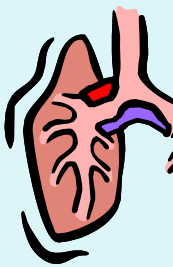
Rehabilitation for Operated Lung Cancer (ROC)

Amy Kerr

Regional Department of Thoracic Surgery
Heart of England NHS Foundation Trust (HEFT)
Birmingham Heartlands Hospital



Regional Thoracic Unit

Lung Cancer Statistics

- Lung cancer is the most common cancer in the world with 1.61 million new cases diagnosed every year.
- Most common cause of cancer death in the UK
- Only 15% cancer patients are getting potentially lifesaving surgery, this has increased over recent years but is lower compared to the best countries in the world
- Five-year survival rates for stage 1 patients treated with surgery 60% -80% and for stage 2, 25-50%

National Cancer Intelligence Network (NCIN)

The Issue

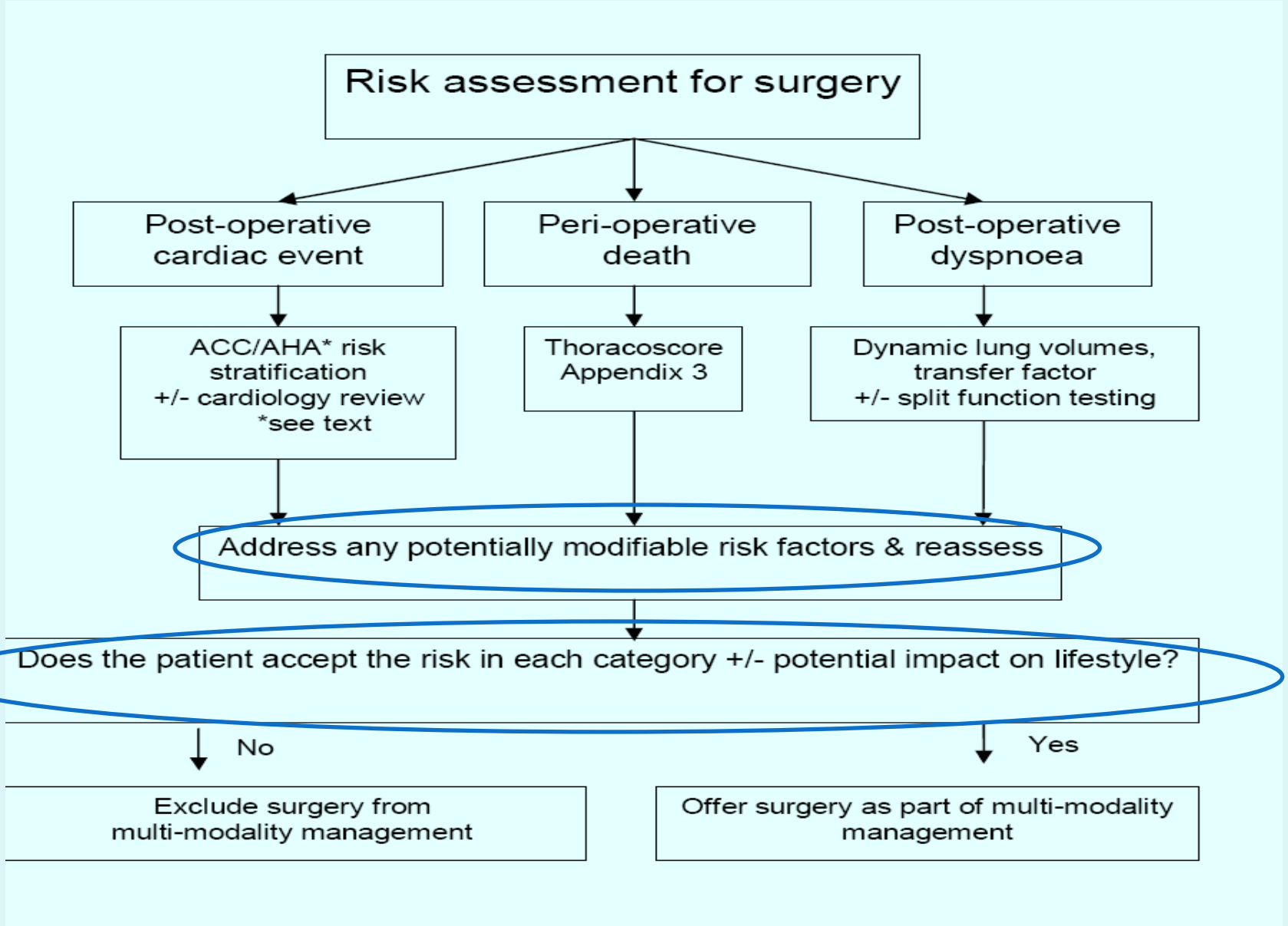
- Curative lung cancer surgery removes a substantial portion of normal functioning lung and disrupts the chest wall
- Leads to a loss of function and reserve which puts the patient at risk of post-operative pulmonary complications (PPC) in and out of hospital.
  - Pneumonia and atelectasis are the most common
- The baseline rate of PPC is **15**%
  - Length of stay increases from 5 to 14 days.
  - Mortality increases from 0.5%to 12%,
  - ITU admission rate increases from 1.5% to 26%

Independent Risk Factors for PPC

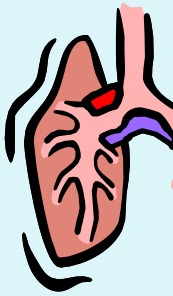
Age ≥ 75
ASA ≥ 3
Current smoking
COPD
Reduced mobility

Agostini et al. Thorax. 2010 (BHH data)

BTS Guidelines Surgery Permissive



Programme Aim



A programme identifying potential surgical candidates several weeks before surgery, optimising their physical status, preparing them for the inpatient journey and supporting their recovery after surgery

Rehabilitation for Operated lung Cancer programme ROC

Project Measures

Historical baseline
Real time comparative group

Primary:

- PPC

Secondary:

- Length of stay (+HDU/ITU)
- Re-admission rate
- Cost Saving
- Lung function exercise capacity breathlessness
- Smoking cessation
- Nutrition assessment (BMI)
- Quality of Life / motivational tool

4 Main Programme Elements

Pulmonary Rehabilitation

Develop and deliver exercise programme to improve exercise/respiratory capacity

(COPD rehabilitation classes)

Smoking Cessation

Utilization of local smoking cessation services to increase the number of patients to quit smoking before surgery leading to permanent abstinence

4 Main Programme Elements

Patient Self management and Education

Develop and deliver patient self-management programme to support and enforce other aspects of the programme, (pulmonary education, lung cancer information)

Nutritional Intervention

Develop and deliver a process to ensure optimisation of patients nutritional status prior to surgery and to identify nutritionally depleted patients for appropriate intervention

Process Pre-surgery

Patient identified in the multi disciplinary meeting as potential surgical candidate for curative lung resection pending final investigations

Written and verbal information given by Lung Cancer Nurse Specialist/Respiratory Consultant

Patient attends Rehabilitation sessions twice a week until surgery (surgery is not delayed)

Self management Education programme

Dietary assessment and advice, referral if needed

Smoking cessation- identify and direct to relevant service

Process Post-surgery

Proceed to surgery

Yes

Return back to Pulmonary Rehabilitation 3-4 weeks after discharge for 6 sessions

Offer support class

No

Offer support class

April 2010 – January 2012

58 Patients

- 52 Heartlands Hospital and Solihull Hospital
- 6 Worcester Royal

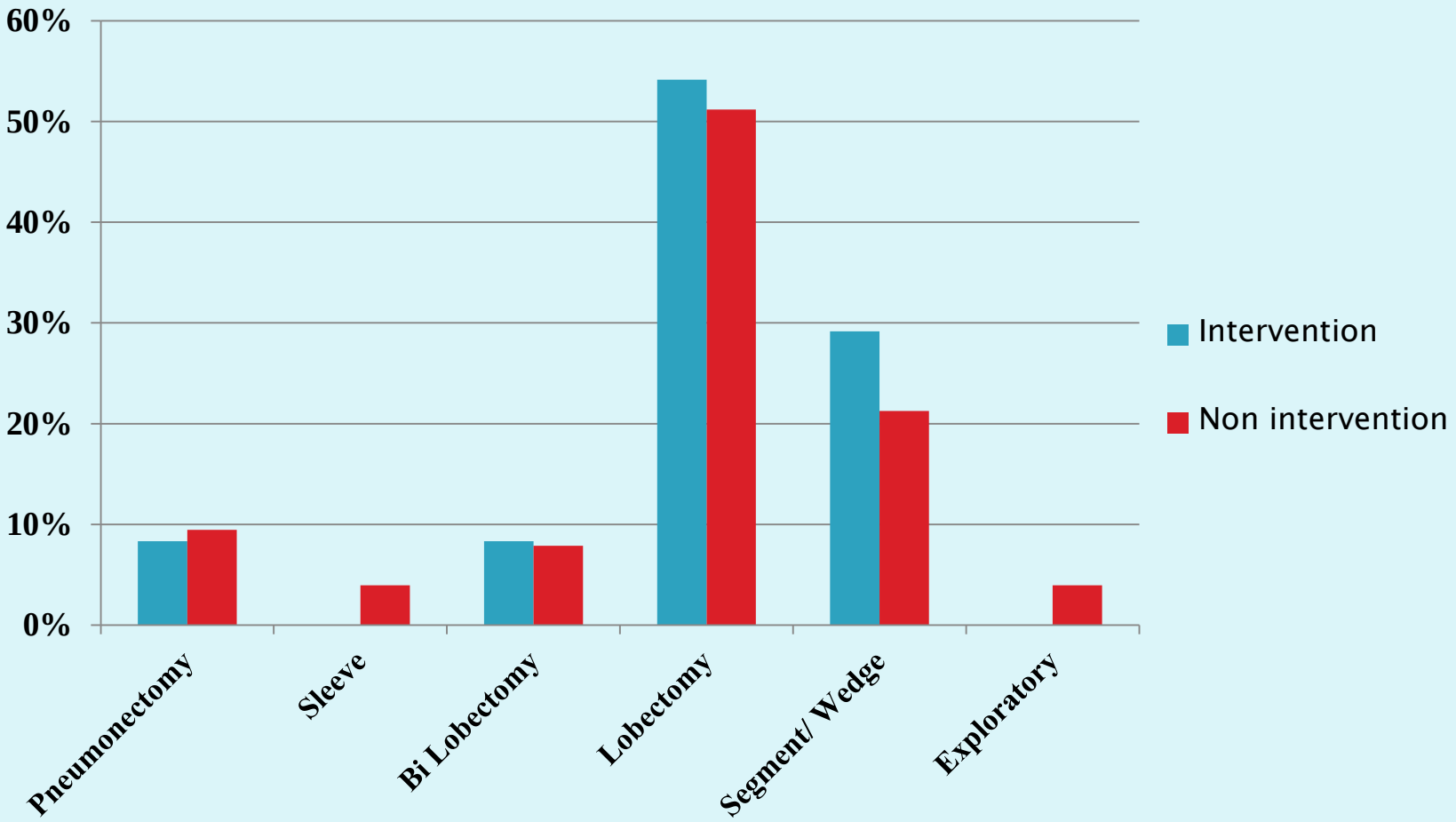
Not including

- 4 patients dropped out
  - 2 mass reduced
  - 1 mass increased
  - 1 wanted radiotherapy (age 92)

Demographic data

Characteristic	Intervention	Non Intervention
Age*	69 (41-85)	67 (21-88)
COPD	36%	23%
Cardiac disease	34%	36%
BMI	26.4 (16.4-36.9)	25.8 (16.7-47.8)
Current smokers	17%	18%
ECOG ≥3	16%	18%
ASA≥3	22%	23%

Types of Surgery



Primary Outcomes

Measures 6th May 2010 – 01ST January 2012	Intervention (n=58)	Non-Intervention (n=305)
PPC Rate	**9%**	**16%**
Unplanned ITU admission rate	3%	3%
Unplanned ITU admission median LOS	2 days	3 days
HDU median LOS	1 days	2 days
Hospital LOS	5 days	5 days
Readmission rate	**5%**	**14%**

Cost Savings

- New service cost (Pulmonary rehab) = £188.45 per patient
- Total cost saving per patient (includes new service costs) **£243.67**
- Savings made through reductions in ITU and HDU admission and hospital readmissions
- Savings are cash releasing to PCT's

Process Timings

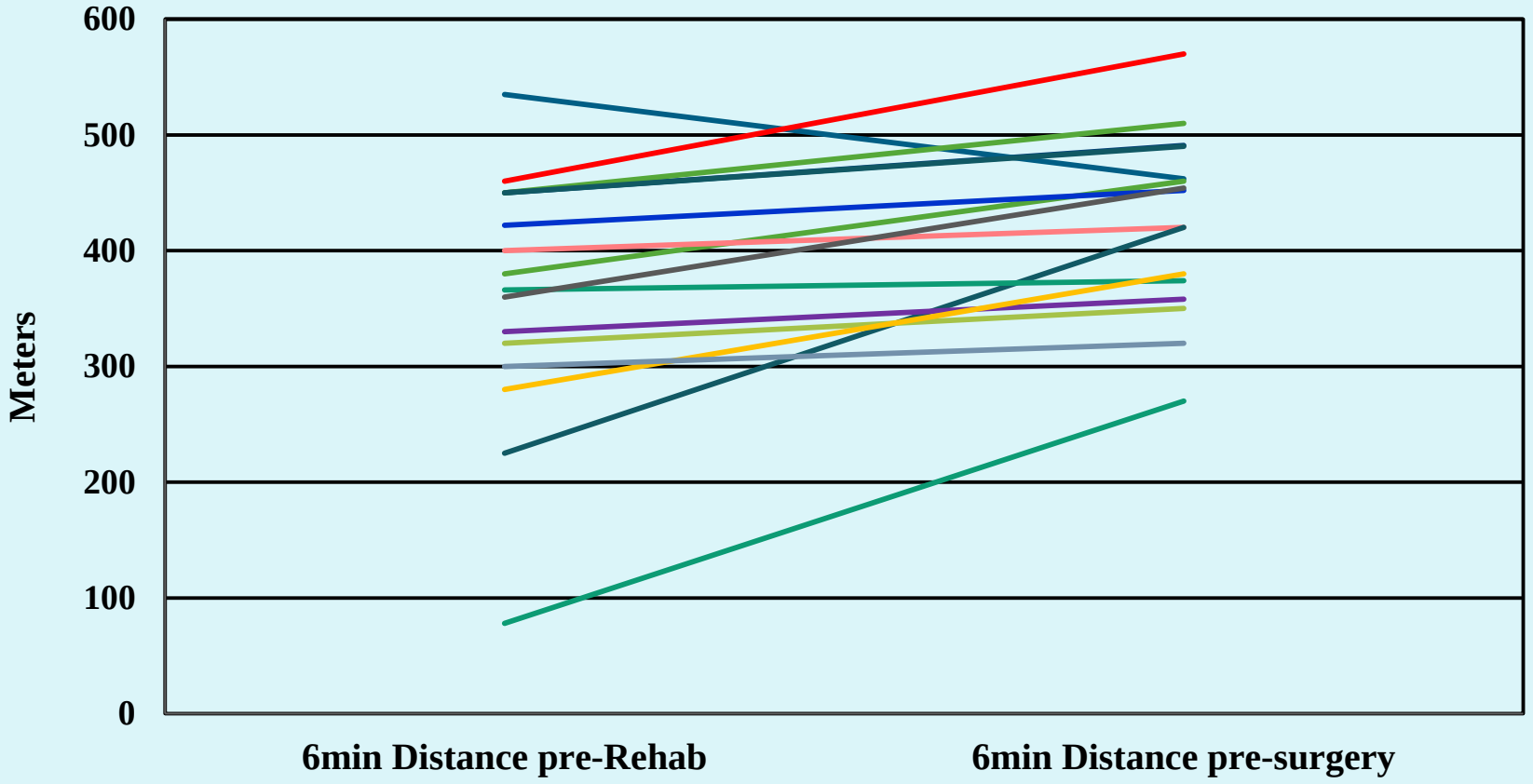
• Patients waited on average 5 days to be seen in a rehabilitation class (range 0 to 23)

• Attended on average 4 rehabilitation classes (range 1 to 15)

• Attended 7 education sessions (range 2 to 13)

No surgery was delayed unless the patients was deemed unfit for surgery

Secondary Outcomes: 6 Minute Walk



Average distance increase for all patients is 60.9meters

Case Study: 66 yr male

- Large tumour
- COPD, ex-smoker
- April 2010 not fit for surgery wheel chair bound
- 12 sessions of rehabilitation
- 8 education sessions
- 6 minute walk test improved 220m to 440m
- FEV_1 1.75 to 2. 86
- August 2010 - Fit for surgery
- Right middle & lower lobectomy
- Length of stay 14 days due to AF
- No PPC

Case Study: 63 yr female

- Large central tumor invading chest wall
- Smoker, 45 year pack history
- 9 sessions of rehab
- 6 education sessions
- 6 minute walk test improved 450m-510m
- Left upper lobectomy and chest wall resection
- Length of stay was 4 days
- No PPC

Unexpected Benefits

- Cancer patients perceiving their own situation more positively compared to the COPD patients
- Patients giving each other support during pre-op rehabilitation sessions
- Patients having a pre-op goal to focus on
- Patients more motivated after surgery
- Staff undertaking informal training, leaning more about thoracic surgery, cancer and each others work
- Positive feedback at presentations of early results

Comments

- **Lung Cancer patients**

"I always thought I was fit but these classes do make me work"

"Feels like I can help my diagnosis"

"I have found it useful meeting other people with the same diagnosis"

- **COPD Physiotherapist**

"I have enjoyed the new group of patients, like a breath of fresh air"

- **Ward Physiotherapist**

"ROC patients seem more compliant with breathing exercises post surgery"

- **Lung Cancer Nurses**

"It has had a positive impact on our service by enhancing the pathway for the surgical patients"

"We have worked well as a team to develop the programme into a robust and relatively easy to follow pathway"

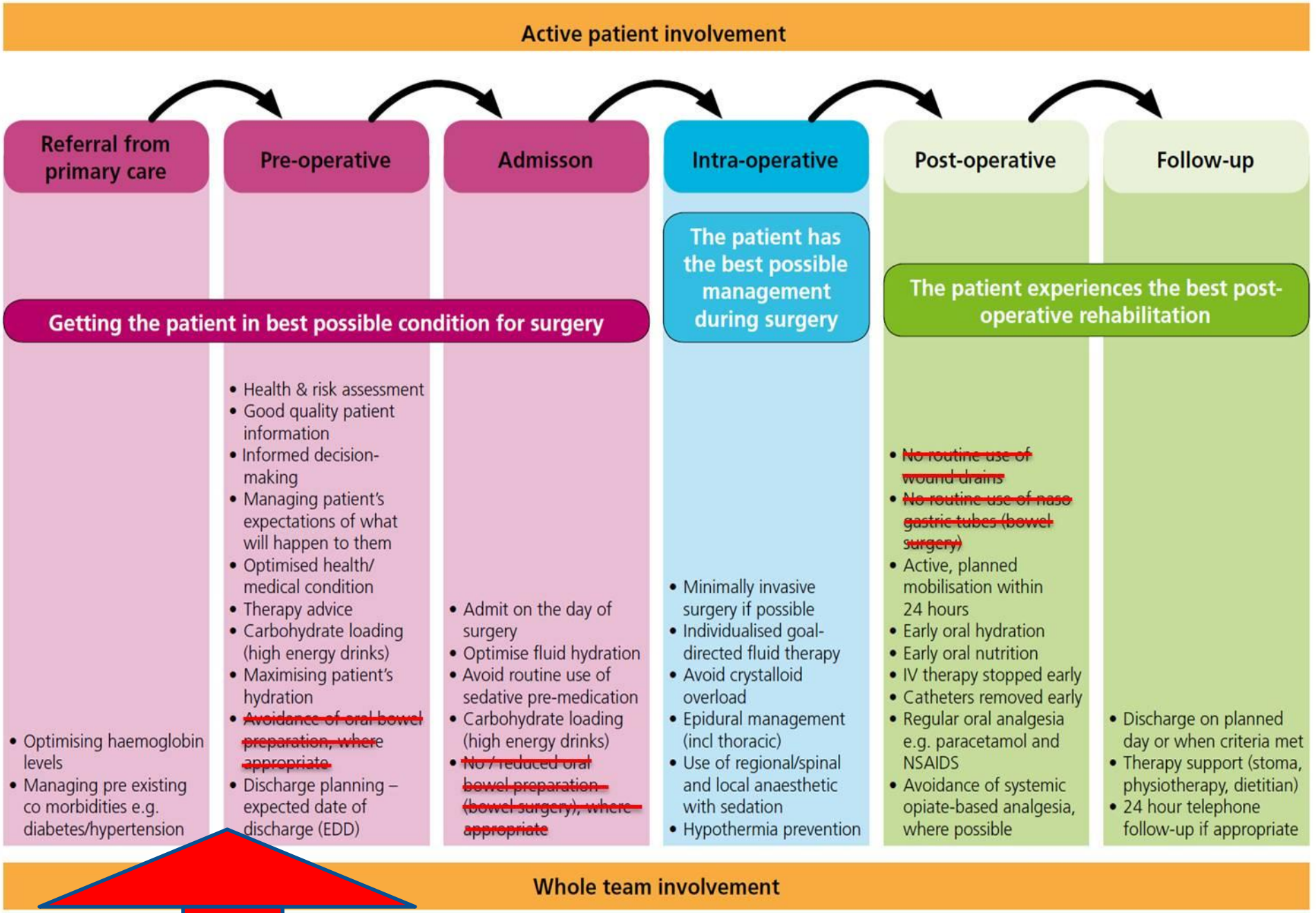
DVD

The purpose of the DVD is to provide patients with information that will help to better prepare them for lung surgery by describing the pathway and providing practical exercise and education advice for before and after surgery.

Future of ROC

- Has successfully spread to:
  - Sandwell hospital
  - Walsall Manor
  - Good Hope
- In process of setting up
  - Queen Elizabeth Birmingham
  - Hereford
  - Cheltenham
- Manual
- Enhance Recovery After Surgery (ERAS)

The enhanced recovery pathway



Thank you

Any questions ?