Optimising the Patient Journey

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Prescribing information is available at this meeting and can be accessed from the links at the end of this deck.
This is a promotional meeting funded and organised by AstraZeneca for UK HCPs only.

GB-56017
Date of preparation: June 2024

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Disclosures

Dr Katy Clarke: I have received sponsorship for congress attendance by Merck Sharp & Dohme and Takeda and honoraria for my participation in the 2024 Think Again Lung Summit from AstraZeneca.

Ms Melissa Taylor: I have received honoraria for my participation in the 2024 Think Again Lung Summit from AstraZeneca.

IMFINZI™▼(durvalumab) indications in NSCLC:

IMFINZI™(durvalumab) as monotherapy is indicated for[1,2]:

- The treatment of locally advanced, unresectable NSCLC in adults whose tumours express PD-L1 on ≥1% of tumour cells and whose disease has not progressed following platinum-based chemoradiation therapy

NSCLC, non-small cell lung cancer; PD-L1, programmed cell death ligand-1; URTI, upper respiratory tract infection.

1. EMC. IMFINZI SmPC. Available at: https://www.medicines.org.uk/emc/product/9495 (Accessed June 2024); 2. EMC Northern Ireland. IMFINZI SmPC. Available at: https://www.emcmedicines.com/en-gb/northernireland/medicine?id=ebfb0ef2-3f0b-4d5d-8e7b-353a0176b147&type=smpc (Accessed June 2024)

Optimising the Patient Journey

Managing adverse effects including prehabilitation

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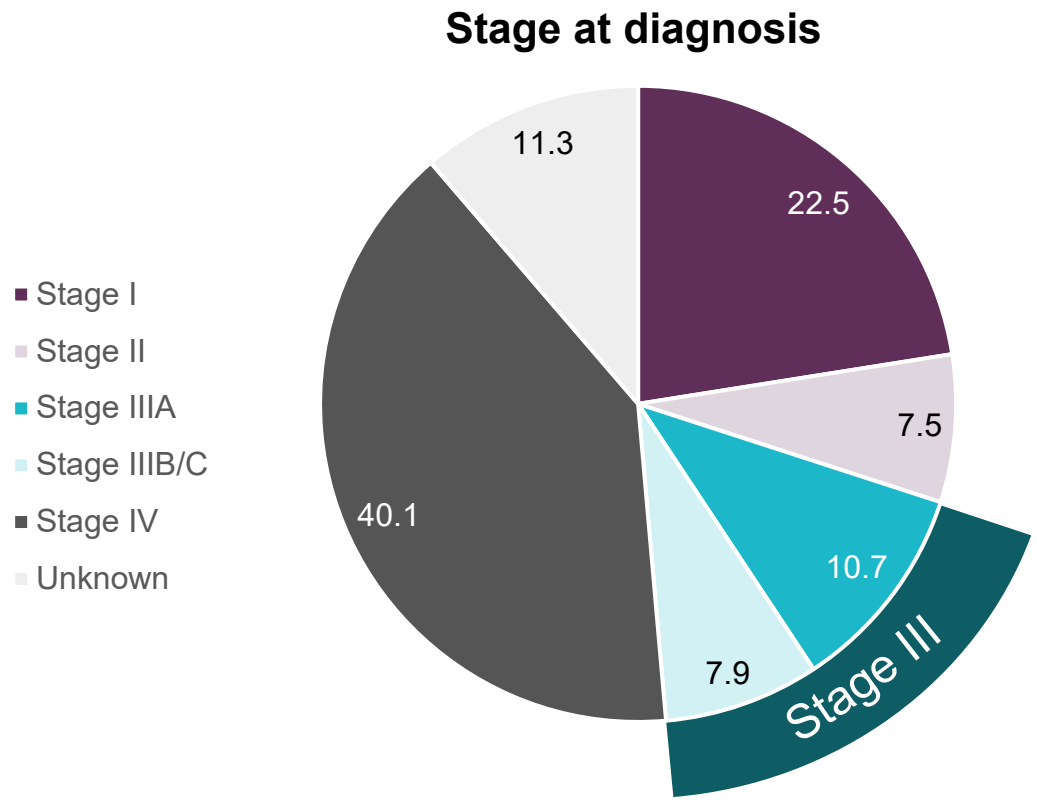
NSCLC stage at diagnosis

According to the 2024 NLCA report, 58.2% of lung cancer cases are pathologically NSCLC[1]

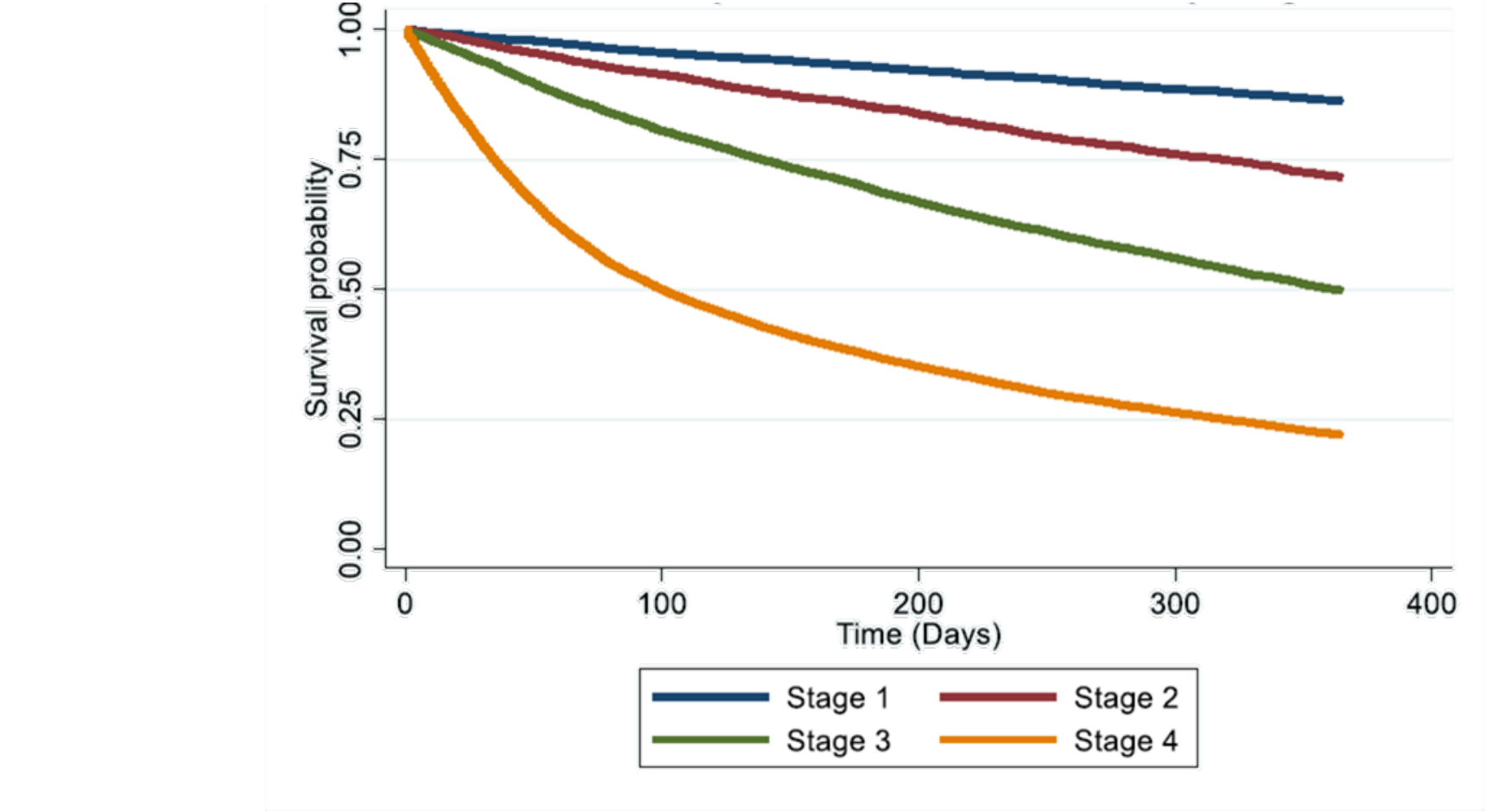


18.6% of patients in England are Stage III at diagnosis

NLCA, National Lung Cancer Audit; NSCLC, non-small cell lung cancer.

1. Royal College of Physicians. NLCA Annual Report 2024. Available at: https://www.lungcanceraudit.org.uk/wp-content/uploads/2024/05/NLCA-State-of-the-Nation-2024_16.05.24_V2.0.pdf (Last accessed June 2024).

In 2020, the median OS for Stage III NSCLC in England was 362 days[1]



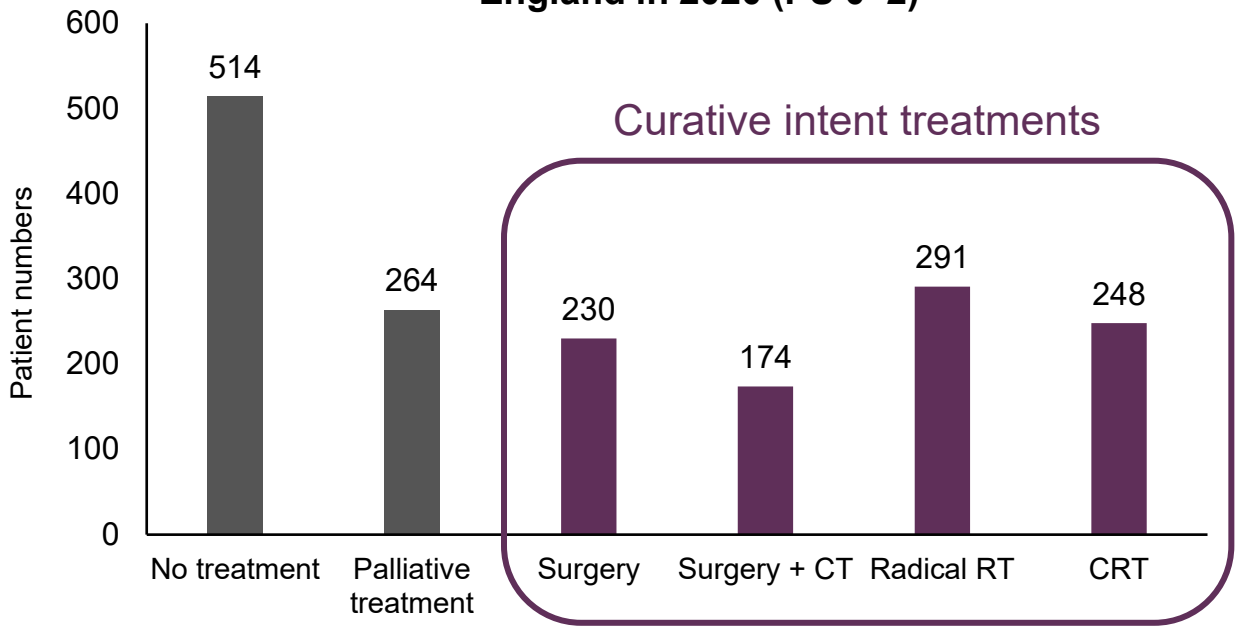
NSCLC, non-small cell lung cancer; OS, overall survival.

1. Royal College of Physicians. 2022. National Lung Cancer Audit annual report for the audit period 2019 England, Wales and Guernsey and 2020 England only.

Historical UK Stage III NSCLC treatments[1]

Only 51% of Stage IIIA NSCLC patients in England received treatment with curative intent in 2020*

Breakdown of treatment of Stage IIIA patients in England in 2020 (PS 0–2)[1]



The lack of curative intent treatment may reflect:

- The significant weight loss, decline in performance status, stage evolution, and serious intercurrent events that often occur during the diagnostic and evaluation process in this patient group[2]
- Variability in clinical practice and expertise across the UK[3]

*UK National Lung Cancer Audit Data. COVID-19 greatly impacted the treatment of lung cancers between 2019–2021; this is reflected in statistics reported at the time.[1] The figure shows the treatment received by Stage IIIA NSCLC patients in the UK in 2020. Curative intent treatments include surgery, surgery + chemotherapy, radical radiotherapy, and chemoradiotherapy.

CRT, chemoradiotherapy; CT, chemotherapy; NLCA, National Lung Cancer Audit; NSCLC, non-small cell lung cancer; PS, performance status; RT, radiotherapy.

1. Royal College of Physicians. 2022. National Lung Cancer Audit annual report for the audit period 2019 England, Wales and Guernsey and 2020 England only (including data spreadsheet); 2. Robinson AG, et al. *Curr Oncol*. 2015 Dec;22(6):399-404; 3. Sethi T, et al. *Thorax*. 2013 Dec;68(12):1181-5.

Several clinical factors influence the type of multimodality treatment for patients with Stage III NSCLC

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While the treatment goal for Stage III NSCLC is to cure, patients with unresectable disease are less likely to be cured when compared with those with resectable disease[2,3]

Case-specific

The exact sequence and modality of treatment used is keenly debated and highly case-specific[1]

Resectability

The choice of multimodal treatment is largely dependent on whether the tumour is potentially resectable and therefore if surgery has a role[2]

Stage

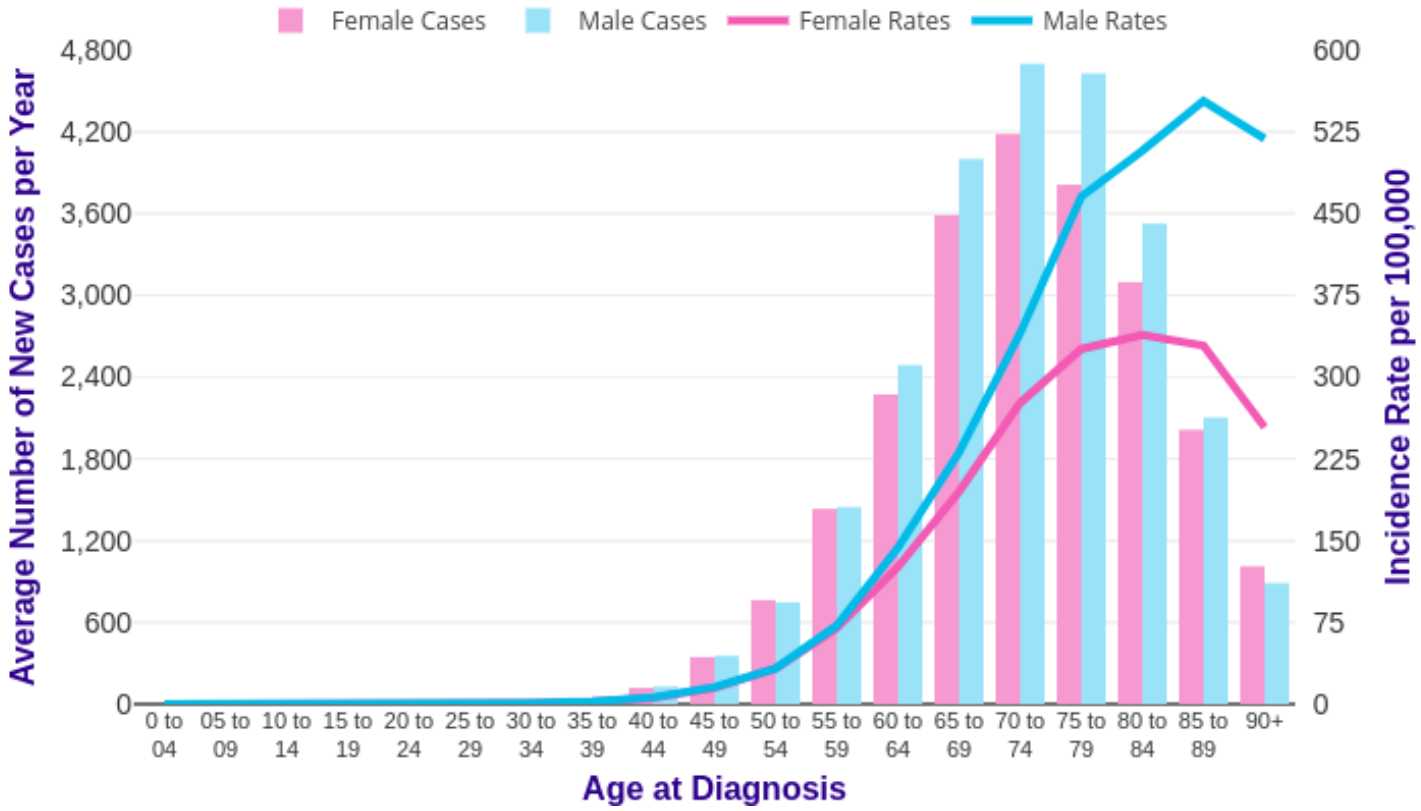
Classification of Stage IIIA and stage IIIB disease indicates the tumour may be either resectable or unresectable, while a classification of stage IIIC disease generally indicates an unresectable tumour[3,4]

NSCLC, non-small cell lung cancer.

1. Yoon SM, et al. *World J Clin Oncol*. 2017 Feb 10; 8(1): 1–20; 2. Patel V, et al. *Oncologist.* 2005;10(5):335-344; 3. Evison M, et al. *Thorax* 2018;73:1105-1109; 4. Postmus PE et al. *Ann Oncol* 2017; 28 (Supplement 4): iv1-iv21.

Patient population

Lung cancer incidence by age

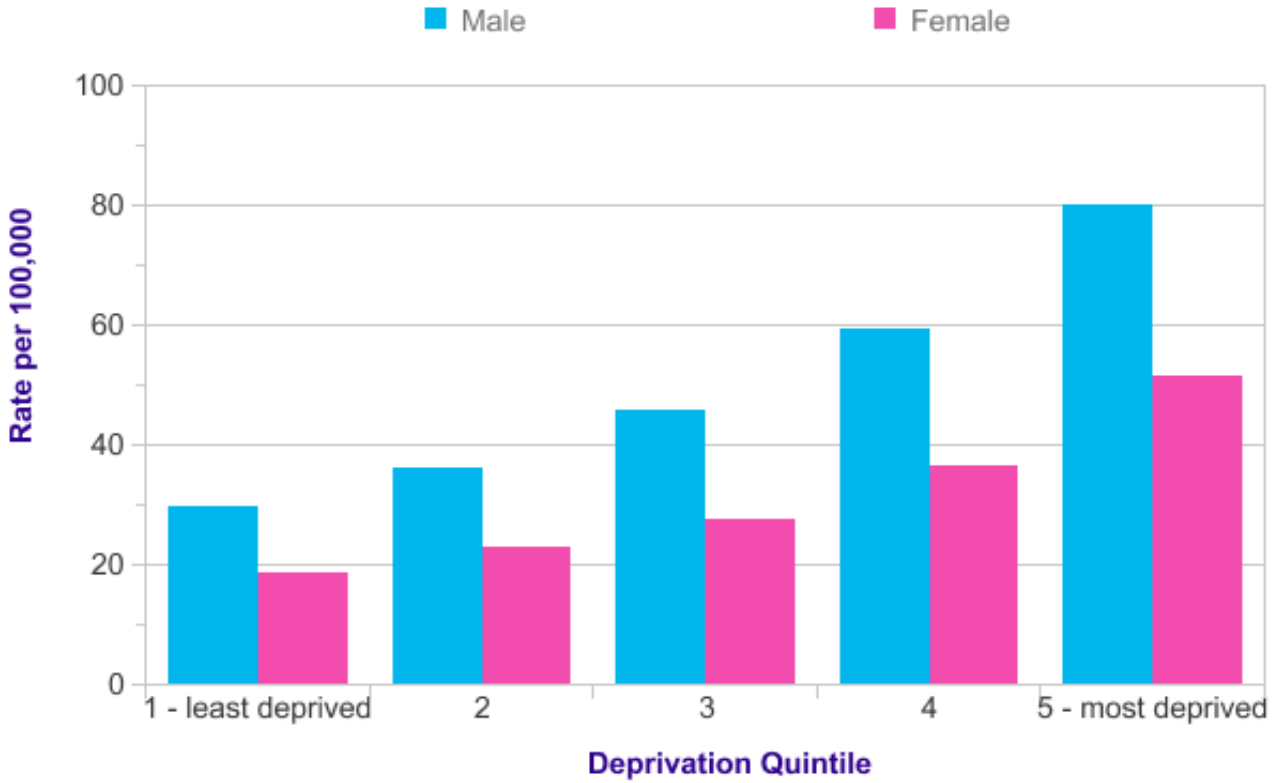


On average, **4 in 10** new lung cancer cases (44%) are in patients aged 75 years and older

Image courtesy of https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer/incidence#heading-One
Cancer Research UK. Lung cancer incidence by age. Available at: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer/incidence#heading-One (last accessed June 2024).

Patient population

Lung cancer mortality by deprivation index



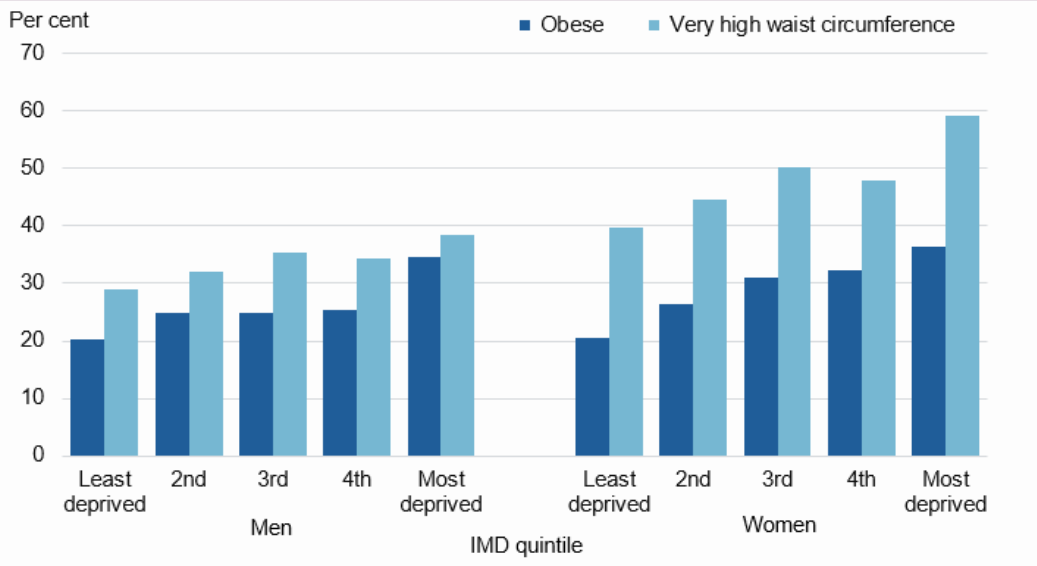
Mortality rates are **170% higher** for males living in the most deprived areas compared with the least deprived, and **176% higher** for females

Image courtesy of Cancer Research UK https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer/mortality#heading-Four.
Cancer Research UK. Deprivation gradient in lung cancer mortality. Available at: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer/mortality#heading-Four (Last accessed June 2024).

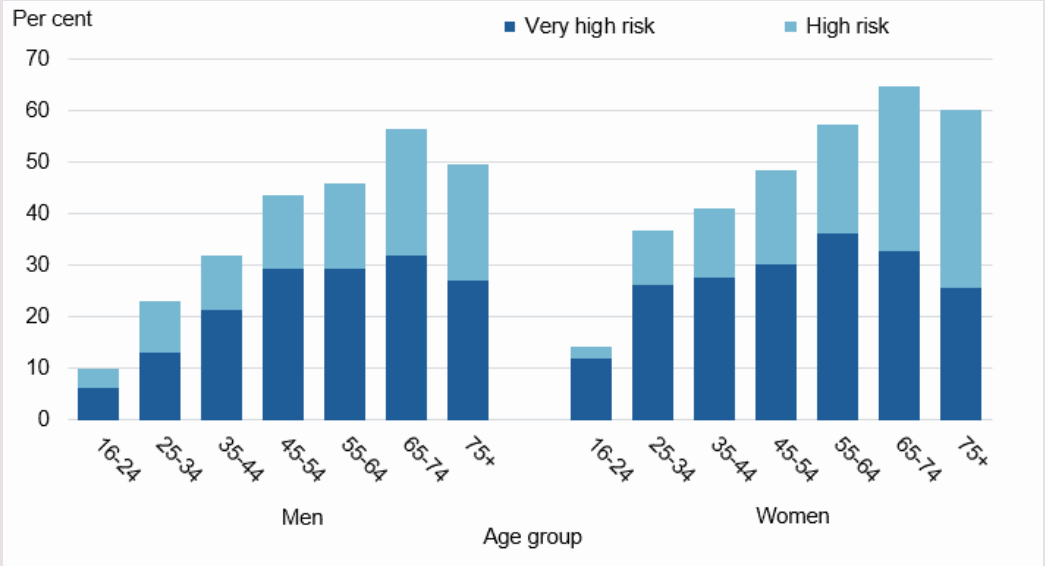
Obesity

- **Obesity has significant effects on respiratory function[1]**
- **Effects are multifactorial and not fully understood[1]**

Adult obesity and waist circumference, by deprivation level[2]



Weight related health risk in adults[2]



1. Dixon AE, et al. Expert Rev Respir Med. 2018;12(9):755-767; 2. NHS. Health Survey for England 2018. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018/summary (last accessed June 2024).

Comorbidities

- **Lung cancer is more common in the older population, who have an increased risk of comorbidities[1]**
- **In one study, 54% of patients presented with three or more comorbidities[2]**
- **In inoperable Stage III disease, overall survival has improved in clinical trials over the past 5–10 years[3-5]**
- **One randomised retrospective comparison in early-stage NSCLC with SABR compared to surgery has suggested:[6]**
  - Surgery has improved overall survival vs. SABR
  - Cancer-specific survival is similar between surgery and SABR

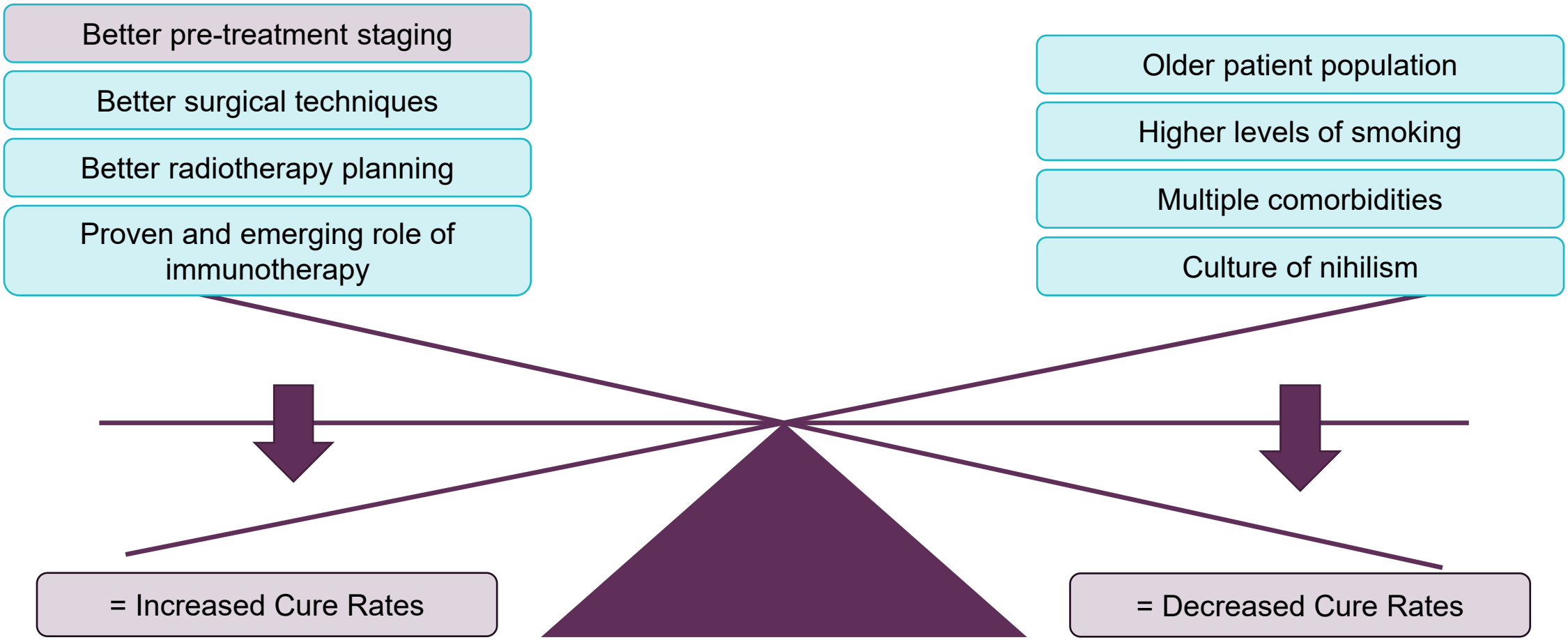
Therefore, as we treat (and hopefully cure) more Stage III patients, are more going to die of their comorbidities rather than their cancer?

NSCLC, non-small cell lung cancer; SABR, stereotactic ablative radiotherapy.

1. Islam KM et al *Cancer Epidemiol Biomarkers Prev*. 2015;24(7):1079-85; 2. Tammemagi CM et al. *Int J Cancer* 2003;103(6):792-802; 3. Bradley JD, et al. *Lancet Oncol.* 2015;16:187–199; 4. Senan S, et al. *J Clin Oncol*. 2016;34:953962; 5. Antonia SJ et al. *N Engl J Med* 2018; 6. Spencer K et al. *Eur Respir J*. 2019; 53(6):1801568.

Therefore, in Stage III NSCLC, are we battling against a “Perfect Storm”?

The Stage III balancing act



Speaker's clinical expertise.

Case 1 - background

- **69-year-old man**
- **Incidental RLL nodule on CTU**
- **PET – 32mm RLL mass SUV 2.8, 2x R10 nodes**
- **FEV 1 – 2.7L (75%) TLCO - 67%**
- **CPEX – VO2 max - 17.4, AT 14**
- **EBUS – station 7 and R11 positive – adenocarcinoma, PD-L1 95%**
- **PMH – HTN, IHD – previous MI and stents 2011, TIA**
- **PS1 current smoker 50 PYH, 20/day**

AT, anaerobic threshold; CPEX, cardiopulmonary exercise testing; CTU, CT urogram; EBUS, endobronchial ultrasound; FEV1, forced expiratory volume in 1 second; HTN, hypertension; IHD, ischemic heart disease; MI, myocardial infarction; PD-L1, programmed death-ligand 1; PET, positron emission tomography; PMH, past medical history; PS, performance status; PYH, pack years history; RLL, right lower lobe; SUV, standard uptake value; TIA, transient ischemic attack; TLCO, transfer factor for carbon monoxide; VO2 max, maximum volume of oxygen.

Speaker's clinical expertise.

Case 1 – treatment plan

Planned for neoadjuvant carboplatin/paclitaxel/nivolumab

How can we ensure he completes all his treatment and optimise his pathway?

Please refer to the individual SmPCs for each product before prescribing, to review detailed information on indications, posology, special warnings, adverse events and their management.

Speaker's clinical expertise.

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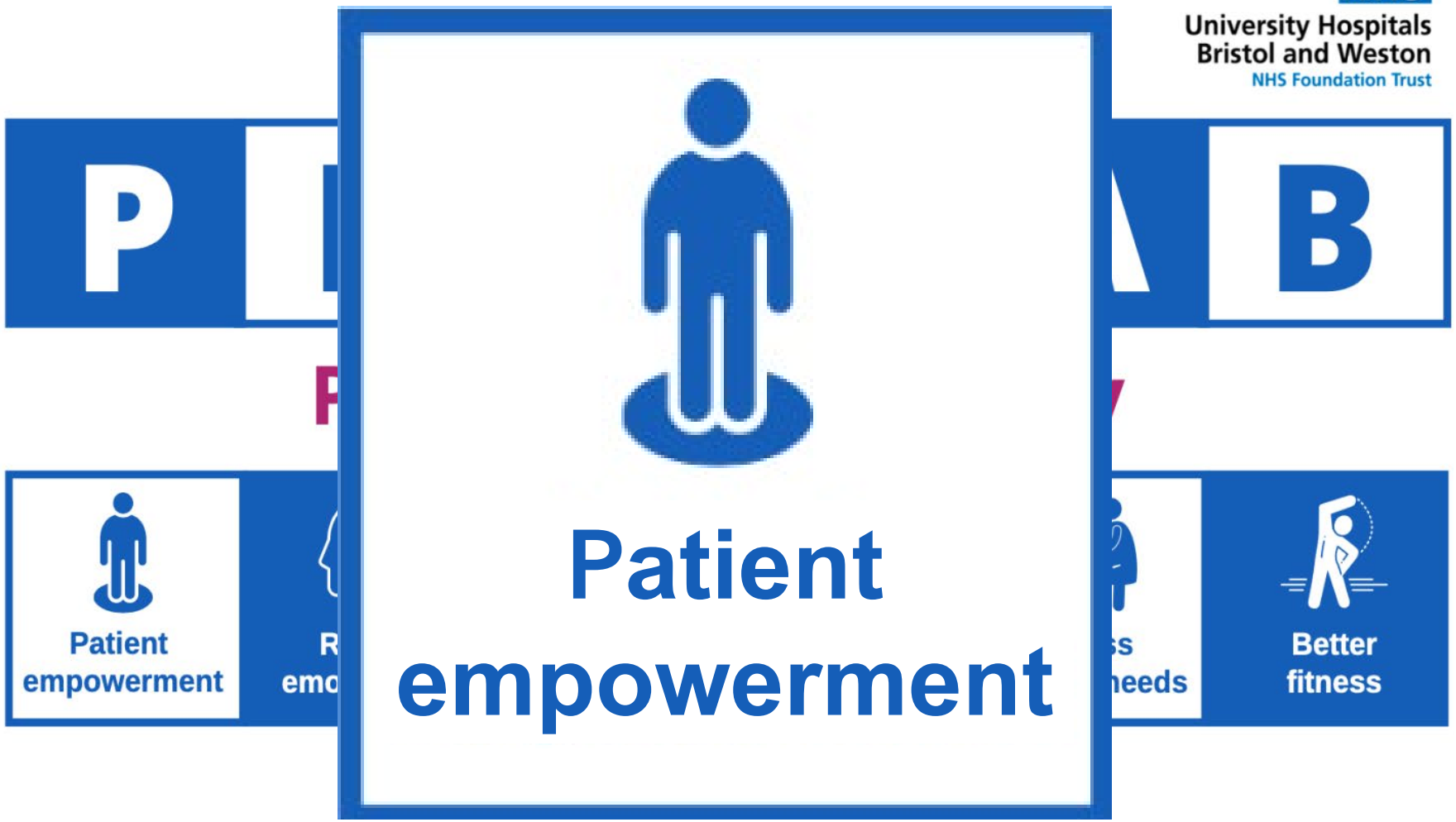
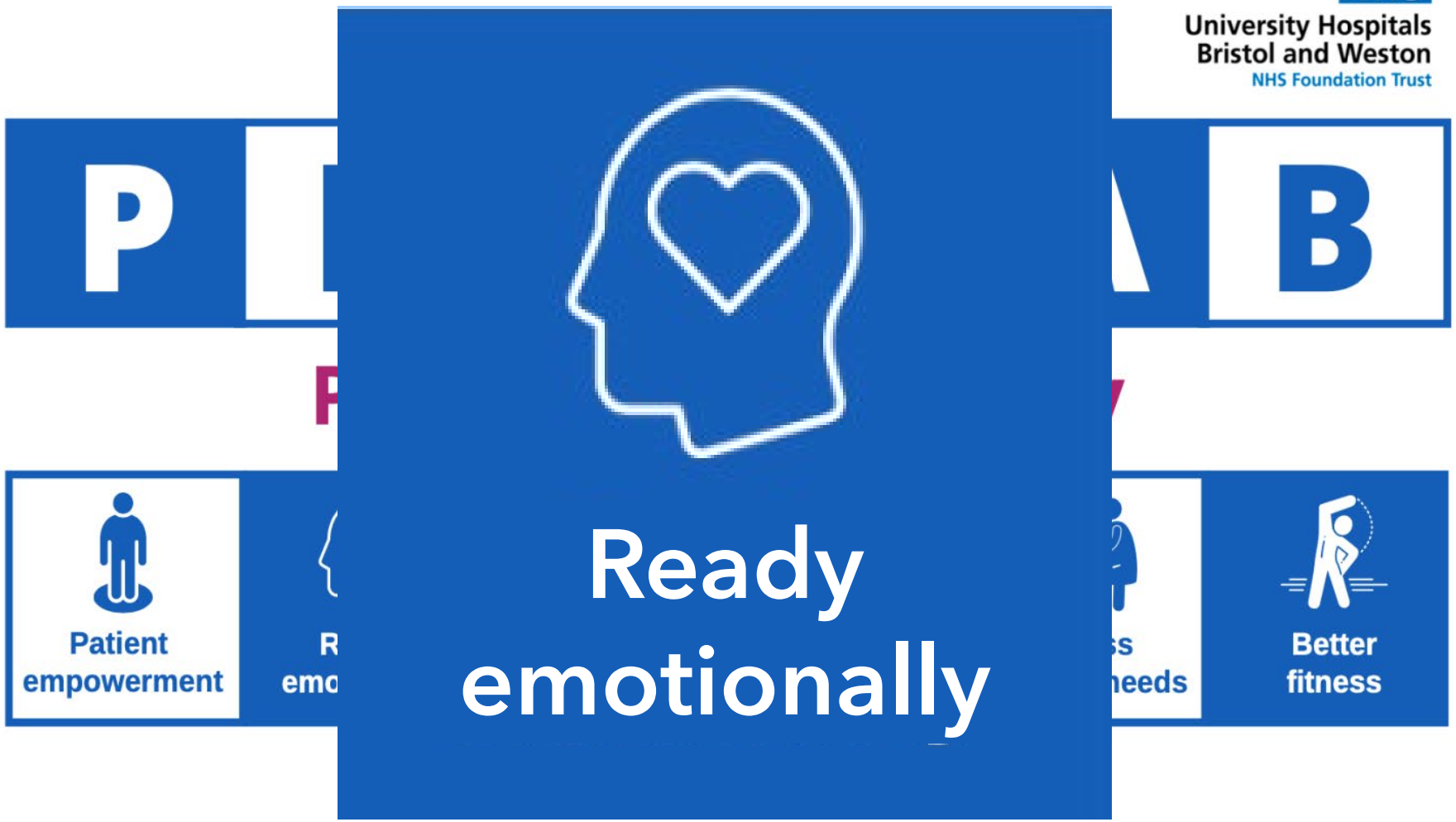
PREHAB

Preparing for surgery

University Hospitals Bristol. Preparing for surgery. Available at: https://www.uhbristol.nhs.uk/patients-and-visitors/preparing-to-come-to-hospital/preparing-for-surgery/ (Accessed June 2024).



University Hospitals Bristol. Preparing for surgery. Available at: https://www.uhbristol.nhs.uk/patients-and-visitors/preparing-to-come-to-hospital/preparing-for-surgery/ (Accessed June 2024).



University Hospitals Bristol. Preparing for surgery. Available at: https://www.uhbristol.nhs.uk/patients-and-visitors/preparing-to-come-to-hospital/preparing-for-surgery/ (Accessed June 2024).

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P

B

Patient empowerment

Better fitness

Assess medical needs

University Hospitals Bristol. Preparing for surgery. Available at: https://www.uhbristol.nhs.uk/patients-and-visitors/preparing-to-come-to-hospital/preparing-for-surgery/ (Accessed June 2024).

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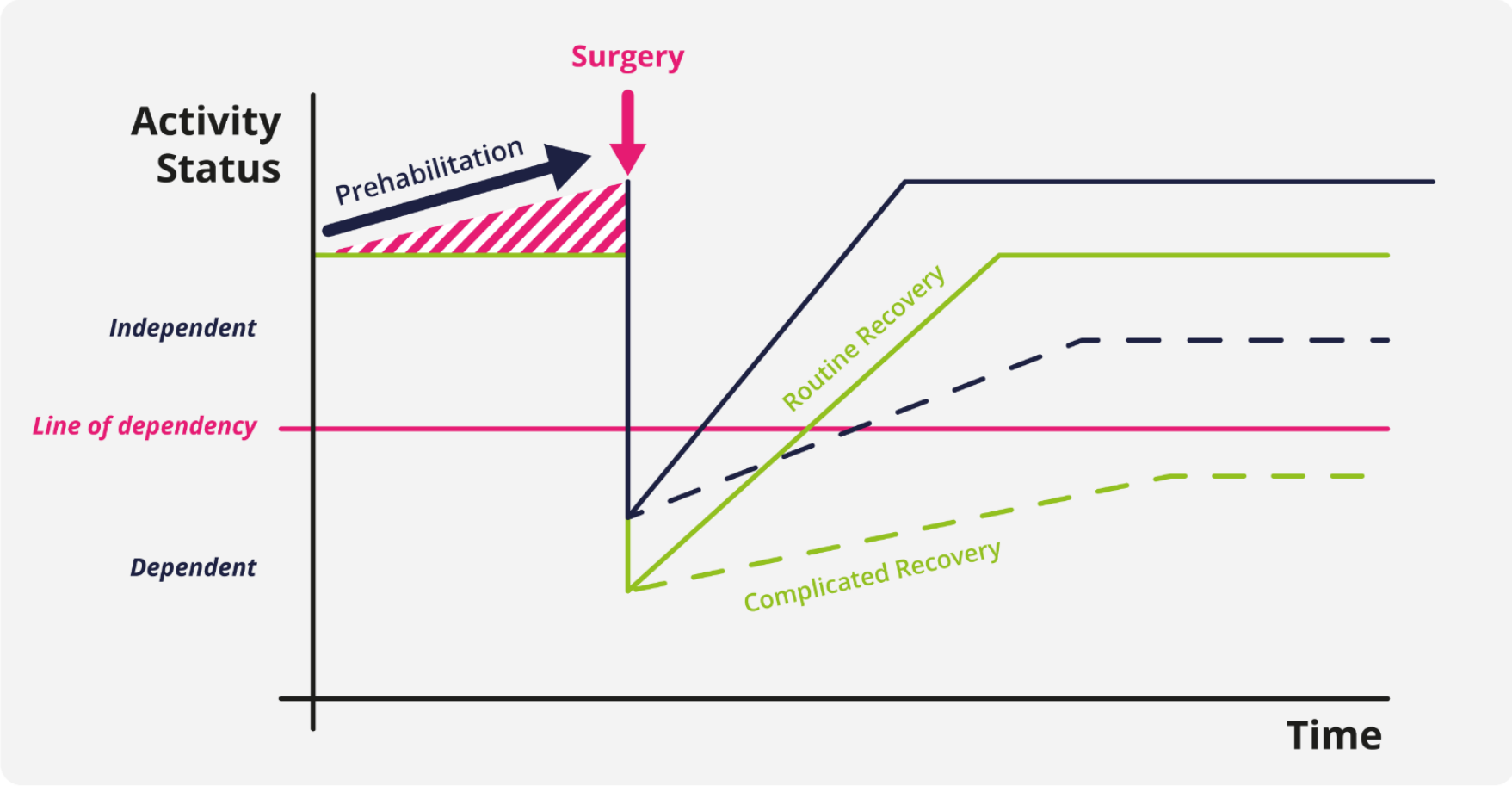
University Hospitals Bristol. Preparing for surgery. Available at: https://www.uhbristol.nhs.uk/patients-and-visitors/preparing-to-come-to-hospital/preparing-for-surgery/ (Accessed June 2024).

The perioperative period



Adapted from Clegg et al. *Lancet.* 2013:381 (9868): 752-762.

Benefits to the patient of prehabilitation

- Improved aerobic capacity and functional status
- Improved anxiety and mood
- Reduced neoadjuvant side effects
- Improved treatment compliance
- Quicker post op recovery
- Reduced post op complications
- Reduce critical care length of stay
- Reduced hospital length of stay
- Reduced ED attendance rates
- Attainment of cancer performance standard

ED; emergency department.

Speaker's clinical expertise.

Prehabilitation interventions

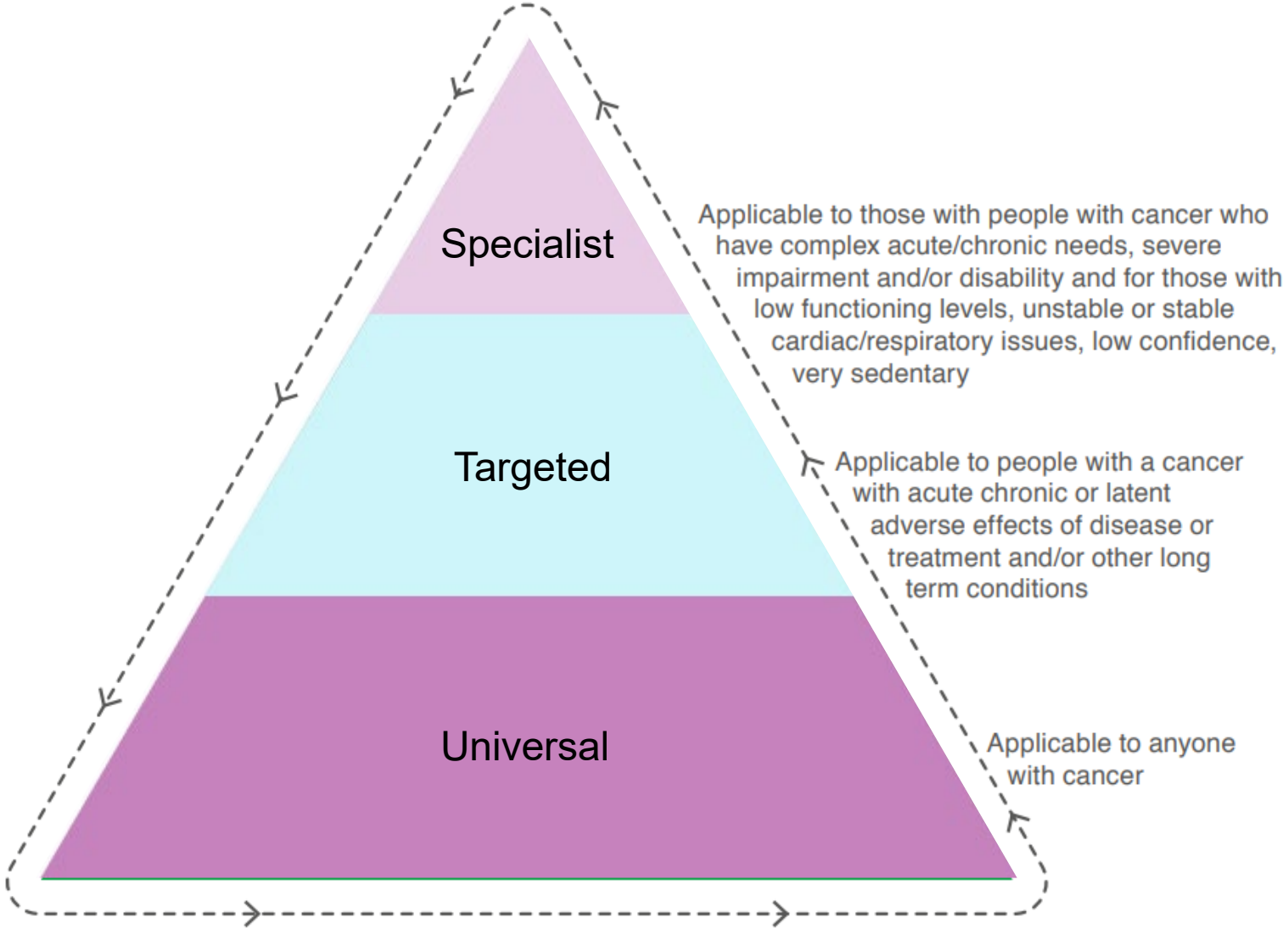
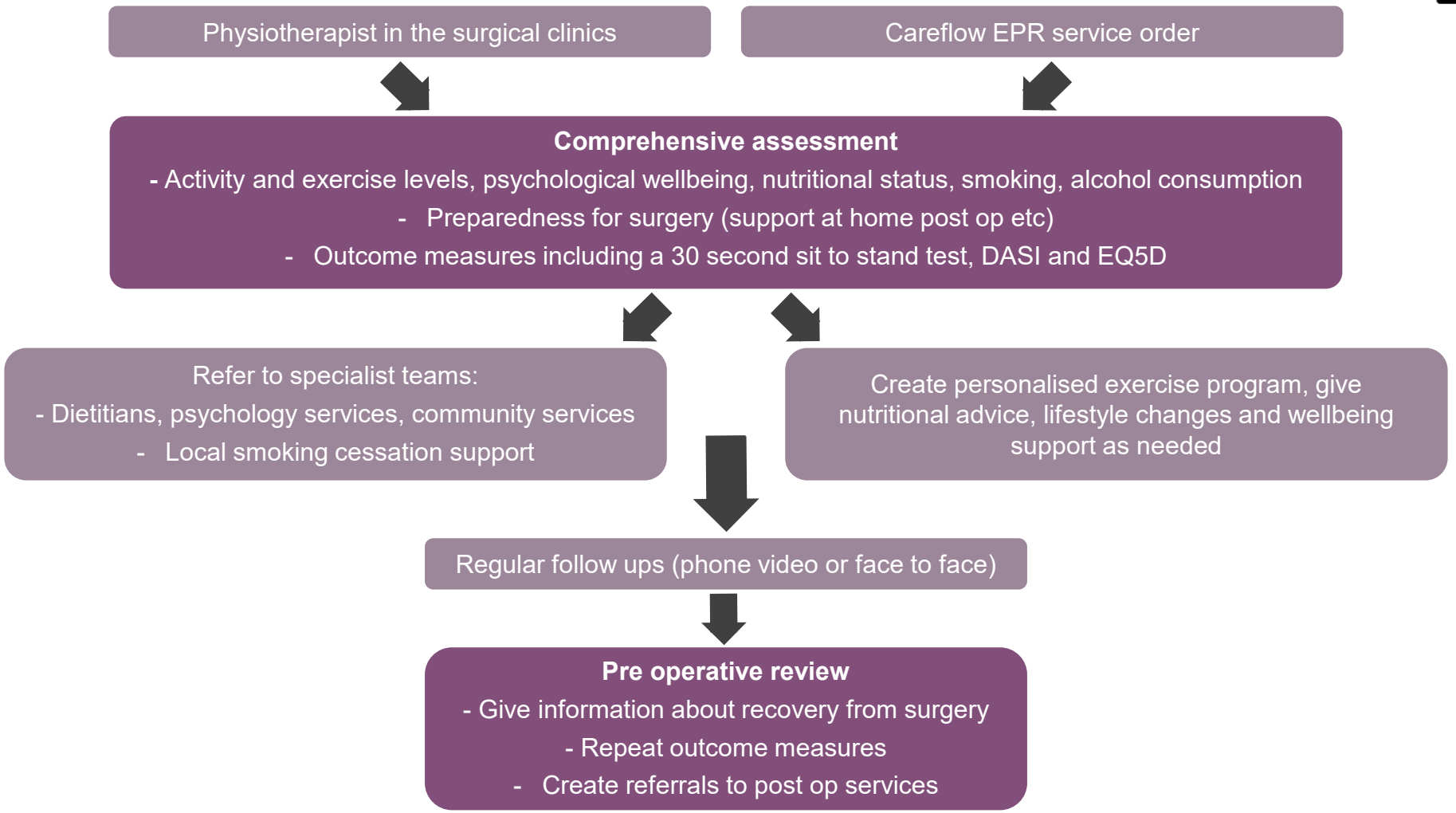


Figure from Macmillan Cancer Support. Prehabilitation For People with Cancer. Available at: https://cdn.macmillan.org.uk/dfsmedia/1a6f23537f7f4519bb0cf14c45b2a629/1532-source/prehabilitation-for-people-with-cancer-tcm9-353994#:~:text=The%20aims%20of%20these%20guidance,in%20the%20development%20of%20cancer (Accessed June 2024).



DASI, Duke activity status index; EPR, electronic patient record; EQ5D, euroQol-5 dimension.

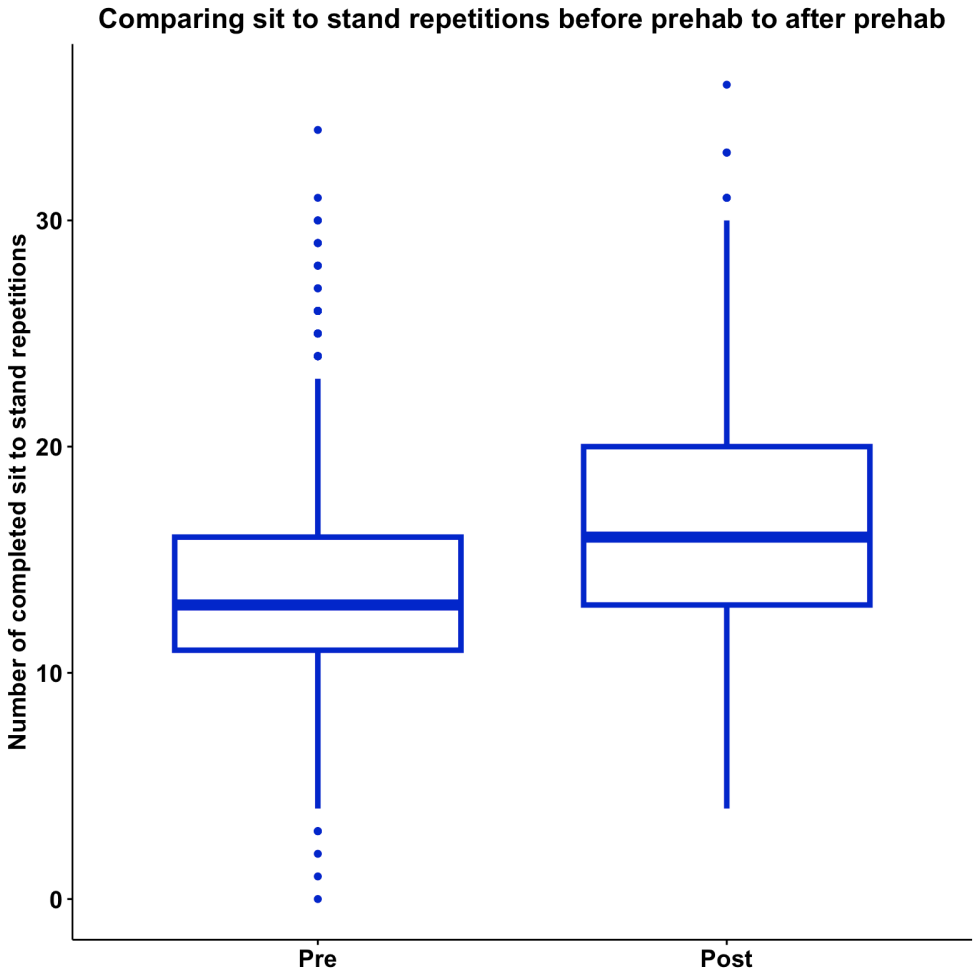
Speaker's clinical expertise.

	Female	Male
Age	Average 30 second STS score	
60–64	12–17	14–19
65–69	11–16	12–18
70–74	10–15	12–17
75–79	10–15	11–17
80–84	9–14	10–15
85–89	8–13	8–14
90–94	4–11	7–12

STS, sit to stand.

Rikli R, et al. *J Aging Phys Activity.* 1999;7(2):162-181.

Comparing sit to stand repetitions



N	Initial	Final	Mean Difference	P Value
493	14	16.7	2.7	< 0.001

Data provided courtesy of speaker.

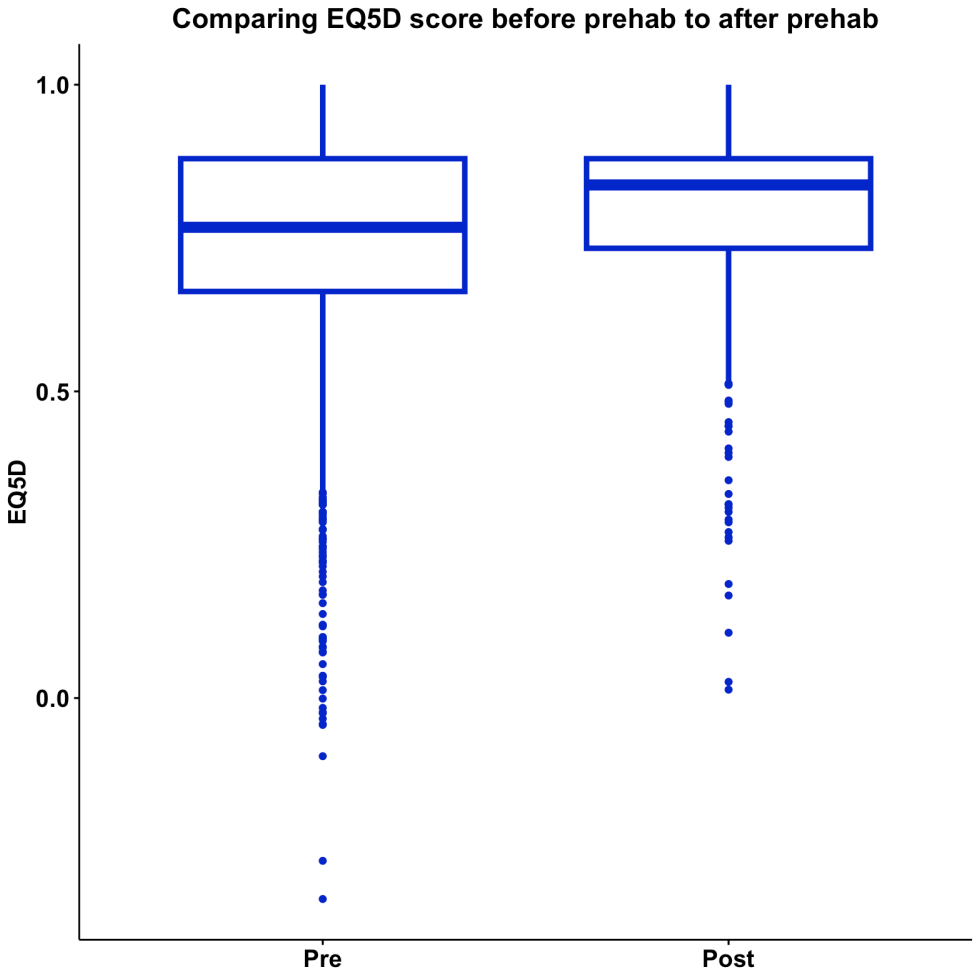
Case 2 - background

- **57-year-old female**
- **Resectable lung cancer**
- **FEV 1: 2.58L (91.7%) TLCO 7.9 (111%)**
- **Nonsmoker**
- **Moderately active, nil formal exercise**
- **Previous poor inpatient experience following colorectal surgery**
- **Anxiety and panic attacks**
- **Fearful of coming into hospital, affecting decision for treatment**

FEV1, forced expiratory volume in 1 second; TLCO, transfer factor for carbon monoxide.

Speaker's clinical expertise.

Comparing EQ5D score



N	Initial	Final	Mean Difference	P Value
496	0.74	0.79	0.05	< 0.001

EQ5D, euroQol-5 dimension.

Data provided courtesy of speaker.

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“I felt Tanya and the prehab physios bent over backwards to help me to the point where I was ready for surgery physically and mentally. I was terrified of surgery before I met them and had even experienced panic attacks in simple appointments. But in 6 weeks the team got me into a really good place. They restored my trust in hospitals.”

Quote provided courtesy of speaker.

	Prehab	No prehab	
Elective admissions: ALL	1753	10626	
Mean elective LoS: ALL	7.7	7.9	No Significant Difference
A&E Attendances within 90 days of elective discharge, per 1000 elective discharges	157.44	206.76	Prehab Significantly Lower
Non-Elective Hospital Admissions within 90 days of elective discharge, per 1000 elective admissions	317.2	377.6	Prehab Significantly Lower
Mean Non-elective LoS	5.1	8.2	Prehab Significantly Lower

A&E, accident and emergency; LoS, length of stay.

Data provided courtesy of speaker.

Case 3 - background

- **59-year-old woman, cough and shortness of breath**
- **RLL lung mass**
- **PET shows 4cm RLL mass with mediastinal invasion plus enlarged nodes in R10, R4 and station 7**
- **EBUS – positive nodes R10, R4, 7 squamous cell ca PD-L1 100%**
- **FEV 1 1.4L 55% TLCO 50%, PS1**
- **PMH - IHD – exertional angina, COPD, BMI 18**
- **Current smoker 10/day, 60 pyh**

BMI, body mass index; COPD, chronic obstructive pulmonary disease; EBUS, endobronchial ultrasound; FEV1, forced expiratory volume in 1 second; IHD, ischemic heart disease; PD-L1, programmed death-ligand 1; PET, positron emission tomography; PMH, past medical history; PS, performance status; RLL, right lower lobe; TLCO, transfer factor for carbon monoxide.

Speaker's clinical expertise.

Case 3 – treatment plan

Planned for radical concurrent chemo/RT plus radiotherapy
66Gy/33# followed by adjuvant durvalumab

How can we ensure he completes all his treatment and optimise his pathway?

Please refer to the individual SmPCs for each product before prescribing, to review detailed information on indications, posology, special warnings, adverse events and their management.

Gy, gray; RT, radiotherapy.

Speaker's clinical expertise.

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PRE ABS

Prehabilitation Radiotherapy Exercise, smoking Habit cessation And Balanced diet Study

Prehabilitation

Radiotherapy

Exercise, smoking

Habit cessation

And

Balanced diet

Study

Dr Kevin Franks, CI

Dr Carole Burnett, Co-CI

Emma Morgan, Research Radiographer

Sam Greenwood-Wilson, Research Radiographer

Gill Williams, Dietetic Lead

Prof Rachael Murray, Smoking Cessation Lead

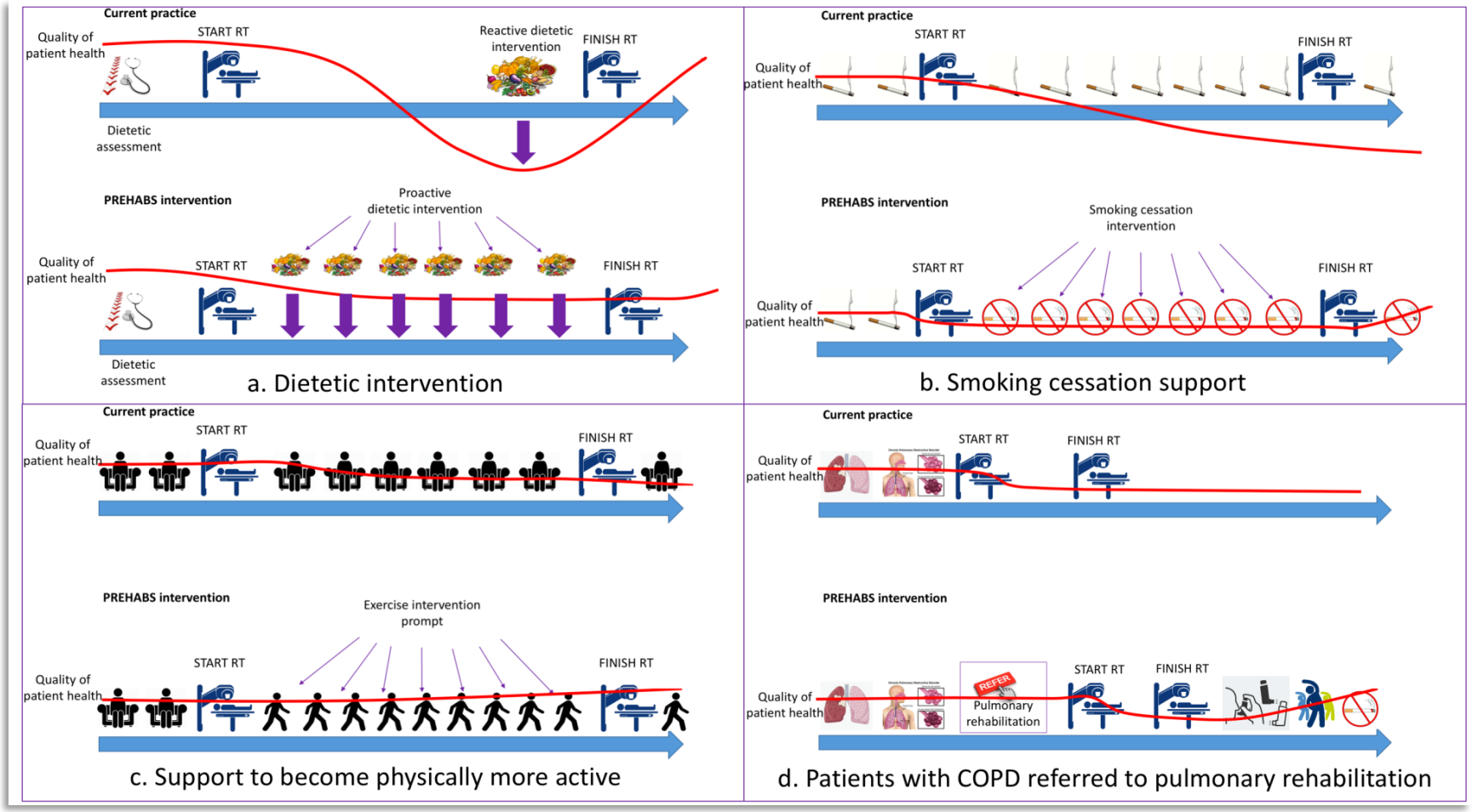
Dr Shaunna Burke, Exercise Lead

Dr Janine Bestall, Qualitative Research Lead

Contact: leedsth-tr.prehabs@nhs.net

University of Nottingham UK | CHINA | MALAYSIA

Funded by Yorkshire Cancer Research



Images courtesy of Dr Carole Burnett.

Funded by Yorkshire Cancer Research

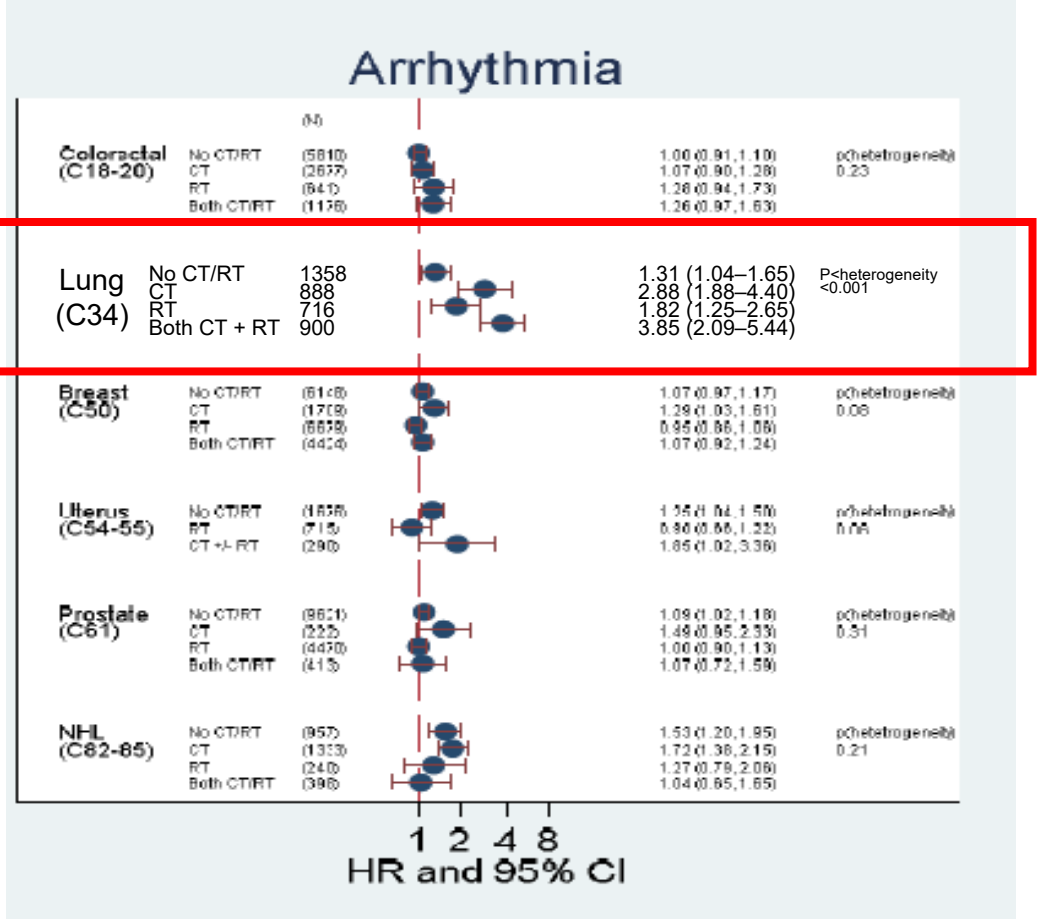
Optimise medical co-morbidities-cardiac

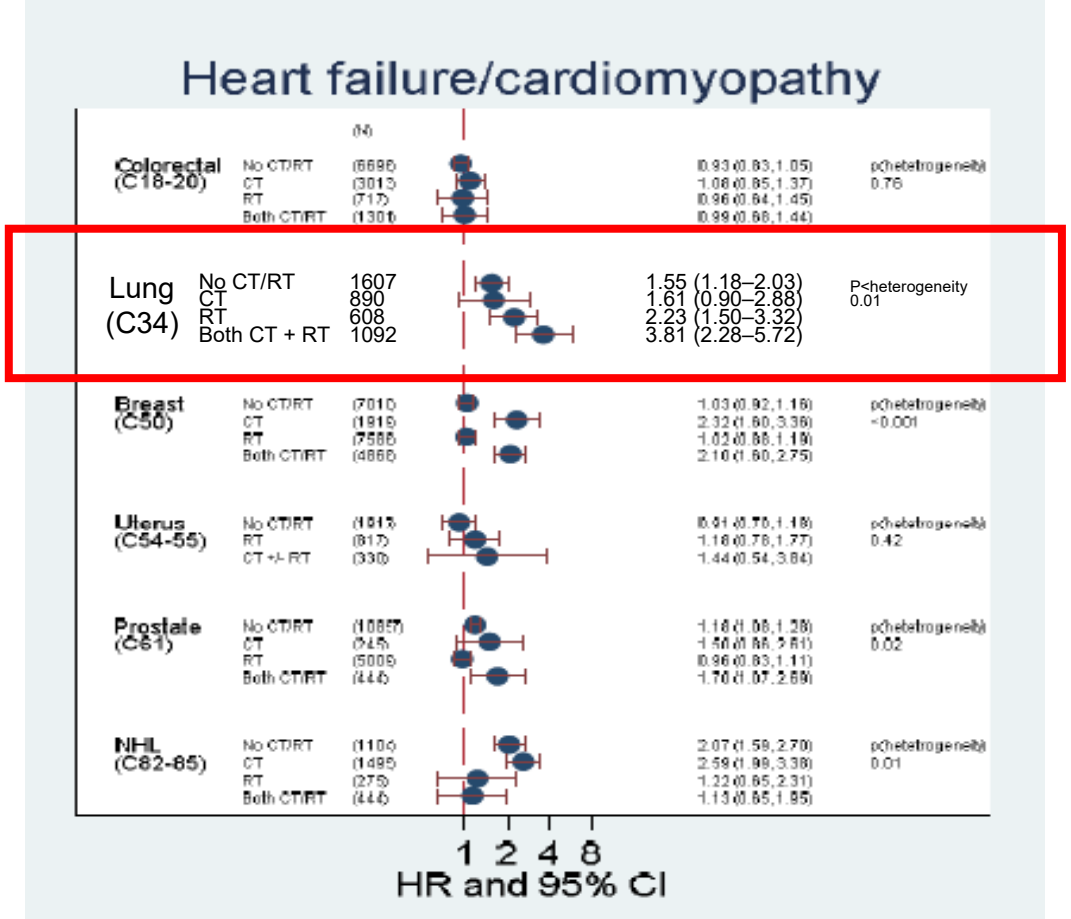
Cardiac complications of treatment:

- **108 215 individuals with a diagnosis of a cancer of interest with F/U >1 year**
- **Matched to 523 541 controls**
- **Cardiac/Vascular Outcomes**
  - Coronary Artery Disease
  - Arrythmias
  - Heart Failure/Cardiomyopathy
  - Valvular heart disease
  - Pericarditis
  - Stroke
  - PVD
  - VTE
- **Outcomes with chemotherapy, radiotherapy and chemotherapy + RT analysed**

Speaker's clinical expertise.

Optimise medical co-morbidities-cardiac





CI, confidence interval; HR, hazard ratio; NHL, non-Hodgkin's lymphoma.

Speaker's clinical expertise.

Optimise medical co-morbidities-cardiac

- **Avoiding cardiac toxicity in lung cancer patients treated with curative-intent radiotherapy to improve survival, funded by Yorkshire Cancer Research**
- **Joint project with University of Manchester/Christie Hospital and University of Leeds/Leeds Cancer Centre**
- **Work ongoing with retrospective date analysis and prospective trials/planning studies**
- **Sun et al*[1] – Cardiac events post-RRT**
  - ~10% of patients (n=52/600)
  - Of these, 37% ischaemic (38% G5), 15% pericardial effusions, 25% arrhythmias, 23% cardiac failures
  - 58% of patients with ischaemic events had no cardiac history
- **Sun et al[2]**
  - High prevalence of baseline cardiovascular disease in people undergoing radiotherapy for NSCLC
  - Significant rates of post-radiotherapy cardiovascular hospitalisation
  - Small proportion of deaths are attributed to cardiovascular disease
  - Suggests that cardiovascular death is greatly under-reported in official statistics

*At a median follow up of 31 months, 52 patients experienced cardiac events following radiotherapy. This cohort comprised 33 males with a median age of 73 years and a median Charleston score of 6. Four (12.5%) of these patients had received adjuvant radiotherapy and 10 (14.5%) patients had received concurrent chemoradiotherapy. No patients were never or ex-smokers, defined as <10 pack years; ex-smokers included 9 patients with <20 pack years, 15 with 20 to 40 pack-years, 9 with >40 pack-years. Nine patients were current smokers. Of the cardiac events reported, 37% were ischaemic events, which were grade 5 in 19 patients and led to death in 7 patients. The majority (58%) of patients with an ischaemic event did not have a known pre-existing cardiac condition; of the 19 patients with an ischaemic event, 8 had a prior reported cardiac anomaly, including 4 patients with a previous myocardial infarction, 2 with ischaemic heart disease one patient each had arrhythmia and a valve abnormality.[1]

NSCLC, non-small cell lung cancer; RRT, radical radiotherapy.

1. Sun F, et al. Presented at ELCC conference 2019. Abstract 72O; 2. Sun F et al. *Lung Cancer.* 2020;146:1-5.

Optimise medical co-morbidities-cardiac

- **Avoiding cardiac toxicity in lung cancer patients treated with curative-intent radiotherapy to improve survival, funded by Yorkshire Cancer**
- **Joint project wi** **ntre**
- **Work ongoing v**
- **Sun et al*[1] – Ca**
  - ~10% of patie
  - Of these, 37%
  - 58% of patien
- **Sun et al[2]**
  - High prevalen
  - Significant rat
  - Small proportion of deaths are attributed to cardiovascular disease
  - Suggests that cardiovascular death is greatly under-reported in official statistics

Should we screen all patients for cardiac conditions, and should some/all patient be reviewed by a cardiologist before and after treatment?

*At a median follow up of 31 months, 52 patients experienced cardiac events following radiotherapy. This cohort comprised 33 males with a median age of 73 years and a median Charleston score of 6. Four (12.5%) of these patients had received adjuvant radiotherapy and 10 (14.5%) patients had received concurrent chemoradiotherapy. No patients were never or ex-smokers, defined as <10 pack years; ex-smokers included 9 patients with <20 pack years, 15 with 20 to 40 pack-years, 9 with >40 pack-years. Nine patients were current smokers. Of the cardiac events reported, 37% were ischaemic events, which were grade 5 in 19 patients and led to death in 7 patients. The majority (58%) of patients with an ischaemic event did not have a known pre-existing cardiac condition; of the 19 patients with an ischaemic event, 8 had a prior reported cardiac anomaly, including 4 patients with a previous myocardial infarction, 2 with ischaemic heart disease one patient each had arrhythmia and a valve abnormality.[1]

NSCLC, non-small cell lung cancer; RRT, radical radiotherapy.

1. Sun F, et al. Presented at ELCC conference 2019. Abstract 72O; 2. Sun F et al. *Lung Cancer.* 2020;146:1-5.

Beatson Glasgow programme

- **All lung cancer patients going for radical treatment will be seen at the Prehab clinic in the first week post referral, where there is:**
  - Smoking cessation assessment
  - Physiotherapist
  - Nursing assessment
  - Pharmacy input – to rationalise medication
  - Links with onco-geriatric service for referral if necessary (regular input to be assessed)
  - On-site – cardiology and respiratory services if required

Speaker's clinical expertise.

Case 3

- **You review during week 4 of the chemo/RT**
- **She has developed grade 2 oesophagitis**
- **Bloods show Hb 100, WCC 6.5, Neuts 3.1, lymphocytes 0.3, Plt 300**
- **Na 137, K 4, Ur 7, Cr 75**

What interventions should you commence?

Cr, creatinine; Hb, hemoglobin; K, potassium; Na, sodium; Neuts, neutrophils; Plt, platelets; RT, radiotherapy; Ur, urea; WCC, white cell count.

Speaker's clinical expertise.

Nutrition

- **Malnutrition is common in patients with lung cancer and is associated with negative prognosis and treatment outcomes**
- **The role of the dietitian is less well defined in lung cancer pathways**
- **Innovative nutrition support initiatives during radiotherapy at Leeds Teaching Hospitals:**
  - Outpatient initiation of nasogastric (NG)/nasojejunal (NJ) tube feeding in the RT department
  - Yorkshire Cancer Research funded PREHABS study – feasibility study of embedding routine dietetic intervention (& other lifestyle interventions) into the radical RT lung pathway

NG, nasogastric; NJ, nasojejunal; RT, radiotherapy.

Slide courtesy of Gillian Williams Dietetic Lead for Radiotherapy, The Leeds Teaching Hospitals NHS Trust.

Dietitian section PREHABS

- **2021–2022 - 53 patients consented to dietary intervention**
- **Aim: Dietetic interventions to improve nutritional status compromised by symptoms such as anorexia and oesophagitis**
- **Interventions included:**
  - Oral interventions (advice on texture modification, increasing nutrient density and the use of ONS)
  - Follow up post completion of RT
  - The provision of enteral nutrition via a feeding tube where severe oesophagitis occurred

ONS, oral nutritional supplements; RT, radiotherapy.

Data courtesy of Dr Gillian Williams, Leeds Teaching NHS Trust.

Dietitian section PREHABS

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Conclusions:

- Feasible to embed dietetic service in lung pathways
- Reduction in hospital admissions
- Increased chance of receiving adjuvant immunotherapy
- Highly valued by patients

ONS, oral nutritional supplements; RT, radiotherapy.

Data courtesy of Dr Gillian Williams, Leeds Teaching NHS Trust.

Outpatient initiation of NG/NJ tube feeding in the radiotherapy department

- **Prior to 2015, initiation of NG/NJ tube feeding during RT at Leeds Teaching Hospitals required admission to a ward to establish feed and tube competence (4–7 nights duration typically)**
- **Hospital admission is commonly cited by patients as a barrier to accepting enteral feeding tube insertion and enteral feeding during RT**
- **In 2015 the RT outpatient Dietetic Service (working alongside key-stakeholders) developed, implemented and evaluated a 'standard operating procedure' for the initiation of NG/NJ feeding in the RT outpatient setting with the following aims:**
  - To improve patient outcomes (for those requiring a reactive NG/NJ tube feeding approach during RT)
  - To reduce inpatient admissions for initiation of enteral feeding and associated costs

NG, nasogastric; NJ, nasojejunal; RT, radiotherapy.

Data courtesy of Dr Gillian Williams, Leeds Teaching NHS Trust.

Process

- **Suitability for Outpatient NG/NJ management is assessed and documented in MDT notes at initial RT Dietetic review**
- **RT Dietitian initiates proactive discussions with patients & medical team encouraging early tube placement to reduce risk of unplanned admission**
- **Aim to insert NG/ NJ tube, commence enteral feed and training at the beginning of the week (to ensure a minimum of 3 working days available to establish feed tolerance and tube competency before the weekend)**
- **Daily enteral feed administration (+/- IV fluids, bloods) and daily education from RT nurses**
- **Enteral feed company nurse training will take place on Day 2 or Day 3 of enteral feed initiation**
- **Daily Dietetic review during week of initiation (reviewing feed tolerance and adequacy and to facilitate provision of a discharge supply of enteral feed & equipment and enteral feeding paperwork**

IV, intravenous; MDT, multidisciplinary team; NG, nasogastric; NJ, nasojejunal; RT, radiotherapy.

Data courtesy of Dr Gillian Williams, Leeds Teaching NHS Trust.

Clinical Oncology 33 (2021) 780–787
Clinical Oncology

Original Article

Reducing the risk of death from Pneumocystis *jirovecii pneumonia* after radical radiation therapy to the lung

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Patrick G Johnston Centre for Cancer Research

Abstract

Aims: Lung cancer is the leading cause of cancer death. Radiotherapy given in the curative setting is associated with a 3% risk of death from Pneumocystis jirovecii pneumonia (PJP). Prolonged courses of high-dose steroids also increase the risk of PJP. International guidelines recommend the use of chemoprophylaxis with trimethoprim-sulfamethoxazole for patients at high risk. We assessed the effect of an intervention designed to reduce the impact of PJP.

Materials and methods: Prophylaxis guidelines were introduced in 2016. Case records of patients treated with radical radiotherapy were examined for the periods 2014 to 2015 (pre-intervention) and 2017 to 2018 (post-intervention). In total, 247 patients were treated pre-intervention and 334 post-intervention.

Results: Freedom from PJP death at 1 year was 96% before intervention and 99% after (hazard ratio 0.3, 95% confidence interval 0.1–0.9, P = 0.029). Although the rate of use of chemoprophylaxis according to the guideline rose from 1% to 13% (P = 0.003), the use of high-dose steroids also fell from 35% to 16% (P < 0.00001).

Conclusions: Reducing radiotherapy-associated infections is an important component of radical treatment in lung cancer. Highlighting chemoprophylaxis guidelines reduced the death rate from PJP, with an associated more judicious use of steroids. Advocating prophylaxis in patients with lymphocyte count <0.6 × 109/l is the next intervention to be studied.

Key words

Lung cancer, *pneumocystis jirovecii,* lymphopenia, radiotherapy, steroids.

Managing concurrent chemo/RT toxicity

- **Optimising comorbidity management**
- **Choice of systemic therapy**
- **Weekly review**
- **Early symptom management e.g. oesophagitis management**
- **Patient education – managing fatigue etc.**

- **PROMS**

- **Nutrition management**

PROMS, patient-reported outcome measures; RT, radiotherapy.

Speaker's clinical expertise.

Case 3 - treatment

She completes her concurrent chemo/RT and goes on to receive adjuvant durvalumab

3 months into receiving her adjuvant durvalumab she complains of marked fatigue and joint pain in multiple areas

Please consult durvalumab SmPC for further information on its safety profile, including immune-related adverse events, and their management.

RT, radiotherapy.

Speaker's clinical expertise.

Medical causes of fatigue

- Endocrinopathies
- Cardiac
- Haematological
- Liver/renal dysfunction
- Generalise treatment related fatigue

= investigations to rule out

Speaker's clinical expertise.

Fatigue management

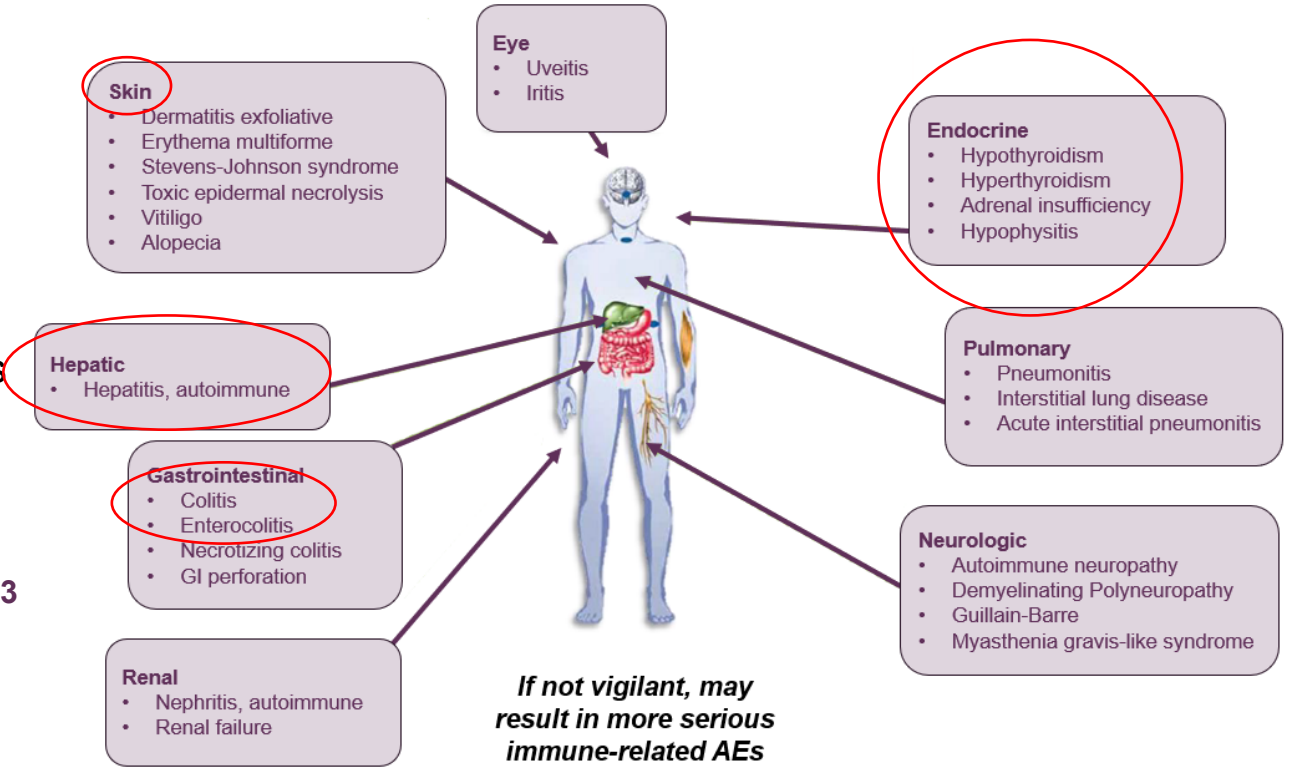
- Occupational therapy assessment and intervention
- Assessing severity and impact of fatigue
- Fatigue mapping/diaries
- Education and exercise
- Strategies such as Plan, Pace, Prioritise

= sleep management training

Speaker's clinical expertise.

CPI toxicity – Immune related adverse events[1]

- **Different to the toxicities than have been seen previously with other SACTs**
- **Grade 3–4 reactions[2]:**
- CTLA4 monotherapy – 10–30%
- PD1/PD-L1 monotherapy – 10–26%
- Combination therapy – approximately 55% in trials
- **Real world data suggests combination rates are higher**
- **Cytokine release syndrome is rarely seen[3]**



Please consult individual CPI SmPCs for further information on their safety profiles, including immune-related adverse events, and their management.

AE, adverse event; CPI, checkpoint inhibitor; PD-(L)1, programmed death (ligand) 1; SACT, systemic anticancer therapy.

1. Brigden M et al. *Onc Exch.* 2016;15(3):10-14; 2. Haanen J, et al. *Ann Oncol.* 2017;28(S4):119–142; 3. Shah D, et al. *Front Immunol.* 2023;14:1190379.

Keep it simple

Mild

Monitor

Plan

Moderate

Review

Oral

Steroids

Investigate

Omit I-O

Severe

Admit

IV steroids

Consider steroid sparing agents early

Investigate

Specialist input

Stop I-O

I-O, immunotherapy; IV, intravenous.

Speaker's clinical expertise.

Leeds checkpoint inhibitor (CPI) arthritis pathway

Please refer all patients with any new **musculoskeletal** symptom during or ≤3 months after cessation of CPI

→ Email kate.harnden@nhs.net for the referral (Rheumatology Research Fellow)

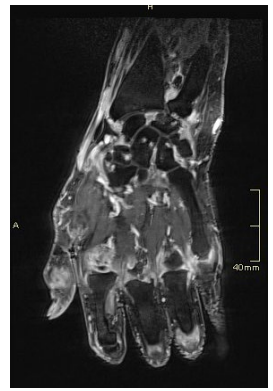
↓ 1-2 weeks

One-stop rheumatology assessment with multi-joint ultrasound scan in Chapel Allerton Hospital, Leeds

→ **Ultrasound and whole-body MRI scan in Chapel Allerton**
Research blood samples

↓

Close rheumatology follow up and initiation of treatment as appropriate – joint injections/steroids/DMARDS



CPI, checkpoint inhibitor; DMARDS, disease-modifying anti-rheumatic drugs; MRI, magnetic resonance imaging.

Speaker's clinical expertise and images.

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UHBW webpage

NHS University Hospitals Bristol and Weston NHS Foundation Trust

PREHAB

Preparing for surgery

Patient empowerment | Ready emotionally | Eat well | Healthy choices | Assess medical needs | Better fitness

PREABS

Prehabilitation Radiotherapy Exercise, smoking Habit cessation And Balanced diet Study

Thank you

Prescribing information is available at this meeting, and at the following links:
IMFINZI GB , IMFINZI NI , TAGRISSO (osimertinib) GB , TAGRISSO NI

THINK AGAIN LUNG SUMMIT