the function of the remaining lung (increasing elastic recoil pressure, thereby increasing expiratory air flow rates; decreasing the degree of hyperinflation resulting in improved diaphragm and chest wall mechanics; decreasing the inhomogeneity of regional ventilation and perfusion, resulting in improved alveolar gas exchange and increasing effectiveness of ventilation to maintain blood gas levels).

The Russian Demikhov was the first who performed an experimental lung transplant in dog, in 1946. Twenty years later Hardy got on with the first LTx in human being. But newly Cooper and his colleagues were the responsibles of the current world wide LTx expansion, with more than 12000 single and bilateral LTx communicated in the last report of the "International Society for Heart an Lung Transplantation" on August 2001[6]. Lung transplant could be the perfect treatment for patients with severe emphysema, we change and replace the diseased emphysematous lung for a new healthy donor lung.

Which are the common aspects to both procedures?: we should indicate both procedures only if patients have received a correct and complete non surgical treatment and their degree of deterioration is irrecoverable. In the other hand both procedures carries a risk of mortality that we should have in mind if we indicate either, for LVRS it varies from 0% to 20% with on average of about 4.8%; for LTx the perioperative mortality is similar but increased during the first year due to infection principally[7]. It is assumed that surgeons recognise that none of both options are to be regarded as other than palliation; there is not as yet evidence that survival is affected by any surgical procedure, however a recent publication from Meyers and colleagues favoring survival in LVRS's patients versus medical therapy (72% versus 41% at 4 years)[8].

We think the most important for indicating LVRS is the assessment of the hyperinflation degree and recognising preoperatively the target areas. General recommendations are to performed LVRS for patients with FEV_1<35% of predicted, residual volume>150% and total lung capaci-ty>120%. Every patients have to be studied with CT scan and lung perfusion scan preoperatively. The functional

improvement after LVRS can raise 58% of the preoperative baseline value in terms of FEV_1, the maximum increase is evident at 6 months after LVRS, but steadly diminishes later, however some patients retain benefits at 2-3 years at least[9].

There are some unanswered questions to regard LVRS: Anatomic characteristics of emphysema are important in patient's selection for the procedure, patients with a heterogeneous pattern of emphysematous involvement with upper lobe predominance have a better outcome than patients with a homogeneous pattern or lower lobe predominance, in the last patients the benefits of the operation persisted only short for them, and returned to baseline at 1 year in most cases, with further deterioration after them. LVRS will only be beneficial if the remaining lung retains sufficient function to enable the patient to make use of his mechanical advantages, in this way the only report of the "National Emphysema Treatment Trial (NETT)" at the moment, shows that patients with a FEV_1 equal o less than 20% of predicted, and either a DLCO equal or less than 20% of predicted, or a uniform pattern of emphysema distribution on the CT scan had a higher risk of death, during the first 30 days after surgery, and should to be excluded of the procedure[10]. Hypercapnia, pulmonary hypertension, homogeneity of disease, high degree of parenchimal destruction are considered risk factors and should avoid the procedure. From the published reports it appears that the applied techniques of LVRS are of minor importance for the overall success, nonetheless the functional improvement after bilateral resections exceeds that after unilateral approach, however we can perform unilateral LVRS if there are unilateral pattern of emphysema, prior unilateral chest surgery or pleural symphysis. Another question is for how long the results of LVRS last. We have information from very limited series on the results after more than 2 or 3 years. Published results indicate that 3 years after LVRS the benefits seem not to persist in the majority of patients, although there is a small number of patients who show benefit 5 years after the operation[11,12].

Regarding LTx we can establish the transplant´s window for COPD if patients presents with a FEV_s<25% of predicted, and/or a $PaCO_2$>55 mm Hg., and/or pulmonary hypertension[13]. The results are a dramatic enhancement in lung function and performance status, with no limitations in 85% of survivors at 5 years, and a FEV_1 nearly 100% of predicted if complications are rule out. The concerns in LTx are the lack of available donor lungs with a waiting time in United States of two years; that is different in Spain where only 4% of patients have to wait in list more than 1 year for a suitable donor lung, and the mean waiting time in list is less than 5 months. This is an important difference between United States and us at the time to indicate LVRS or LTx[14]. Other issue is the develop of chronic rejection in 50% of patients at 5 years post-transplant, with a progressive decline in lung function and finally death. The last problem is the need for lifelong immunosupression with a con-tinued risk for infection.

It is important to realise that up to 70% of emphysema patients inquiring into LVRS will be rejected for this surgery due to a variety of medical, physiologic an anatomic reasons. Only a small number of patients are candidates for the procedure. However it has been published that approximately 47% of patients with emphysema referred for evaluation by a lung transplant program were candidates for both LVRS and LTx procedures[15]. The problem is get to separate the common group of patients to both procedures for indicating the most beneficial.

Following the criteria by Meyers and Patterson, indications to both procedures are: emphysema with destruction and hyperinflation; marked impairment, with FEV_1<35% of predicted; marked restriction in activities of daily living; failure of maximal medical treatment to correct symtoms. Conditions favoring LVRS would be: marked thoracic distension; heterogeneous disease with apical target areas;

FEV_1>20% of predicted; age between 60 and 70 years. Finally conditions favoring LTx are: diffuse emphysema; FEV_1<20% of predicted; hypercarbia ($PaCO_2$>55 mm Hg.); pulmonary hipertensión; age less than 60 years; alpha 1 antitrypsin deficiency[16].

Revising bibliografy, we can find some studies which LVRS and LTx has been used jointly.

Wiser and colleagues describes 15 out of 102 LVRS patients that underwent LTx 19,6 monoths later, in 53% of them LVRS failed to improve FEV_1 and in the remaining 47%, FEV_1 improved 31,9% of predicted value; in responders LTx was able to be delayed more than in non responders; three months mortality after LTx was 20%, all deaths in non responders; they concluded that LTx could be a dangerous option when LVRS has been unsuccessful[17].

Meyers and colleagues studied 99 patients who met criteria for LVRS and LTx, firstly every patients underwent LVRS; in the follow-up the results were better when they performed upper lobe reduction surgery with a rate of listing for LTx of 27% and an increase of 63% in FEV_1, versus 63% of listing and 30% increase in FEV_1 if they performed lower lobe reduction surgery; they concluded that LVRS do not preclude posterior LTx and bridged it for 3,8 years[18].

Lastly Karen and colleagues matched 15 LVRS plus LTx patients against 15 only LTx patients, They did not find any differences in lung function or survival, and the results were better for bilateral LVRS[19].

We conclude that at the present there are only evidences that the most important selection factor for successful LVRS is the presence of a heterogeneous pattern of emphysema predominately in upper lobes, consistently we are conservative in its indications; we only performed it if patients meet the previous criteria, and in the case that do not preclude a future LTx. We hope that NETT's results could clarify the optimal selection of candidates for LVRS, and to identify those with a greater risk for the procedure.

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The prescription of an home ventilator according to different diseases: from setting to family training

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In recent years, guidelines have been published in order to define indications, applications and delivering of long-term mechanical ventilation (MV). Noninvasive positive pressure ventilation (NPPV) has been increasingly used in the management of chronic respiratory insufficiency both in restrictive than in obstructive patients. Side-effects due to the interface may impact the follow-up of these patients in 20 to 50 % of cases and account for an important problem dealing with discontinuation and lacking of compliance. Nonetheless, selection of patients, modalities of ventilation, types of ventilators and their setting, have been claimed to account for these conflicting results. It is has been described that only 50% of patients with COPD continued to use NPPV during prolonged follow-up of approximately 6 months. In the clinical practice, home NPPV is prescribed as nasal pressure support ventilation (NPSV), and is set to achieve a decrease in $PaCO_2$ and an optimal patient's compliance. We recently demonstrated that when compared to unassisted breathing both settings (at patient's comfort, or the physiological setting) indu-ced a significant improvement in minute ventilation and in diaphragm activity as assessed by the diaphragmatic pressure-time product (PTP); eva-luation of lung mechanics and respiratory muscle function may result in reduction in ineffective ins-piratory efforts. Home NPPV is often prescribed after in-hospital practice sessions performed with the commercial ventilators available at the moment (often a single one), which may be not necessarily that used by the patient at home. In our laboratory we undertook a study to compare the patient-ventilator interaction and patient comfort with different commercial bi-level pressure home ventilators. We con-