DOSA in Thoracic Surgery in Oxford

Day of surgery admission (DOSA) rates for thoracic surgery show wide variation. The overall rate for patients undergoing lung resection is 47.3% however, rates range from 3% to 97.8% between centres[1]. It has been estimated the were all units to reach the rate of the average centre, 1,170 days may be saved and GIRFT have recommended DOSA should be routine practice in thoracic surgery[1].

The Development of Day of Surgery Admission in Oxford

Oxford Thoracic Surgery developed DOSA via a multidisciplinary approach. The aims of DOSA were to reduce rework, improve list efficiency, optimize bed management and improve patient satisfaction. Oxford Thoracic Surgery has achieved a DOSA rate of 97.8% for elective lung resection[1]. DOSA is now delivered as part of an Enhanced Recovery Service. A Task to Completion Committee was formed to facilitate the introduction of this service. Members of the committee included surgeons, anaesthetists, preadmission staff and service managers. The current Oxford DOSA pathway is shown in Figure 1. Thoracic planning meetings support theatre list preparation and optimisation.

Advantages and Barriers to the Development of a Day of Surgery Admission Program

DOSA delivers a number of advantages over traditional day prior to operation admission services. DOSA reduces duplication of pre-operative tests providing a more efficient service with attendant cost savings. In a study by Brown *et al*., DOSA reduced duplication of preoperative tests from 83% to <2%[2]. Despite concerns that patients prefer admission the day prior to surgery, patient satisfaction with DOSA is high. Patient surveys demonstrated high levels of satisfaction with DOSA, with a preference for DOSA, compared to admission one-night pre-operatively[3]. In particular, Vijay *et al* reported that patients are better prepared for surgery if they are given a date for surgery with notice of admission time and pre-operative tests completed at least 48 hours in advance[4]. Moreover, significant cost savings are realised by introduction of DOSA[3].

A number of barriers to the development of a DOSA service may persist. Over and above the status quo bias that may exist regarding any change in practice, there may be perceived advantages of admitting patients the day before surgery. There may be concerns regarding the availability of beds on the day of surgery if the patient is not admitted a day prior to operation. DOSA is assisted by ring fencing of beds and this practice is recommended by GIRFT[1]. In one study, ring fencing of beds and establishment of a preadmission clinic increased DOSA rates from 56 to 85%[3]. Oxford has achieved a DOSA rate for lung resection of 97.8%, despite not securing ring fencing of thoracic surgery beds, whilst maintaining day of surgery cancellation rates below the national average[5]. Concerns regarding distances patients may have to travel on the day of surgery may be mitigated by use of local guest houses and hotels for those patients from outside the immediate area.

Patient Role in DOSA

Key to the success of a DOSA service is the empowerment of patients to take responsibility for their care on the day prior to and the morning of surgery. This important time in the patient pathway has traditionally been the responsibility of the ward staff following admission to hospital the day prior to surgery. It is vital that the preadmission team are

able to impart clear instructions regarding medication, cleansing pack utilisation and time and place of admission, in order that patients can arrive feeling informed and as relaxed as possible prior to operation. Lack of clarity of instructions or failure to confirm that patients comprehend instructions given, can result in stress for patients, cancellation due to medication errors or increased risk of complications if instructions regarding mediation, cleansing packs or fasting are misunderstood. In general, patients are keen to take responsibility for their health, and facilitating this is an important component of the preadmission clinic.

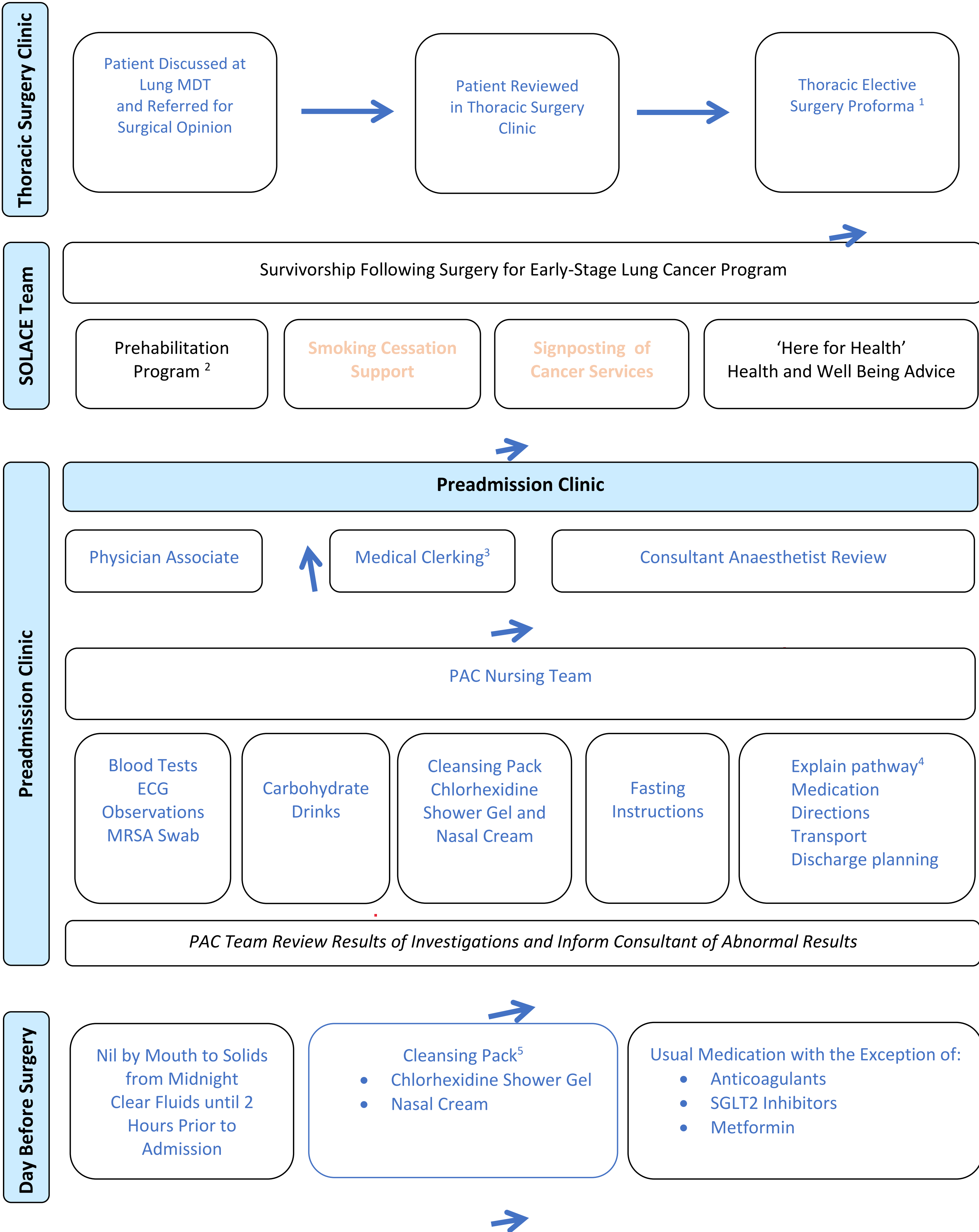
Development of Cardiothoracic Physician Associates

Oxford Thoracic Surgery appointed Cardiothoracic Physician Associates who play a vital role in our DOSA service within the clinic (Figure 1). These first in Trust innovative posts were designed to provide ongoing high quality clinical care of cardiothoracic patients whilst supporting our FY2 trainees during their time in our department. Appointment of Physician Associates has also facilitated an increase in the time trainees spend in high quality training opportunities such as theatre, MDTs and new patient clinics. Such appointments have the potential to deliver a model to improve patient safety, reduce costs, bolster staff retention and create 'Time to Educate' trainees and other health professionals.

Our Cardiothoracic Physician Associates are now core members of the Preadmission Team and are responsible for the medical clerking of patients attending the clinic, performing history taking and examination. Their presence in our department and the ward care they provide, allows them to discuss the surgical pathway with pre-operative patients and answer queries from patients attending the clinic.

Role of SOLACE within Preadmission Pathway

Oxford SOLACE (Survivorship After Lung Cancer Surgery Program) was developed to provide enhanced support for early-stage surgical lung cancer patients, with the aim of reducing morbidity, readmissions, mortality and improving physical, psychological and social health and wellbeing. Key to the commencement of the SOLACE service was the appointment of two core staff, a Macmillan Lung Cancer Survivorship Advanced Nurse Practitioner and a Lung Cancer Survivorship Advanced Therapist Practitioner. The SOLACE program now plays a vital role in our DOSA (Figure 1). A central feature of SOLACE was the creation of pre- and post-operative exercise classes aimed at optimising patients' health and fitness levels prior to, and following, surgery, with a long-term aim of preventing hospital re-admissions and reducing length of stay. The SOLACE team also provide personalised intervention support to patients depending on their support requirements, offering single consultations and advice or a full prehabilitation structured exercise program with or without post-operative follow-up. Our prehabilitation structured exercise program is offered as either face to face in our hospital gym or via telephone advice for patients who live at a distance or do not wish to travel. Assessments include handgrip strength, walk tests and performance questionnaires.


Thoracic Surgery Clinic
Patient Discussed at Lung MDT and Referred for Surgical Opinion
Patient Reviewed in Thoracic Surgery Clinic
Thoracic Elective Surgery Proforma 1
SOLACE Team
Survivorship Following Surgery for Early-Stage Lung Cancer Program
Prehabilitation Program 2
Smoking Cessation Support
Signposting of Cancer Services
'Here for Health' Health and Well Being Advice
Preadmission Clinic
Preadmission Clinic
Physician Associate
Medical Clerking3
Consultant Anaesthetist Review
PAC Nursing Team
Blood Tests
ECG
Observations
MRSA Swab
Carbohydrate Drinks
Cleansing Pack Chlorhexidine Shower Gel and Nasal Cream
Fasting Instructions
Explain pathway4
Medication Directions
Transport
Discharge planning
PAC Team Review Results of Investigations and Inform Consultant of Abnormal Results
Day Before Surgery
Nil by Mouth to Solids from Midnight Clear Fluids until 2 Hours Prior to Admission
Cleansing Pack5
Chlorhexidine Shower Gel
Nasal Cream
Usual Medication with the Exception of:
Anticoagulants
SGLT2 Inhibitors
Metformin

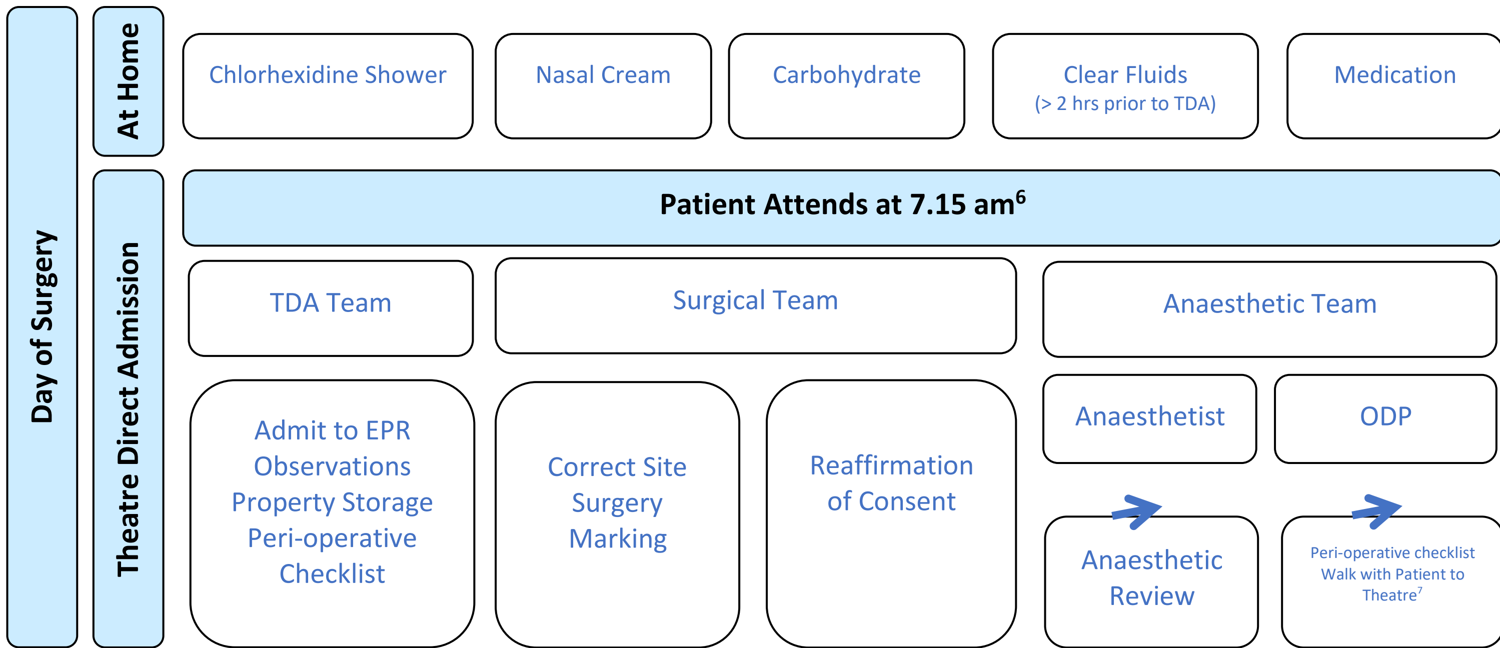


Figure 1: Pathway for Patients Undergoing Elective Thoracic Surgery. EPR (Electronic Patient Record), MDT (Multi-Disciplinary Team Meeting), ODP (Operating Department Practitioner), PAC (Preadmission Clinic), SOLACE (Survivorship After Lung Cancer Surgery Program, TDA (Theatre Direct Admission).

[1] Thoracic Surgery Proforma - Appendix 4
[2] Prehabilitation Patient Leaflet - Appendix 1
[3] Medical Clerking Proforma - Appendix 5
[4] Patient Pathway Leaflet - Appendix 2
[5] Cleansing Pack – Appendix 6
[6] Patient Admission Letter – Appendix 7
[7] Thromboprophylaxis Patient Advice Leaflet – Appendix 3

References

1. https://gettingitrightfirsttime.co.uk/wp-content/uploads/2018/04/GIRFT-Cardiothoracic-Report-1.pdf

2. Day of Surgery Admission reduces duplication of pre-operative tests Brown R, Grehan P, Brennan M, Carter D, Brady A, Moore E, Teeling SP, Ward M, Eaton D. Using Lean Six Sigma to improve rates of day of surgery admission in a national thoracic surgery department. Int J Qual Health Care. 2019 Dec 22;31(Supplement_1):14-21.

3. Concannon ES, Hogan AM, Flood L et al. . Day of surgery admission for the elective surgical in-patient: successful implementation of the elective surgery programme. *Ir J Med Sci* 2013;182:127–33.

4. Vijay V, Kazzaz S, Refson J. The same day admissions unit for elective surgery: a case study. Int J Health Care *Qual Assur* 2008;21:374–9.

5. Wong DJN, Harris SK, Moonesinghe SR, on behalf of SNAP-2. Cancelled operations: a 7-day cohort study of planned adult inpatient surgery in 245 UK National Health Service hospitals. *British Journal of Anaesthesia* (2018);121(4):730–8.

Appendices

Appendix 1

https://www.ouh.nhs.uk/patient-guide/leaflets/files/35682Prehabilitation.pdf

Appendix 2

https://www.ouh.nhs.uk/patient-guide/leaflets/files/14114Ptda.pdf

Appendix 3

https://www.ouh.nhs.uk/patient-guide/leaflets/files/14232Pclots.pdf

Appendix 4 - Thoracic Referral Proforma

The Thoracic Referral Proforma is completed in clinic by the surgeon reviewing the patient and used to inform the Preadmission Team of the requirement for review in the Preadmission Clinic. This, together with the consultant clinic letter and the allocated date of operation is used to activate the Preadmission process.

Thoracic Referral Proforma

Surgery: ____

Date of Surgery: ___/___/_____ **Surgeon: DS/ FDC / PEB Signature:** _____________

Patient Details:					
Patient Details:			**GP details:**		
Patient contact telephone number:					
Referring Clinician:			**Referring Hospital:**		
31 Day Target:			**62 Day Target:**		
18 Week target:					
Please tick patients predicted pathway:					
1. Day case (TDA/theatre/recovery/discharge lounge/home) ☐					
2. Inpatient (TDA/theatre/recovery /CTW/home) ☐					
3. Inpatient (TDA/theatre/CTCC/CTW/home) ☐					
4. Inpatient (CTW/theatre/CTCC/CTW/home) ☐					
Within 1 week ☐		**Within 2 – 4 weeks** ☐		**Routine** ☐	
Bloods taken at out-patients appointment				**Yes** ☐	**No** ☐
Anaesthetic review at Pre-admission				**Yes** ☐	**No** ☐
Social situation –can provide transport home				**Yes** ☐	**No** ☐
Has appropriate support at home				**Yes** ☐	**No** ☐
Diagnostic tests to be arranged prior to surgery:					
PFTs ☐	Echo ☐	Immunoglobulin ☐			
Cardiology Review ☐	CXR ☐	Other:			
Reason For Referral:					
Symptoms:					
Performance Status:	**0**	**1**	**2**	**3**	**4**
Past Medical History:					

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Thoracic Referral Proforma

<table>
<tr><td colspan="2">Medications:</td><td colspan="6"></td></tr>
<tr><td colspan="2">Medications to be stopped for admission:</td><td colspan="6"></td></tr>
<tr><td colspan="4">Allergies:</td><td colspan="4">Asbestos exposure:</td></tr>
<tr><td colspan="2">Smoking History</td><td>Current:</td><td>Ex: (stopped when)</td><td>Never</td><td>Pack Years:</td><td colspan="2">Smoking Cessation Advice:</td></tr>
</table>

<table>
<tr><td rowspan="6">Pulmonary Investigations</td><td colspan="6">Lung Function:</td></tr>
<tr><td colspan="2">FEV1:</td><td colspan="2">FVC:</td><td colspan="2">TLCO:</td></tr>
<tr><td>Absolute:</td><td></td><td>Absolute:</td><td></td><td colspan="2" rowspan="2"></td></tr>
<tr><td>%</td><td></td><td>%</td><td></td></tr>
<tr><td>Shuttle walk test: (meters)</td><td>Stairs (flights):</td><td colspan="2">ABG:</td><td colspan="2">Resting SaO2</td></tr>
<tr><td></td><td></td><td colspan="2"></td><td colspan="2"></td></tr>
</table>

Radiology		
Investigation (type)	**Date:**	**Outcome:**

Pathology		
Investigation (type)	**Date:**	**Outcome:**

Thoracic Referral Proforma

EXAMINATION:

Anaemia | Cyanosis | Jaundice | Clubbing

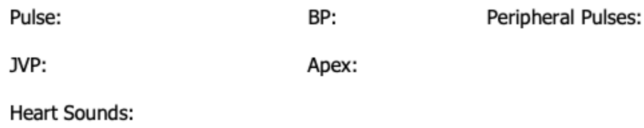
Lymphadenopathy | Carotid Bruits | Oedema

CVS:

Pulse: | BP: | Peripheral Pulses:

JVP: | Apex:

Heart Sounds:



CHEST:

RR:

Trachea:

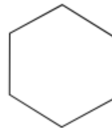
Expansion:

Percussion:

Breath Sounds:

Scars:

ABDOMEN:



Thoracic Referral Proforma

FURTHER INVESTIGATIONS REQUIRED PRE-OPERATIVELY:

SUMMARY:

Medical Checklist – Pre-Admission	Signed
Surgery explained:	
CXR reviewed	
ECG reviewed	
Spirometry Results:	
Drugs Chart written:	
Decolonisation Therapy prescribed:	

PRE ADMISSION CLERKING:

SIGNED: ………………………………………………………………………… Date: …../…../…..

Medical Checklist - Admission	Signed
Consent obtained	

CLERKING INFORMATION REVIEWED ON ADMISSION:

SIGNED: ………………………………………………………………………… Date: …../…../…..

Thoracic Referral Proforma

ACTIVE CO-MORBIDITIES (CHARLSON INDEX)

ACUTE MI	○	CVA	○	PARAPLEGIA	○
CONGESTIVE CARDIAC FAILURE	○	CONNECTIVE TISSUE DISORDER	○	RENAL DISEASE	○
DEMENTIA	○	DIABETES	○	DIABETIC COMPLICATIONS	○
LIVER DISEASE	○	SEVERE LIVER DIEASE	○	HIV	○
PEPTIC ULCER	○	PERIPHERAL VASCULAR DISEASE	○	METASTATIC CANCER	○
PULMONARY DISEASE	○	CANCER	○		

Please describe these conditions in greater detail below:

Appendix 5 - Thoracic Surgery Clerking Proforma

THORACIC SURGERY CLERKING

Date: **Consultant:**

Type of admission: Elective/ Urgent/ Emergency
Referring Consultant/NHS Trust:
Planned surgery:

Reason for referral:
Symptoms:
Performance status:

PAST MEDICAL HISTORY:

PAST SURGICAL HISTORY:

SOCIAL HISTORY:
Occupation:
Smoking history:
Asbestos exposure:
Alcohol intake:

SYSTEMS REVIEW:
Cardiac:
Respiratory:
Vascular:
Neurology:
Memory impairment:
GI tract:
Liver:
Renal:
Genitourinary:
Diabetes:
Other endocrine:
Haematology:
Malignancy:
Mobility:
Other:

MEDICATIONS: (List of current and recent medications, including doses)

ALLERGIES:

MEDICATION TO BE STOPPED:

EXAMINATION: (Y/N)

General examination:

Cyanosis: Jaundice: Clubbing: Carotid Bruits:
Oedema: Anaemia: Lymphadenopathy:

CVS:

Pulse: BP: JVP:
Peripheral Pulses: Apex: Heart Sounds:

Chest:

RR: Trachea: Expansion:
Percussion: Breath sounds: Scars:

Abdomen:

PREOPERATIVE INVESTIGATIONS (date/summary)

Pulmonary Investigations:

FEV1:
FVC:
TLCO:
Additional investigations:

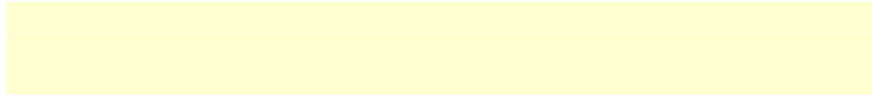
Radiology:

CXR:
CT scan:
PET scan:
Additional imaging:

Pathology:

MEDICAL CHECKLIST:

Surgery explained:
CXR reviewed:
ECG reviewed:
Spirometry results:
Confirm imaging on our system:
Drug chart written:
Decolonisation therapy prescribed:
Discontinuation of appropriate medication:



Name: **Designation:**

Appendix 6 - Cleansing pack information patients for DOSA.

Patients are required to take responsibility for medication requirements the day prior to surgery and on the morning of surgery. By contrast, for patients admitted the day prior to surgery, this information is managed by the ward staff. Clear instructions are therefore vital in order that patients are managed safely during the pre-operative protocol period.

CLEANSING PACK

We will give you a shower gel and nasal cream. These are to be started at lunchtime ***the day before surgery*** to reduce infection risk. Please use as shown in the table below:

✓ =use

	Day before surgery:			**Morning of surgery:**
	Lunchtime	Dinnertime	Bedtime	
Nose cream	✓	✓	✓	✓
Shower gel			✓	✓

Nose Cream	**Shower gel**
Place a small amount of cream (size of a match head) onto little finger	Wet your hair and body – use about 2 tablespoons of gel onto a clean wash cloth
Apply to the inside of nostrils, then squeeze nostrils together	Start with face/neck and work down the body. Pay attention to body creases – armpits, breasts, navel, groin, bottom and genitals
Repeat 4 times a day	Rinse and repeat starting with hair. Dry with a clean towel. Use clean nightwear /bedding afterwards
Contains **Chlorhexidine,** Also **soya** and **peanut** oil –please inform us if you are allergic to nuts	Repeat on morning of operation. Contains **Chlorhexidine. Do not put near eyes, ears or up nose**

Appendix 7 - Patient admission letter

Dear Patient,

Procedure: Thoracic Surgery

We have a vacancy for you to come into hospital for the above procedure on:

Monday 25th January 2021 at 7:15 am

On the day of your procedure please report to: Theatre Direct Admissions at the hospital (0700 to 1630). Your procedure will be carried out on this day. On the day of your procedure please bring this letter with you.

Important information

- You are able to continue eating until six hours prior to admission. Try to eat foods high in carbohydrate the day before your surgery such as pasta, potatoes, bread and rice.
- You should continue to drink clear fluids (water, squash, lemonade, tea and coffee without milk) until two hours prior to admission to prevent dehydration .
- If you are on the Enhanced Recovery programme follow the instructions in your information booklet about taking your pre-operative drinks .
- Please continue to take your usual morning medication with water unless told otherwise at preadmission.
- Bring a dressing gown, slippers and any toiletries you require.
- Bring any reading material you would like to help pass the time.
- Please bring any medications you are taking.
- Do not bring any valuables with you.
- You will not be able to drive from the hospital if you are discharged later the same day. You will need to have a responsible adult over the age of 18 stay with you overnight if you are discharged the same day .

Medical information

If you are taking **clopidogrel, aspirin or ticagrelor,** please continue to take these medications.

You should **STOP** taking any of the following tablets one week prior to surgery:

- Captopril, enalapril, ramipril, or any other ACE inhibitor.
- Losartan, valsartan or candesartan or any other Angiotensin II Receptor Blockers.
- Metformin 48 hours prior to surgery.
- Warfarin five days prior to surgery.

If you are unsure please contact the preadmission nurses regarding when you need to stop taking these medications prior to surgery.

You will receive a further appointment inviting you to attend a preoperative assessment clinic prior to your procedure date. Please note that if you do not attend this appointment, we will not be able to perform your planned procedure and it will be postponed; some of our assessments however, can be carried out over the phone.

Please complete the enclosed admission form and bring this with you on the day of admission.