



Peter Mac

Peter MacCallum Cancer Centre
Victoria Australia

COVID-19 – DRO Clinical Response Plan

March 2020



EXECUTIVE SUMMARY

- COVID-19 is a novel coronavirus which causes a respiratory illness. Symptoms range from a mild cough to pneumonia. Some people recover easily, others may experience rapid clinical deterioration requiring ICU support. The estimated mortality rate is 1-3%.
- The current DHHS projections suggest that the peak rate of transmission within Victoria will be between April and May 2020 with a wane in new cases by July 2020.
- It is estimated that 5-10% of presenting cases will need ICU support and this will have a critical impact on the Health Service. During the outbreak Peter Mac will act as supporting hospital to Royal Melbourne but will be impacted by significant staff shortages.
- These staff shortages will impact our ability to deliver routine cancer care to patients in the form of Radiation therapy, Systemic Therapy and Cancer Surgery.
- Furthermore, our current business continuity plans (BCPs) do not cover the eventuality of a state-wide or Australia-wide pandemic, hence a tailored clinical response plan is required.
- This Clinical Response Plan seeks to stratify appropriate adjustment of the clinical service dependent on the staffing level. In developing this plan the following principles were adhered to:
 - Where possible those treatments that provide a chance of long-term cancer control or 'cure' will be prioritised;
 - Treatments aimed at palliation alone or a minimal extension of life will have to be temporarily suspended during the peak of a COVID outbreak;
 - Those treatments where deferral for a 1-3 month period will have a minimum clinical impact (e.g. treatment of a basal cell carcinoma), should be deferred;
 - Where a patient is receiving treatment as part of a clinical trial, this should be prioritised and continued where possible;
 - Patients who have commenced a course of radiation therapy or chemotherapy should be prioritised and supported in completing their treatments.
- During the COVID-19 outbreak, the Executive Team supported by the clinical leadership team will continuously monitor the situation and determine the appropriate clinical service level provision based on the principles and guidance contained in this plan.

GENERAL MEASURES TO PROTECT PATIENTS AND STAFF

To reduce transmission between staff or between staff and visitors, the following measures will be implemented at the start of the escalation phase of the COVID pandemic:

- **Staff quarantine after travel or exposure** as per infection control advice/protocol.
- **Communications to patients** to stay away if they have symptoms of a respiratory tract illness or flu like illness. This will be on Peter Mac Webpage, accompanying clinic letters and SMS alerts.
 - Patients to be asked when contacted with new patient appointment for clinic, attendance at CT, attendance at RT new case appointment if they have travelled overseas, been in contact with anyone who has tested positive for Covid-19 or have symptoms. If responding yes, patient asked to seek medical review through their GP before presenting to Peter Mac.
 - Patients finishing RT to be asked if they intend to travel overseas prior to next follow up/review appointment.
- **Follow guidance on managing the patient with suspected COVID-19.**
 - **Reduce transmission on hard surfaces** within the VCCC building by erecting extra hand sanitising stations at entry points and positioning Volunteers at ground floor lift call points to call lifts to avoid contact with lift control panels. Remove couches and have only single chairs (1 meter apart) and remove chairs that cannot be cleaned easily. All magazines and extraneous items to be removed from waiting rooms
 - Patient baskets to be removed & patients requested to bring their own bag to transport valuables from change area to treatment
 - Patients to be requested to use hand sanitiser on entry & exit from bunkers & treatment areas
- **Reduction in visitor access** to patients on wards. Ask patients to bring no more than one accompanying person to clinic or treatment visits.
 - Patients requested to wait alone in waiting spaces, or where a carer is necessary to limit this to a single carer.
 - Patients only to be permitted in radiotherapy areas
- **Reduction in patient footfall** within the building by use of telehealth facilities in place of clinic face to face assessments and deferral of routine review appointments.
 - Medical staff to review follow-up/review clinic lists to determine if patients may be postponed or consult via telephone
- **Reduction in staff to staff transmission** by facilitating working at home where possible, creating staff group silos between clinical teams, splitting up critical clinical teams in two separate entities to reduce the risk of 100% absence of that team. Cancelling staff meetings where not essential and cancelling staff social functions. Cancellation of staff travel as per

policy and cancellation of external meetings or visits within Peter Mac. Encourage staff to only have lunch within their designated small group. Asking staff that are calling in sick whether they have symptoms, and if so, directing them to medical review before returning to work

- Radiation therapy campuses to split RT staffing into patient contact (treatment & CT) and non-patient contact (planning) staff. Staffing to remain constant until end of July.

PROJECTED IMPACT LEVELS

For each of the clinical departments, the following are suggested impact levels as measured against normal roster staffing levels:

Level 1	Minimal staffing impact
Level 2	Less than 80% of normal staff available
Level 3	Less than 50% of normal staff available
Level 4	Less than 25% of normal staff available
Level 5	Less than 10 % of normal staff available

RADIATION ONCOLOGY CLINICAL RESPONSE PLAN

Radiation therapists (RTs) are the largest single craft group within radiation oncology and are responsible for treatment planning and treatment delivery. Staffing numbers are divided between treatment planning and delivery and varies from campus to campus but is roughly 50/50. During the COVID-19 response, it will be necessary to move RTs currently based within pre-treatment and treatment planning onto the treatment machines to complete treatments of patients already commenced. Ensuring the appropriate balance of planning to treatment delivery will be supervised by the Campus Manager or their delegate. Medical physics staff will be expected to prioritise Machine QA and treatment QA over less urgent tasks. Plan checks will be attended to through working from home where possible. The usual BCP measures of load sharing between campuses for planning, treatment QA and treatment delivery will continue as is currently in place.

During the COVID epidemic, priority will be given to complete those treatment courses already commenced. The longest of these will be approximately 7.5 seven weeks duration. The response plan below describes the proposed plan for patients who have not yet started treatment.

Level 1 – Minimal staffing impact:

- Current services will continue as planned.

Level 2 – Less than 80% of normal staff available:

- Postpone all benign treatments.
- Use of single fraction regimens for palliative treatment to reduce treatment slots required
- Where possible use hypofractionation for adjuvant and radical treatments to reduce the number of treatment slots required (e.g. low-grade glioma, extremity sarcoma). Serious consideration to move to 5 fraction adjuvant regimens in breast cancer
- Defer by 1-3 months the planning of low risk adjuvant and radical treatments such as:
 - DCIS of the breast
 - Radical RT for prostate carcinoma where androgen deprivation therapy is being used
 - Indolent non-Hodgkin's lymphoma
 - Uncomplicated basal cell carcinoma
- Consider omitting radiation therapy in patients with low risk breast cancer (aged over 65 years, luminal A subtype, node negative and <2cm).
- Consider avoiding boost radiation therapy in any patients aged over 40 years
- Postpone any brachytherapy therapy treatments where possible and convert prostate brachytherapy therapies to single fractions only or to external beam treatments.

- Move to single fraction SABR treatment where possible (e.g. lung primary and oligometastatic disease).

Level 3 – Less than 50% of normal staff available: Planned Response

In addition to Level 2:

- Postpone all palliative treatments except where these are for life threatening conditions such as haemorrhage, superior vena cava obstruction.
- Postpone all SABR treatments for oligometastatic disease.
- Postpone SRS for brain metastases, except in exceptional circumstances.
- Postpone lung SABR treatments in low risk tumours (small, slow growing) or in at-risk individuals (e.g. poor performance status, significant comorbidities).
- Postpone de novo, uncomplicated squamous cell carcinoma of the skin.

Level 4 – Less than 25% of normal staff available: Planned Response

In addition to level 2 and 3:

Defer all adjuvant treatments

Level 5 – Less than 10% of normal staff available: Planned Response

In addition to levels 2,3 and 4:

- Cancel all routine radical / curative intent treatments.
- Only consider immediately life-threatening treatments such as bleeding tumours.

If a clinician is of the opinion that treatment is warranted, but prohibited by the above measures, they may ask the Site Director or Director of Radiation Oncology to consider a waiver.

Gerry Hanna

Director of Radiation Oncology – on behalf of all of Peter Mac Radiation Oncology who compiled this document as a team

APPENDIX 1: LEVEL 2 DOSE FRACTIONATION RECOMMENDATIONS

Lung and Thoracic Malignancies

Non-Small Cell Lung Cancer

Radical cases

Conventional 55Gy/20# for all cases including central/mediastinal disease, either alone or with concurrent chemo. OAR as per SOCCAR study.
Chemo: Week 1 and 4 cis/pem for non-squamous, OR Weekly carbo/taxol

SABR

Non-central: 30Gy/1# - dose constraints as per SAFRON II on intranet
Central (but not ultra central) 50Gy/5# - definition of central as per RTOG

High Dose Palliative 27Gy/6# over 2 weeks (Instead of 30-36Gy/10-12#)

Small Cell Lung Cancer

Limited Stage 40Gy/15# PCI: 25Gy/10#

Extensive Stage Thoracic consolidation –only in select cases 20Gy/5# No
PCI

Palliative

Lung (non SABR) Low Dose Palliative: 8Gy/1# or 16Gy/2# one week apart

Bone 8Gy/1# unless re-treat

Brain If WBRT really required 20Gy/5#. Consider SRS as per usual criteria.

Cord Compression 8Gy/1# for poor PS/poor prognosis
20Gy/5# for good PS/better prognosis

SABR for Oligomets /Oligoprogression: 1-3 lesions only - Single fraction

Head and Neck

RADICAL TREATMENTS – DEFINITIVE

Mucosal

All early stage laryngeal treatment

- Treat surgically whenever possible
 - Use most hypo-fractionated schedule appropriate for size of PTV

All other mucosal SCC

- Definitive RT alone – 66-70Gy/33-35# standard fractionation or accelerated 6 fractions per week
- Definitive ChemoRT – 70Gy/35# concurrent chemotherapy

Alternative histologies

NPC and other histologies lower priority to commence RT as per points system

RADICAL TREATMENTS – ADJUVANT

Mucosal

- For low risk patients with <30% estimated recurrence risk, surveillance with discussion with patient
- For low to standard risk patients – 50-55Gy/20-22#
- ONLY High risk patients – 66Gy/33# with concurrent chemotherapy, requires MDM /chart round discussion and approval for more prolonged fractionation

Skin

All adjuvant treatment - 50-55Gy/20-22#

Skin treatments (50Gy/20#) acceptable to delay start to 8 weeks post-surgery

PALLIATIVES

- Delay use of RT and refer for medical management of symptoms whenever possible
- 8Gy single fraction in place of 14Gy/4# for first cycle of quad shot
- Reassess dose /fractionation of second cycle, dictated by resources available at that time.

BENIGN

No benign treatments

OTHER RECOMMENDATIONS

Nutrition

Communicate with allied health line manager to ensure all standard nutrition consultation done via telecommunication.

Speech Pathology

Communicate with allied health line manager to ensure all standard speech pathology consultation done via telecommunication. Exceptions will exist of tracheostomy care patients etc.

Communicate with allied health line manager regarding appropriate PPE for speech pathology interventions and examinations

Nursing

Communicate with site nursing line manager regarding ID recommendation to follow Vic guidelines regarding COVID-19. This states that aerosol generating procedures (AGP) should be avoided. Examples include sputum induction. "Nebuliser use should be discouraged and alternative administration devices (for example, spacers) should be used."

Communicate with site nursing line manager regarding PPE for NGT insertion

REVIEW OF RECOMMENDATIONS

Weekly Monday morning teleconference amongst head and neck ROs.
May increase to twice / three weekly as per need.

DRAFT

Skin

- 1) Benign disease – defer
- 2) BCC - defer all indolent BCC for 4-6 months, arrange Telehealth follow up in the interim
- 3) Adjuvant treatment for conditions that do not have clear evidence of benefit e.g. mucinous carcinoma – defer to observation/surveillance

Consider the following alternative hypofractionation schedules in the current i-Policy which have comparable disease control rate and acceptable toxicities

Radical/Adjuvant	Alternatives
60-66Gy/30-33F/5w	50-55Gy/20-22F/5w
Palliative	
20-25Gy/5F/5w	Single fraction
HDP	
Eg 36/12/5	20/5/5 repeat after 1-2 weeks (TD 40Gy/10F)

Please discuss with individual patients the rationale for alternative fractionations where clinical appropriate and take into considerations of patients' risk factors for COVID19 mortality.

Breast

Patients who have had Breast Conservation Surgery

- a) Patient with very low risk cancers (who would otherwise have been considered for EXPERT trial i.e. Tumour, 2cm and Grade ½ and node negative and ER& PR strongly positive and HER2 negative)
 - Omit radiotherapy and proceed with endocrine therapy alone
 - (Exceptions can be made for younger patients (50 – 65) with larger (>1cm) tumours if the treating doctor is uncomfortable with omitting radiotherapy.)
 - Treat as for b below

- b) Patients suitable for breast only irradiation (node negative or only 1 lymph node involved)
 - Treat tangents giving 40Gy in 15Fx @ 5 / week
 - No boost unless <40 years of age
 - Boost dose when used is 9Gy in 3 fx @ 5 / week

 - Consider 26Gy in 5 fx @ 5 / week **Or** 36Gy in 8 fx @ 3/ week in older patients

- c) Patients requiring Breast & nodal irradiation
(2 or more axillary lymph nodes containing cancer)
 - Treat tangents and S/C +/- axilla giving 40Gy in 15fx @ 5 / week to both the breast and nodal regions
 - No boost unless < 40 years of age

- d) Breast conserving surgery after neoadjuvant chemotherapy
 - Treat as b or c above

Patients for radiotherapy after mastectomy

- a.) No skin or muscle invasion and 0 or 1 involved axillary lymph nodes involved
 - Omit radiotherapy

- b.) Skin or muscle invasion by cancer, or 2 or more involved axillary lymph nodes
 - Treat chest wall and S/C +/- axilla, giving 40Gy in 15fx to both breast and nodal regions

c) Mastectomy after Neoadjuvant chemotherapy

→ treat as b) above

3. Patient requiring radiotherapy for symptom relief

Treat with single fraction of 8Gy unless:

- i) Spinal cord compression by tumour mass
- ii) Brain metastasis
- iii) SVC obstruction

→ In these cases 20Gy in 5fx @ 5 / week can be used

Consider 15Gy in 3fx @ 5 / week

4. Patient with fungating breast cancer

- Treat breast with 36Gy in 8f @ 2/3 per week.
- Treat nodal areas with 27Gy in 6fx or 31.5 Gy in 7fx @ 2 /3 per week
- Or palliative treatment fractionation

5. Patients with DCIS who have had Breast Conserving surgery

a) When DCIS is < 1 cm in diameter, low or intermediate grade and patient of any age

→ Omit radiotherapy

b) When DCIS is <1cm in diameter and grade 3 or high grade and patient aged > 65

→ Consider omitting radiotherapy

c) When treating breast for DCIS give 40Gy in 15fx @ 5 / week and no boost

or consider 26Gy in 5fx @ 5 / week

Prostate cancer

- Attempt to defer RT in all cases
 - For low or low-intermediate risk disease - defer RT with surveillance
 - High-intermediate and high-risk disease - defer RT with neoadjuvant ADT
- Change fractionation of current / future bookings
 - 60 Gy in 20 fractions as standard in all. In selected cases, there is an option for 55Gy in 20fr or 36Gy in 6fr delivered weekly as per STAMPEDE Arm H delivered without IGRT.
 - Convert all HDR monotherapy cases (2 implants) to HDR boost (single implant) if theatre resources permit. If not, convert to EBRT or commence ADT
 - Convert HDR boost external beam schedules to 37.5y / 15 fr
 - Pelvic nodal treatments should be converted to a 20 fraction schedule where dose constraints deem it safe. Anticipated dose to uninvolved nodes ranges from 42-44Gy typically.

Post-Prostatectomy curative intent RT:

Typically 33-35 fractions. Hypofractionated approaches in this setting have conflicting evidence regarding efficacy and toxicity and should not be used

Action:

- Attempt to defer RT in all cases with neoadjuvant ADT. Discuss cases thought to require RT in the short-term

Treatment of primary in metastatic setting

Recently popularised by STAMPEDE result with impact in low metastatic burden cases only

Action:

- Defer on ADT

Oligometastatic disease (asymptomatic)

SABR to asymptomatic oligometastatic disease popular but no high-level data supporting as yet.

Action:

- Conventional palliative approaches to be used preferentially - only for symptoms
- Patients on a trial protocol require discussion
- Any off-protocol patients being considered for SABR to be discussed in view of clinical scenario and available RO, RT and physics resources.

Bladder Cancer

TCC Bladder treated with curative intent:

Most will not have an option to be delayed. Current standard is for 64Gy in 32fractions +/- chemotherapy.

Action:

- Move all to 55 Gy in 20 fractions irrespective of whether chemo is able to be given

TCC Bladder treated palliatively:

Treat only for symptomatic relief

Action:

- Utilise 10 fractions at most eg 30Gy/10# or 21Gy/3#

Seminoma

Rarely treated with RT currently.

Action:

- Favour surveillance in all cases suitable. Discuss cases thought to be requiring RT.

Renal Cell Carcinoma

Primary and metastatic RCC typically treated with 1-3 fractions SABR utilising institutional or trial protocols.

Action:

- All cases require discussion. Defer cases where possible to active surveillance. If requiring treatment and resource available, this should utilise single fraction.

General Palliative

Follow conventional approaches

Action:

- Single fraction unless special circumstances (retreatment, etc)

Paeds

Post-pubertal patients - consider adult fractionation (2 Gy per#).

Pre-pubertal patients – unchanged.

Palliative treatments – 8 Gy single fraction as standard, for patients with long expected survival times may give 20/5.

DMG/DIPG – make 39 Gy/13#s standard, reserving 59.4# for atypical/long presentations and/or clinical/radiological features that may suggest lower grade tumours.

Neuro

High grade Glioma	Age 65+	25Gy / 5 / 5 days
	Age < 65-	50Gy / 20 / 5# per week
Low grade Glioma	Delay unless very symptomatic / new enhancement without biopsy.	
	Hypofractionation	40Gy in 15 (+/- 50 in 20 if HGG on imaging)
Medulloblastoma	Normal practice	
Other	Consider individually	
	<ul style="list-style-type: none">- Apply principles of symptoms / signs and grade- Strongly consider hypofractionation	
All Benign disease	No treatment until Covid19 is over	
Choroidal Melanoma	Delay or Hypofractionation (only treat rapid growth / symptomatic)	

Gynae

Cervix	<p>Radical – maintain standard ChemoRT practice</p> <p>Adjuvant – maintain standard practice: chemoRT for High risk patients</p> <p>Palliative – Single 8Gy for pain QS or 20Gy in 5# if bleeding or needed for further Sx control</p>
Endometrium	<p>Adjuvant – All to be treated with 45Gy in 25#, no boosts (Vault boost only if clinically indicated for risk factors)</p> <p>Delay start to 8-12wks post-op PORTEC-3 protocol ok</p> <p>Palliative – Single 8Gy for pain QS or 20Gy in 5# if bleeding or needed for further Sx control</p> <p>Radical – consider on a case by case basis (those unable to have surgery)</p>
Vagina/Vulva	<p>Radical – maintain standard ChemoRT practice</p> <p>Adjuvant Groin RT – maintain standard practice</p> <p>Palliative – Single 8Gy for pain QS or 20Gy in 5# if bleeding or needed for further Sx control</p>
Brachytherapy	<p>HDR T&O Brachy for radical cervix – reduce to 3 fractions only</p> <p>HDR Vaginal Vault Brachy – reduce to 3 fractions</p>

Localised cutaneous lymphoma

ALCL	30/12-15
FCCL	24/10-12
leg type DLBCL after systemic therapy	30-36 /15-18

Emergency/ Urgent palliation including “bridging” to definitive interventions (ASCT, CAR-T etc...)

Individualised dose/fractionation

Non urgent palliation

- Myeloma– 4 or 8 Gy single # or 20/5 if structural integrity an issue
- Indolent NHL 4 Gy / 1-2 #
- Local palliation of Mycosis Fungoides 6/2
- DLBCL 15/5 with? repeat to total 30 Gy

Treatments to be considered only in exceptional cases of Level 2 COVID Response (based on MDM consensus)

Adjuvant RT for bulky localised or advanced stage DLBCL/HL PET -ve after full course systemic therapy

30/15 (consider smaller fractions for mediastinum after anthracyclines)

Salvage - Peri-transplant RT

30/15 (consider smaller fractions for mediastinum after anthracyclines)

C. Not to be given in phase 2

Skin lymphoma

TSE

TBI allograft

Older patients with ALL (substitute with chemo only regimen) 12Gy in 6 # BD

GI

Curative

Rectum

Rectum T3 preop – 25/5/5

Rectum T4b preop– chemoRT 50/25/5

Preoperative re-irradiation for rectal recurrence (for fit patients with high chance of cure and accepts exonerative surgery) – chemoRT 36-39.6Gy in 1.8Gy/fraction; no re-irradiation at 50% staff or chemo not available

Anus – chemoRT 54/30/5 (80% staff); 45/15/5 (50% or when chemo not available)

Oesophagus

Oesophagus preop – CROSS 41.4/23 (80% staff); surgery alone (50% staff or chemo not available)

Oesophagus definitive: for fit and young and good chance of cure but not suitable for surgery - chemoRT 50Gy (80% staff); 45/15 (50% staff or chemo not available)

Note: if not appropriate for 'radical CRT' (age, comorbidity, advanced tumour), but locoregional disease only then palliation (20/5/5)

Stomach preop – trial only

Pancreas

Chemo good responders – no RT consolidation

Chemo poor responders – palliation 20/5/5

SABR – single fraction whenever possible, selection of cases according to SABR guidelines

Palliation

Bone metastasis – single 8Gy

Oesophagus, stomach, pancreas, rectum – 20/5/5

Sarcoma

Extremities preop – 36/12/5

Retroperitoneal sarcoma

At 80% staff, preop (not for leiomyosarcoma) – 45/20/5 or 45/25/5

At 50% staff, preop (liposarcoma only) 45/20/5 or surgery alone

Bone metastasis – 8Gy

Abdominal metastasis – 8Gy whenever possible.

SABR – single fraction whenever possible, selection of cases according to SABR guidelines