GenesisCare Prostate Radiotherapy Protocol (UK)

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1. Introduction and Purpose

This document defines GenesisCare UK (GenesisCare) recommended radiotherapy protocol for the treatment of the prostate gland (+-) seminal vesicles, pelvic lymph nodes and prostate bed.

2. Terms and Definitions

- Low/Intermediate risk – T1c T2a-c T3, PSA<15, Gleason ≤7.
- Low risk (D'Amico) T1-T2a, Gleason <=6, PSA <10 ng/ml
- Intermediate risk (D'Amico) T2b, Gleason 7, PSA 10-20 ng/ml
- High risk (D'Amico) T2c, Gleason >=8, PSA >20 ng/ml
- Hypofractionation: Low risk of seminal vesicle involvement T1b/c or T2a/b and with PSA + ((Gleason score -6) x10) <15
- Hypofractionation: Intermediate/high risk of seminal vesicle involvement
- Clinical stages T1b/c or T2a/b, and with PSA + ((Gleason score -6) x10) >15
- T2c or T3a. Intermediate Risk, small volume (non CHHiP eligible).
- High Risk T3A, MRI T3b; PSA>20; Gleason 8-10 (any)
- Prostate bed: high risk features for prostate bed + nodes. include: Grade group 3 or higher at formal histology, presence of extracapsular extension or seminal vesicle invasion at formal histology, rising PSA despite negative margins
- Palliative prostate radiotherapy

3. Scope

This protocol applies to all prostate radiotherapy treatments done on a standard linac undertaken in GenesisCare centres. MR-Linac can also be used to treat prostate patients following – MR-Linac Prostate Protocol (RT-PRO-356).

4. Responsibilities

The Urology Clinical Reference Group are responsible for writing this Clinical Protocol. The Head of Physics and Head of Radiotherapy are responsible for implementing this procedure and subsequent local policies and procedures.
Radiographers that are entitled and competent are responsible:

For ensuring the accurate and safe delivery of radiotherapy treatments.

Note: Cone Beam CT is the GenesisCare gold standard of treatment delivery.

5. Policy Treatment Considerations

5.1. Hypofractionation (CHHiP)

- A Scripted CHHiP protocol has been produced by GenesisCare available at the clinician's request which will automate the production of PTVs, planning structures and optimiser objectives.

5.2. HDR/LDR

- A 15Gy single # HDR prostate boost may be delivered in high risk cases (Not currently offered at GenesisCare) in combination with 46Gy in 23 fractions to the whole pelvis.
- A low dose brachytherapy boost delivering 110Gy to the prostate (not currently offered at GenesisCare) may be delivered in high risk cases (ASCENDE-RT trial, Journal of Clinical Oncology 2015 33:7_suppl, 3-3), in combination with 46Gy in 23 fractions to the whole pelvis or 36Gy/12# or 37.5/15# to the prostate.
- HDR/LDR boost can be delivered before or after EBRT

5.3. Locally advanced PC

- Treatment of the prostate/seminal vesicles with or without pelvic lymph nodes as determined by local clinician decision.
- Prostate cancer with small volume Oligometastatic disease in the pelvis, encompassable within a radical dose.
- Patients of good performance status with small volume synchronous oligometastases geographically close to the prostate and therefore encompassable within a high dose field. This could include obturator or external iliac lymph nodes, bone lesions within the bony pelvis around the prostate.
- Radiotherapy to the prostate in low volume metastatic disease.
- This includes patients where irradiation of the primary is indicated despite the presence of extra-pelvic metastases as based on STAMPEDE and CHAARTED data.

5.4. Palliative Prostate Radiotherapy is indicated when radical treatment is inappropriate.

- Elderly frail with local symptoms or hormone resistant disease.
- Metastatic with local symptoms.

5.5. Post-prostatectomy salvage radiotherapy

- This includes treatment to the prostate bed alone or with the inclusion of pelvic nodal irradiation.
- Salvage radiotherapy (SRT) is the administration of radiotherapy to the prostatic bed and possibly the surrounding tissues, including lymph

nodes, in patients with PSA recurrence after surgery but no evidence of distant metastatic disease. Biochemical recurrence after surgery is defined as a detectable PSA level of ≥0.2 ng/mL with a second confirmatory level of >0.2 ng/mL.

- (Ref https://www.practicalradonc.org/article/S1879-8500(19)30120-1/fulltext)

6. Patient Selection

6.1. Consent

As per GenesisCare Consent Policy (QR-POL-045).

6.2. Inclusion Criteria

- MDT confirmed diagnosis

6.3. Re-irradiation

Re-irradiation should only be undertaken with caution and after appropriate consideration of the previous dose delivered, time since irradiation and careful assessment of the previous radiotherapy plan and dose.

6.4. Scheduling of Patients

A 7-day planning pathway is available at GenesisCare pending clinician availability.

Radical cases may start any weekday excluding Friday. Palliative cases can start any day.

Refer to Clinical Advisory Team (CAT) referral (RT-POL-136) criteria.

7. Patient Positioning and Localisation

Immobilisation Device	Set-Up	Suggested Practice	Localisation	Tattoo/reference mark Location	Bladder/rectal status
Head on scoop & rectangle; arms on chest; Combi-fix	Supine, head to gantry; Hands on chest	Mandatory AP/ Lat MOSAIQ set-up photograph (Tattoo location visible. All CT wire removed); Clothing & jewellery removed as necessary	Prostate/Bladder only: L4/5 vertebrae to 3cm inf to ischial tuberosities Primary+Nodes: L1/2 vertebrae to 3cm inf to ischial tuberosities	Anteriorly on m/l at approx. 5cm Sup to BOP (male) or at planner discretion depending on patient size Left & Right Lat rotation tattoos at approx. HATT 10-12cm	Bladder comfortably full Rectum, Empty

8. Pre-treatment Imaging

MRI CT fusion is recommended where possible for planning radical prostate radiotherapy. Patients who have had a rectal spacer placed pre radiotherapy should have a planning MRI scan to facilitate visualisation of the rectal spacer. Contrast is required when pelvic nodal irradiation is planned and or at the doctor's request.

9. Definition of Target and OAR

Target Volumes

9.1. GTV:

- The GTV is the prostate only in the CHHiP protocol.

9.2. Clinical target volume (CTV) definitions:

- The urethral planning organ at risk volume (PRV): urethra plus 3mm; the area of integrated radiation sparing
- For 'low risk' patients: CTV = prostate minus the urethral PRV (see below)
- For 'intermediate and high risk' patients: CTV = prostate plus the base of the seminal vesicles (=2cm) plus any visible tumour extension seen on MRI minus the urethral PRV (see below).

9.3. CTVp:

- Clinical Target Volume (CTVp) defined as prostate gland (+/-) the seminal vesicles.

9.4. CTVn:

- The CTVn includes the Pelvic nodes below the bifurcation of the common iliac vessels to include the internal lilacs, obturator, presacral and external iliac nodes.

9.5. CTVn+:

- The CTVn+ includes the clinical or radiological involved lymph nodes to be boosted.

9.6. CTV Prostate Bed

- The CTV Prostate Bed is defined as:
    - Superior border: Base of seminal vesicle or if removed at estimated position from pre-op scans if available.
    - Inferior border: 5mm above penile bulb.
    - Anterior border: Caudal (<2cm above anastomosis) – Posterior border of pubic symphysis. Cranial (>2cm above anastomosis) – Posterior 1/3rd of bladder wall.
    - Below anastomosis: Posterior third of bladder wall.
    - **Posterior border:** Anterior rectal wall.
    - **Lateral border**: Medial border obturator internus and levator ani muscles.

9.7. CTV Prostate bed + SVs

- The CTV Prostate bed + SVs is defined as per prostate bed only but extending superiorly to include tips of seminal vesicles or if absent, estimated position of seminal vesicles from pre-op imaging if available. This is at the discretion of the referring clinician.

9.8. CTV Prostate (Palliative):

- In palliative cases the CTV is defined as the prostate and any extra-prostatic extension.

9.9. CTV Prostate – CHHiP:

- CTV1 – CHHiP (Low risk):
    - The CTV1 is prostate and base of seminal vesicles (proximal 2cm) with 5mm margin.
- CTV1 – CHHiP (Intermediate/high risk):

- CTV1 is the prostate and seminal vesicles with 5mm margin for Group 2.

- CTV2 – CHHiP:
  - CTV2 is the prostate only + 5mm.
- CTV3 – CHHiP:
  - CTV3 is the prostate only.

9.10. ITV:

- The ITV is not applicable.

9.11. PTV Prostate:

- The PTV is defined as the CTVp + 7mm uniformly.
- Also acceptable: PTV66: CTV66 (Prostate/SV + 10mm)
- PTV74: CTV74 (Prostate only + 5mm) can be accepted if a 2nd dose level of PTV/SV + 10mm is used

9.12. PTV Prostate Bed:

- The PTV Prostate bed is defined as the CTV Prostate bed + 10mm uniformly.
- (0.7–1.0cm posterior margin depending on rectal area which should be defined on
- each CT planning slice -LCA guidance).

9.13. PTVs1-3 (CHHiP):

- PTVs 1-3 Add 5mm to the relevant CTV except for adding a 0mm margin posteriorly or posterior-inferiorly (towards the rectum) for PTV2+3 (withspacer, a 5mm can be maintained posteriorly and posterior-inferiorly).
- Also acceptable: PTV48 (1cm around prostate/SV) and PTV60 (5mm around prostate).

9.14. Recommended modifications to margins

- Lymph node volumes should follow vessels as defined by contrast CT using asymmetric manual expansions to nodes along tissue planes as defined in table below from Taylor et al Clinical Oncology 2007; 19: 542-550.

Lymph node group	Recommended margins
Common Iliac	7mm margin around vessels; extend posterior and lateral borders to psoas and vertebral body
External Iliac	7-mm margin around vessels; extend anterior border by additional 10-mm anterolaterally along iliopsoas muscle to include lateral external iliac nodes
Obturator	Join external and internal iliac regions with 18-mm-wide strip along pelvic sidewall
Internal Iliac	7-mm margin around vessels; extend lateral borders to pelvic sidewall
Presacral	10-mm strip over anterior sacrum
Also include any visible nodes	

Contouring Atlases available below:

- https://www.rtog.org/LinkClick.aspx?fileticket=glmTGKHTmr0%3d&tabid=234 **(LNs)**
- https://www.rtog.org/LinkClick.aspx?fileticket=glmTGKHTmr0%3d&tabid=234 **(Postop +ve apex margin)**
- https://www.rtog.org/LinkClick.aspx?fileticket=_znZLMP1yco%3d&tabid=232 **(Postop +ve SV)**

9.15. Nodal PTVs

- Prostate + Nodes – Nodal PTV margin = 10mm
- Prostate Bed + Nodes – Nodal PTV margin = 7-10mm
- Involved Nodes (N+) margin = 5-10mm

9.16. Organs at Risk (OAR)

- Organs at risk are to be outlined as per GenesisCare UK Anatomy Atlas (PHY-MAN-102).

9.17. OAR 1- Rectum

- The rectum should be outlined from the anus (Usually at the level of the ischial tuberosities or 1cm below the lower margin of the PTV (whichever is more inferior) to the recto-sigmoid junction. The recto-sigmoid junction can usually be identified on the CT slice where the bowel turns anteriorly and laterally. This will give a length of 10-12cm in most cases. Any additional bowel in the volume should be outlined separately.

9.18. OAR 2 – Bladder

- The whole bladder should be outlined from base to dome.

9.19. OAR 3 – Femoral Heads

The femoral heads should be outlined as per GenesisCare UK Anatomy Atlas (PHY-MAN-102), excluding the femoral neck.

9.20. OAR 4 – Bowel

- The bowel is to be outlined when there is nodal involvement 2cm superior the PTV.

9.21. OAR 5 – Penile Bulb

- The penile bulb should be contoured using the fused diagnostic MRI to aid recognition.

9.22. Treatment Planning - Prostate Dose Prescription. (For a summary of doses please see appendix 1.)

9.22.1. **Low/Intermediate risk:** T1c T2a-c T3, PSA<15, Gleason ≤7. (Level 1 Evidence):
PTVp -60Gy/ 20# over 4 weeks (CHHiP eligible)

9.22.2. Intermediate risk:
PTVp 78Gy/ 39# over 7.5 weeks. Also acceptable: 74Gy in 37# over 7.5 weeks and 76Gy in 38# over 7.5 weeks and 78Gy in 37# over 7.5 weeks or 60Gy in 20# over 4 weeks.

9.22.3. **High Risk disease:** T3A, MRI T3b; PSA>20; Gleason 8-10 (one)

9.22.4. Two schedules are in use depending upon whether the entire treatment is to be with external beam or brachytherapy (HDR/LDR) boost will be used.

9.22.5. External Beam Only (78Gy/ 39# or in 37# or 76Gy/38# or 74Gy/37# or 60Gy in 20# if clinical decision is not to treat the pelvic nodes)

- PTVn: 60-62Gy in 37-39#
- PTVp: 74-78Gy in 37-39#
- PTVn+: 65-74Gy in 37-39# over 7.5 weeks (evidence J. Fowler et al. IJROBP 56; 4; 2003)
- In case of excess bowel, reduce LN to 55Gy and nodal boost to 60Gy (LCA guidance).

9.22.6. External Beam IMRT+HDR Brachytherapy Boost (Level 1 Evidence)

- PTVp & n combined: 46Gy in 23# over 4.5 weeks
- PTVn+: 56.6-58Gy in 23# (if radiologically involved nodes)
- HDR Boost: 15Gy single dose to HDR PTV
- For node –ve disease, also acceptable is 37.5Gy/15# EBRT followed by 15Gy HDR boost.

9.22.7. External Beam IMRT+ LDR Brachytherapy Boost

- PTVp & n combined: 46Gy in 23# over 4.5 weeks
- PTVn+: 56.6-58Gy in 23# (if radiologically involved nodes)

  LDR Boost: 110Gy
- For node –ve disease, also acceptable is 37.5Gy/15# or 36Gy/12# EBRT followed by 110Gy LDR boost.

9.23. Synchronous oligometastases treated radically with radiotherapy to both prostate and nearby small volume metastases:

Treat as per high risk in 9.26.6 above with 74Gy in 37#. Nodes treated to 55-70Gy. Small volume oligometastatic disease in nearby nodes/bones treated with a dose between 64Gy and 74Gy depending on nearby OAR tolerance. (evidence: Zhao et al. Clin Trans Med (2019) 8:30;
Sites of synchronous distant metastases and prognosis in prostate cancer patients with bone metastases at initial diagnosis: a population-based study of 16,643 patients. Also Battaglia et al:
European Urology Oncology Volume 2, Issue 2, March 2019, Pages 174-188 Novel Insights into the Management of Oligometastatic Prostate Cancer: A Comprehensive Review)

9.24. Prostate bed radiotherapy

Three schedules are in use for adjuvant and salvage radiotherapy depending upon the risk of pelvic lymph node involvement.

9.24.1. Prostate Bed Dose Prescription (Level 1 Evidence)

- 52.5Gy-55Gy 20# Low/High Risk opting not to treat nodes over 4 weeks
- 66Gy/33# over 6.5 weeks. Visible gross disease might be boosted to a dose of 71.6Gy in 33# (Royal Surrey protocol). Alternatively, a total dose of 70-74Gy in 35-37 fractions as a boost to the visible disease (Oxford protocol).

9.25. High lymph node risk- positive nodes on histology at prostatectomy or presence of high-risk features at prostatectomy

- 66Gy in 33# PTVp over 6.5 weeks
- 52-55Gy in 33# PTVn (RADICALS)
- 58-70Gy in 33# PTVn+ (MVH protocol, AUA 2013, EUA 2016)
- Boost to visible tumour/enlarged node recurrence up to 71.6Gy in 33# (Royal Surrey protocol). Alternatively, a total dose to 70-74Gy in 35-37 fractions as a boost to the visible disease (Oxford protocol)

9.26. Palliative Radiotherapy

Aim for local disease control where either there is evidence of metastatic disease, or a patient is judged not fit for radical treatment

- IMRT –36Gy in 6#, treated 1 fraction per week over 6 weeks or 55Gy in 20# daily schedule (STAMPEDE) 60Gy in 20# over 4 weeks also considered appropriate
- AP PA Fields/3D CRT – 21Gy in 3# MPD/Target mean dose alternate days over 1 week.
- AP PA Fields/3D CRT – 8-10Gy in 1# or 20Gy in 5 # MPD/Target mean

9.27. Delivery Technique

The standard technique will typically employ VMAT.

9.28. Dose Targets and Constraints

9.28.1. Minimum Target Coverage

- As per PHY-POL-007: V95>99% is optimal and V95%>98% is acceptable if required to meet OAR constraints.

9.28.2. Max dose

- The maximum 2cc dose to the PTV should be ≤107.

9.28.3. OAR Dose Constraints

Prostate

Organ at Risk	Dose (Gy)	78Gy/39# Mandatory/optimal Volume (%)		60Gy 20# Volume (%)
Rectum	30	-	80	
	40	-	65	
	42			60
	50	60	50	50
	54			30
	58			15
	60	50	35	
	65	30	-	
	70	25	15	
	75	5	3	
Bladder	42			55
	50	50	-	40
	60	25	-	
	62			5
	74	15	5	
	50	50	5	

Bowel	50	17cc		
Penile Bulb	50	-	50	
	60	-	10	

Prostate Bed/Prostate with HDR Boost

Organ at Risk	Dose (Gy)	52Gy 20# Volume (%)	66Gy 33# Volume (%)	Prostate with HDR Boost 46Gy 23# Volume (%)
Rectum	24	80		
	30		80	
	31.1			80
	32	70		
	37.3			60
	40	60	70	
	40.4			40
	43.5			25
	46.6			2
	48	50		
	50		60	
	52.5	30		
	60		50	
	66		30	
Bladder	31.1			90
	37.3			70
	40	80		
	43.5			40
	48	50		
	50		80	
	60		50	

CHHiP trial Constraints

Organ at Risk	Dose for 2Gy/# Prescribed Dose	Dose for 3Gy/# Prescribed Dose	% of prescription dose	Max Vol (% or cc)
Rectum	30 40 50 60 65 70 74	24.6 32.4 40.8 48.6 52.8 57 60	41 54 68 81 88 95 100	80% 70% 60% 50% 30% 15% 3%
Bladder	50 60 74	40.8 48.6 60	68 81 100	50% 25% 5%

Femoral Heads	50	40.8	68	50%
Bowel	50	40.8	68	17cc
Urethral Bulb	50 60	40.8 48.6	68 81	50% 10%

9.29. Plan Approval

9.29.1. Plan approval should be by a Clinical Oncologist, or where agreed and documented by the oncologist, by competent members of physics staff who may perform the plan approval for all radical prostate plans as long as:

a) the consultant has electronically approved the prescription;
b) the consultant has signed The GTV and CTV, OARs are approved by either the consultant or a competent member of physics staff;
c) all PTV and OAR constraints are met and distribution is within current ICRU guidelines; and
d) assessment and approval of this competency is delegated to the physics department.

10. Pre-treatment Quality Assurance

10.1. All complex IMRT/VMAT plans undergo a fluence delivery check on the linac (e.g. using MapCheck2 or ArcCheck). For guidance on this process see RT189 and MapCheck/ArcCheck manuals. This check is usually carried out prior to commencing treatment and always before a fifth of the treatment has occurred (e.g. before fraction 5 on a 25# treatment).

11. Pre-treatment Verification

11.1. Treatment verification is to be undertaken day 1 prior to treatment.

12. Treatment IGRT

12.1. Image Guidance is to be performed using daily CBCT.

13. Image Assessment

13.1. As per Radiotherapy Imaging Policy (RT-POL-028), Clip-box to include the surrounding bony anatomy not including the femur.

13.2. Perform Bony match then match to prostate.

13.3. Review rotations + translations are in tolerance.

13.4. Ensure the CTV remains within the 95% Isodose.

13.5. Review bladder/rectal filling/gas.

13.6. Assess position of seminal vesicles if part of CTV.

13.7. Review skin contour, if >1cm difference in tissue discuss with planning.

13.8. Try to ensure the patient's legs (femoral head/neck) are in a similar position to planning CT; this can alter consistently on treatment if the patient was tense and "clenching" at CT.

14. Treatment delivery

As per Radiotherapy treatment Policy (RT-POL-014), weekly radiographer-led on-treatment reviews are documented on MOSAIQ. Radiographer-led end of treatment reviews documented on MOSAIQ.

15. Stereotactic Radiotherapy

15.1. Stereotactic radiotherapy on a standard linear accelerator (non-MR Linac) is now available for current PACE eligible referrers.

15.2. Stereotactic radiotherapy is a potential treatment option for patients who fulfil the PACE trial entry criteria (outlined below) who are accepting of the lack of randomised outcome data.

15.3. Patients referred for stereotactic radiotherapy must be eligible and consented to have both rectal Spacing Gel and Gold Fiducial Anchors inserted, as per the Spacing Products Work Instructions, UK (OPD-WI-048) and the GenesisCare Fiducial Markers SOP, UK (OPD-SOP-073).

15.4. **Inclusion criteria:**

- Low to intermediate risk disease and selected high risk disease
- T1-3a disease
- Gleason 3+3, 3+4, 4+3 and selected 4+4
- PSA<20
- PS 0-2
- Prostate volume ≤90cc

15.5. **Dose Prescription** 36.25Gy in 5 fractions on alternate days over 2 weeks (7.25Gy x 5) prescribed to PTV

- GTV = prostate gland

- CTV = prostate gland (low risk patients)
    - Prostate gland and proximal 1 cm seminal vesicles (Intermediate risk patients)
    - Prostate gland and proximal 2 cm seminal vesicles (high risk patients)
- PTV = CTV+6.0mm margin in all directions
- Dose constraints as per PACE trial, see following table:

Organ at risk	Dose volume constraints		
	Dose (Gy)	Maximum volume (% or cc)	
		Mandatory	Optimal
Rectum	18.1	50%	
	29	20%	
	36	2cc	1cc
Bladder	18.1	40%	
	37	10cc	5cc
Femoral heads †	14.5	-	5%
Bowel	18.1	5cc	
	30	1cc	
Penile bulb	29.5	-	50%
Urethra (if visualised)	42	-	50%
Testicular	Blocking structure		

15.6. Treatment Gaps

Considering a tumour repopulation of 0.6 Gy/day, patients can be safely treated over a 3-week time period (≈6Gy drop in BED) if the treatment is forced to be paused for few fractions due to unforeseen treatment machine breakdown or other clinical reasons.

15.7. Peer Review

All patients treated with stereotactic radiotherapy will undergo peer review by the Urology SAT group (refer to the Urology SABR Advisory Team Terms of Reference TOR-TEM-003).

16. Evaluation

This Protocol will be monitored by Clinical Reference Group, Head of Medical Physics, Head of Radiotherapy and Chief Medical Officer.

17. References

- Dearnaley D, et al (2016): Conventional versus hypofractionated high-dose intensity-modulated radiotherapy for prostate cancer: 5-year outcomes of the randomised, non-inferiority, phase 3 CHHiP trial. Lancet Oncol. 2016
- B.R. Prestidge et al (2016): H.M. Sandler
- Search for articles by this author Affiliations – Cedars-Sinai, Los Angeles, CA
- Initial Report of NRG Oncology/RTOG 0232: A Phase III Study Comparing Combined External Beam Radiation and Transperineal Interstitial Permanent Brachytherapy with Brachytherapy Alone for Selected Patients with Intermediate Risk Prostatic Carcinoma Identification and Validation of Intrinsic Subtypes of Prostate Cancer: http://www.redjournal.org/article/S0360-3016(16)30352-2/fulltext
- PACE TRIAL:

  https://www.clinicaltrials.gov/ct2/show/NCT01584258.
- Urology SABR Advisory Team Terms of Reference TOR-TEM-003

18. Appendix

- Appendix 1: Dose List for Prostate Cancer

Revision History

Version	Revision Date	Revised By (Position Title)	Description of change
1.0	April 2018	Chief Medical Officer	New Protocol
2.0	July 2020	Philip Camilleri – Urology Clinical Reference Group Lead	Updates to include MRL, updates to doses and reformatted to new format
2.1	August 2020	Mark Bowler – Head of Radiotherapy	Addition of Nodal PTV margins and removal of references to SpaceOAR and replaced with spacers.
2.2	September 2020	Mark Bowler – Head of Radiotherapy	Change to organ at risk table for bowel V50
2.3	Feb 2021	Stuart Williams - Service Delivery Manager	Update of Stereotactic section to reflect SAT peer review & standard Linac SABR.
2.4	Feb 2021	Stuart Williams - Service Delivery Manager	Update of Stereotactic section to include requirement for Fiducial and spacing gel insertion

Appendix 1 – Dose List for Prostate Cancer

Prostate: Low/Int risk:

- 55-60Gy in 20# over 4 weeks or
- 74Gy in 37 over 7.5 weeks or
- 78Gy in 37 fractions over 7.5 weeks

Prostate High risk including pelvic nodes:

- Prostate PTV to be treated to 74Gy in 37 or 78Gy in 39#
- Nodes to be treated to 55Gy-70Gy in 37-39Gy in 7.5-8 weeks
- Boost to node or gross disease outside the prostate 60Gy-74Gy in 37-39# in 7.5-8 weeks limited by dose to OARs

Prostate High risk without pelvic nodes:

- Prostate PTV to be treated to 60Gy in 20#
- See section – 4.26.8

Prostate SABR:

- 36.25Gy in 5#
- Can be treated on MRL or standard linac

Prostate bed:

- 52.5-55Gy in 20# in 4 weeks or
- 64- 66Gy in 32-33Gy in 6.5 weeks
- Boost to gross tumour recurrence in prostate bed up to 71.6Gy in 33# in 6.5 weeks or up to 74Gy in 37# in 7.5 weeks

Prostate bed and nodes:

- 66Gy in 33# over 6.5 weeks to the prostate bed. Boost to gross tumour recurrence in prostate bed up to 71.6Gy in 33# over 6.5 weeks or up to 74Gy in 37# in 7.5 weeks
- Nodal dose: 52-55Gy in 33# in 6.5 weeks. Boost to nodal masses 57Gy-71.6Gy in 33# in 6.5 weeks or up to 74Gy in 37# in 7.5 weeks.

Synchronous small volume metastases near prostate (prostate, nodes and metastases):

- Prostate: 74Gy in 37# in 7.5 weeks.
- Nodes: 55-70Gy in 37-39# in 7.5-8 weeks.
- Metastases treated to between 64-74Gy in 37-39# over 7.5-8 weeks depending on nearby OAR tolerances

Metastatic Prostate cancer (STAMPEDE):

- Dose to prostate: 55-60Gy in 20# over 4 weeks or
  36Gy in 6 fractions treating once a week for 6 weeks

Palliative radiotherapy:

- 8-10Gy single #
- 21Gy in 3# treated on alternate days
- 20Gy in 5# treated daily
- 36Gy in 6# treated once a week for 6 weeks