RANZCR PHASE II · VIVA REVISION HANDBOOK

Rectal Cancer

Clinical decision-making, radiotherapy management and viva-style reasoning for the advanced radiation oncology trainee. Australian (EViQ) practice.

1 Epidemiology, Aetiology & Presentation

Bowel cancer = 4th most diagnosed cancer (AIHW)
2nd leading cause of cancer death · rectum ≈ ⅓ of CRC

4th	2nd	~1 in 15	~68
MOST DIAGNOSED CANCER IN AUSTRALIA	LEADING CAUSE OF CANCER DEATH (AFTER LUNG)	LIFETIME RISK (M ~1:15, F ~1:16)	AVERAGE AGE AT DIAGNOSIS (YRS)

Risk factors

Category	Factors
Non-modifiable	Age, male sex, prior CRC/adenoma, prior pelvic RT
Hereditary (~5%)	**Lynch / HNPCC** (MMR genes, MSI-H), **FAP** (APC), MUTYH-associated, Peutz-Jeghers, juvenile polyposis
Inflammatory	Ulcerative colitis > Crohn's; risk ∝ duration & extent
Lifestyle	Red/processed meat, low fibre, obesity, physical inactivity, smoking, alcohol, type 2 diabetes

◆ VIVA PEARL — SCREENING (AU)

Australia's **National Bowel Cancer Screening Program** = biennial **iFOBT**, lowered to **age 45–74** from 1 July 2024 — 45–49s must **opt in / request a kit**; 50–74s are auto-mailed. Early-onset (<50) incidence is rising. Lynch / FAP need early colonoscopic surveillance and genetics referral.

Presentation & work-up triggers

- **Rectal bleeding**, altered bowel habit, tenesmus, mucus PR
- **Cramping pain / obstruction** (annular tumour)
- Iron-deficiency anaemia, weight loss
- Often detected via FOBT-positive screening colonoscopy

∴ WHY RECTAL ≠ COLON

The rectum is **extraperitoneal** (mid/low), confined by the bony pelvis with a **circumferential resection margin** at risk and rich **lateral lymphatic drainage** not removed by standard surgery. This is why **local recurrence** is the dominant problem and why **radiotherapy** has a central role it does not have in colon cancer.

Anatomic sub-site (from anal verge, rigid scope)

Third	Distance	Relevance
Lower	0–5 cm	Sphincter / APR risk; W&W candidates
Mid	5–10 cm	Classic TME + neoadjuvant territory
Upper	10–15 cm	**Behaves like colon** (peritonealised) — often surgery ± chemo, RT frequently omitted

▲ COMMON TRAP

Don't reflexively offer pelvic RT for an **upper-third / rectosigmoid** tumour above the peritoneal reflection — it is biologically colon cancer, the CRM is not the issue, and RT often adds toxicity without benefit. Confirm the height and the relationship to the peritoneal reflection on MRI first.

2 Critical Surgical & Radiotherapy Anatomy

The mesorectal fascia is the surgical (TME) plane = the CRM on MRI = the prognostic battleground

Layers, fascia & landmarks

Structure	Significance
Mesorectum	Fatty envelope of lymphovascular tissue & first-echelon nodes around the rectum
Mesorectal fascia (MRF)	Investing fascia = **TME dissection plane** = **CRM** on MRI. Tumour ≤1 mm from MRF = **involved/threatened**
Peritoneal reflection	Anterior ~7–9 cm; divides intraperitoneal (upper) from extraperitoneal (mid/low) rectum
Denonvilliers' fascia	Anterior — recto-vesical (M) / recto-vaginal (F) septum
Waldeyer's (rectosacral)	Posterior — rectum to presacral fascia / sacrum
Anorectal ring / dentate line	Sphincter complex; determines APR vs sphincter-preserving LAR

Lymphatic drainage — why CTV is shaped as it is

Region	Primary drainage	CTV implication
Upper / mid	Superior rectal → **IMA / mesorectal**	Mesorectum + presacral
Lower	Middle rectal → **internal iliac**	Add internal iliac ± obturator
Below dentate / anal canal involved	Inferior rectal → **inguinal**	Add inguinal nodes
Lateral pelvic	Internal iliac, obturator	**Not removed by TME** → RT / selective lateral node dissection

⌖ BLOOD SUPPLY ↔ METASTATIC PATTERN

- **Superior rectal a.** (← IMA)
- **Middle rectal a.** (← internal iliac)
- **Inferior rectal a.** (← internal pudendal)

Venous: upper rectum → **portal** (→ liver mets); mid/low → systemic via internal iliac (→ **lung** mets, can bypass liver). Explains the differing met patterns of low vs high rectal tumours.

◆ VIVA PEARL — THE FOUR MRI QUESTIONS

For any rectal MRI, answer:

1. **Height** — distance of inferior edge from anal verge
2. **mrT stage** & depth of extramural spread (T3a–d)
3. **CRM** — clear / threatened / involved (≤1 mm)
4. **EMVI** & nodal status (mesorectal vs lateral)

These four drive every downstream decision.

∴ WHY TME REVOLUTIONISED OUTCOMES

Total mesorectal excision (Heald) removes the rectum + intact mesorectal envelope along the MRF plane, capturing the first nodal echelon en bloc. It dropped local recurrence from ~30% to <10% and reframed RT as an **adjunct to optimise the CRM**, not a substitute for surgery.

▲ COMMON TRAP

"Threatened" CRM (tumour/EMVI/node ≤1 mm from MRF) is treated as **involved** for decision-making — it mandates downstaging neoadjuvant therapy to convert a likely R1 into an R0 resection. Don't wait for frank invasion.

3 Master Management Flowchart

Biopsy-proven rectal adenocarcinoma

↓

Staging: DRE · rigid sigmoidoscopy · pelvic MRI · CT chest/abdo/pelvis · CEA · colonoscopy

↓

Metastatic (M1)?

YES — M1

Systemic therapy ± resection of primary/mets · SBRT for oligomets · MDT (see §13)

NO — NON-METASTATIC → STRATIFY BY MRI

EARLY / GOOD

cT1–2 N0 · or cT3a/b N0, MRF clear, EMVI−, upper/mid

→ **Upfront TME** (LAR/APR).
cT1 favourable → consider **local excision**.

INTERMEDIATE

cT3a/b mid, or cN1–2 with MRF clear, EMVI±, not low

→ **TME ±** neoadjuvant.
Selected: **FOLFOX alone, RT omitted** (PROSPECT). Or SCRT → TME.

LOCALLY ADVANCED / UGLY

cT3 CRM+/threatened · cT4 · EMVI+ · lateral nodes · low tumour

→ **TNT** (RAPIDO / PRODIGE-23) → TME.
cCR → consider **watch & wait**.

∴ WHY THIS STRUCTURE

MRI risk group — not just TNM — drives therapy. The single question is: **"can surgery alone achieve a clear CRM and is systemic risk acceptable?"** If yes → surgery first. If the CRM is threatened or distant-relapse risk is high → neoadjuvant therapy first, increasingly **all systemic + RT before surgery (TNT)**.

◆ VIVA PEARL — OPENING MOVE

Always open with **"I would confirm histology, assess the patient (PS, comorbidity, continence, DRE), stage with pelvic MRI and CT C/A/P, check CEA, complete the colon, and discuss at MDT."** Then commit to a risk group and justify.

4 Staging (AJCC 8) & MRI Risk Stratification

TNM defines stage; MRI defines **resectability**
"Good — Bad — Ugly" (MERCURY)

AJCC / TNM 8th edition

T	Definition
T1	Invades submucosa
T2	Invades muscularis propria
T3	Through MP into perirectal fat `a<1 · b1–5 · c5–15 · d>15 mm` extramural depth
T4a	Penetrates visceral peritoneum
T4b	Invades adjacent organ/structure

N		M	
N1a	1 node	**M1a**	1 organ
N1b	2–3 nodes	**M1b**	>1 organ
N1c	Tumour deposit, no node	**M1c**	Peritoneum
N2a	4–6 nodes		
N2b	≥7 nodes		

◆ **VIVA PEARL**

T3 substaging (a–d) matters more than T3 alone: T3a/b (≤5 mm) with clear MRF behaves favourably and may go straight to surgery, whereas T3c/d carries higher relapse risk. **EMVI** on MRI is an independent predictor of distant relapse.

MRI risk groups — what actually drives treatment

Group	MRI features	Strategy
GOOD	cT1–2 / cT3a–b, N0, MRF clear, EMVI−, not low	Upfront TME (± local excision if cT1)
BAD	cT3a–c any N, or cN+, MRF clear, EMVI±	TME ± SCRT; or FOLFOX±RT-omission (selected)
UGLY	cT3 CRM threatened/involved, cT4, EMVI+, lateral nodes, low	**TNT** → TME ± organ preservation

The staging investigations & their job

Test	Answers
Pelvic MRI	T, CRM, EMVI, nodes, height — the master tool
Endorectal US	T1 vs T2 in early tumours (if scope passes)
CT C/A/P	Distant metastases
CEA	Baseline / surveillance
Colonoscopy	Synchronous lesions (CT colonography if obstructed)
MMR / MSI	Lynch screen + immunotherapy candidacy

▲ **COMMON TRAP**

PET is **not** routine for primary rectal staging — reserve for equivocal metastatic disease or recurrence work-up.

5 Pathology & Molecular Profile

~90% adenocarcinoma NOS · test every tumour for MMR/MSI

Histology & adverse features

Feature	Why it matters
Adenocarcinoma NOS (~90%)	Standard pathway
Mucinous / signet-ring	Often MSI; worse response to chemoRT, poorer prognosis
Poor differentiation (G3)	Adverse; favours systemic intensification
LVI / PNI	Independent adverse prognostic markers
Tumour deposits (N1c)	Upstage; adverse
CRM <1 mm (path)	Strongest predictor of local recurrence
Tumour regression grade	Post-neoadjuvant; mrTRG & path TRG prognostic

⌖ QUALITY METRICS TO QUOTE

≥12 nodes examined · intact mesorectal specimen (Quirke grading) · R0 with CRM >1 mm · distal margin clear.

Molecular markers & clinical significance

Marker	Significance
MMR / MSI	**dMMR/MSI-H** → Lynch screen; **relative resistance to fluoropyrimidine chemoRT** but exquisite **immunotherapy** sensitivity (see §11)
KRAS / NRAS	Mutation → no benefit from anti-EGFR; guides metastatic therapy
BRAF V600E	Poor prognosis; anti-EGFR resistance; targeted combos
HER2	Emerging target in metastatic disease

◆ VIVA PEARL — DMMR IS A GAME-CHANGER

A **dMMR locally advanced rectal cancer** should prompt discussion of **neoadjuvant immunotherapy** (dostarlimab) — early data show very high complete-response and organ-preservation rates. **Investigational in Australia** (trial-only for rectal, e.g. **AZUR-1**; PBS-funded only for dMMR endometrial) — consider trial referral. Always check MMR status up front.

∴ WHY TEST MMR BEFORE CHEMORT

dMMR tumours respond poorly to 5-FU-based chemoRT yet may achieve clinical complete response with checkpoint inhibition — identifying them **changes the whole pathway**, not just adjuvant choice.

6 Treatment Algorithm by Risk Group

Decision tree — early · intermediate · locally advanced

EARLY — cT1–2 N0

cT1, <3 cm, <⅓ circumf, G1–2, no LVI, sm1?

YES → **Local excision (TEM/TAMIS); adjuvant chemoRT if adverse path**

NO / CT2 → **Radical TME (LAR/APR)**

∴ WHY

Local excision spares the morbidity/stoma of TME but only when nodal-risk is <~5%. Adverse path on excision → completion surgery or chemoRT.

INTERMEDIATE — cT3a–c / N+, MRF clear

Needs downstaging / APR-sparing?

SELECTED → **PROSPECT: FOLFOX ×6, RT only if <20% response → TME**

OR → **SCRT 25/5 or LC-CRT → TME**

Adjuvant chemo per path / MDT

∴ WHY

PROSPECT shows selected intermediate-risk patients can **safely omit pelvic RT**, sparing late toxicity, when MRF is clear and APR is not required.

LOCALLY ADVANCED — cT3 CRM+ / cT4 / EMVI+ / low

Total Neoadjuvant Therapy

RAPIDO: SCRT→consol chemo or PRODIGE-23: induction FOLFIRINOX→LC-CRT

Restage — clinical complete response?

CCR → **Watch & wait (§10)**

RESIDUAL → **TME**

◆ VIVA PEARL — CHOOSING TNT REGIMEN

CRM threatened/T4 (local problem dominant) → favour a schedule with **long-course CRT** for maximal downstaging (PRODIGE-23 style). **High distant-relapse risk** → front-load systemic therapy. Either way, delivering all therapy pre-op improves compliance vs post-op chemo.

▲ COMMON TRAP

Adjuvant chemotherapy evidence after neoadjuvant chemoRT in **rectal** cancer is **weaker** than in colon cancer (compliance poor, trials mixed). This is a key driver behind moving all systemic therapy to the neoadjuvant setting (TNT).

7 Total Neoadjuvant Therapy (TNT)

All chemo + RT before surgery · ↑ pCR · ↓ distant mets
Enables organ preservation

CONSOLIDATION MODEL

RAPIDO: SCRT 25/5 → CAPOX/FOLFOX (≈18 wk) → TME

INDUCTION MODEL

PRODIGE-23: FOLFIRINOX ×6 → LC-CRT 50.4/28 + cape → TME → adjuvant

Trial	Design	Key result
RAPIDO	SCRT → consolidation chemo vs standard CRT+surgery+adjuvant	↓ disease-related treatment failure, pCR ~28%, ↓ distant mets (some ↑ local regrowth on longer FU)
PRODIGE-23	Induction FOLFIRINOX → CRT vs CRT alone	↑ 3-yr DFS & metastasis-free survival; pCR ~28%
STELLAR	SCRT → chemo vs CRT	Non-inferior; higher pCR
OPRA	TNT (induction vs consolidation) for organ preservation	**Consolidation** → higher sustained TME-free survival (~50%)

∴ WHY TNT WORKS

Moving systemic therapy forward (1) treats **micrometastases earlier**, (2) achieves far better **compliance** than post-op chemo, (3) raises **pCR** rates, opening the door to **non-operative organ preservation**.

Short-course vs long-course RT

	SCRT 25/5	LC-CRT 50.4/28
Duration	1 week	5–6 weeks + capecitabine
Downstaging	Limited (if immediate surgery)	**Substantial**
Best for	Resectable, MRF clear; frail; TNT consolidation	**CRM threatened / T4 / low** needing downstaging
Acute toxicity	Lower (no concurrent chemo)	Higher (GI, skin)

◆ VIVA PEARL

Stockholm III: SCRT with a **delay to surgery** gives downstaging similar to immediate SCRT-with-shorter-delay and lower toxicity. SCRT + delay (± chemo in the gap) is now an accepted route to downstaging, not just a "fast" option for frail patients.

▲ COMMON TRAP

SCRT delivered with **immediate** surgery does little downstaging — if the CRM is involved you need either LC-CRT or SCRT with a **deliberate delay ± consolidation chemo**. Don't quote "25/5" for a threatened margin without that caveat.

8 Radiotherapy Technique & Target Volumes

Simulation & set-up

Step	Detail
Position	**Supine** (standard), comfortably **full bladder + empty rectum**; knee/ankle immobilisation
Prep	Anal verge marker; IV ± rectal contrast; bladder-filling & bowel protocol
Alternative	**Prone on belly board** — displaces small bowel (traditional 3DCRT-era; some centres)
Technique	**IMRT / VMAT** (or 3DCRT) — spares small bowel, bladder, marrow
IGRT	Daily CBCT / kV — bowel & bladder variation

Target volumes (Australian / RTOG consensus)

- **GTV** = primary + involved nodes (MRI/PET fusion)
- **Elective CTV** = mesorectum + presacral space + internal iliac + obturator nodes
- **Add external iliac** if T4 / anterior organ involvement
- **Add inguinal** if lower-third / anal canal involvement
- **Add ischiorectal fossa** if levator/sphincter involved
- **PTV** = CTV + 0.7–1.0 cm (per IGRT)

⌖ DOSE / FRACTIONATION — EVIQ SIB (LONG COURSE)

Volume	Schedule
Elective pelvis ($CTV_{elective}$)	**45 Gy / 25#** (1.8 Gy/#)
Primary + involved nodes (SIB)	**50 Gy / 25#** (2.0 Gy/#) **simultaneous integrated boost**
Concurrent chemo	**Capecitabine 825 mg/m² BD** on RT days (EViQ)
Short course (alternative)	**25 Gy / 5#** ± delay/consolidation chemo
Re-irradiation	~30–40 Gy hyperfractionated (1.2 Gy BD), individualised

◆ VIVA PEARL — CAPECITABINE & SIB

Capecitabine is the practical radiosensitiser (NSABP R-04: equivalent to infusional 5-FU, avoids a central line). Adding oxaliplatin to chemoRT **increases toxicity without survival benefit** and is not standard. The **SIB** delivers elective (45 Gy) and boost (50 Gy) dose in the **same 25 fractions** — efficient, conformal, and avoids a separate boost phase.

⌖ LATERAL PELVIC NODES

Internal iliac/obturator nodes are **not** removed by TME. Enlarged lateral nodes → consider a **boost** to the involved node (e.g. SIB to ~54–55 Gy) or selective lateral node dissection at MDT.

▲ COMMON TRAP

Avoid **treatment gaps** and prolonged overall time — they compromise local control. Manage acute skin/GI toxicity proactively to keep the patient on schedule.

Dose summary table

Indication	Dose / fractionation
Neoadjuvant long-course — elective pelvis	**45 Gy / 25#**
Neoadjuvant long-course — primary/involved nodes	**50 Gy / 25# SIB** (EViQ) + capecitabine
Neoadjuvant short-course	25 Gy / 5#
Bulky/lateral node — higher SIB (selected)	≈54–55 Gy / 25#
Definitive (inoperable) ± boost	50–54 Gy/25–28# ± contact/EBRT boost
Palliative	30 Gy/10#, 25 Gy/5#, or 5 Gy×5

OAR constraints (pelvic EBRT)

Organ	Constraint
Small bowel	V45 < 195 cc; V15 < 830 cc; minimise loops in PTV
Bladder	V45 < 50–60%; Dmax < ~50 Gy
Femoral heads	V45 < 25–40%; Dmax < 50 Gy
Genitalia / perineum	Minimise — skin toxicity
Pelvic bone marrow	V40 < 37% (relevant with concurrent chemo)

Biological equivalence — short vs long course

Schedule	Tumour $EQD2_{10}$	Late $EQD2_3$
25 Gy / 5#	≈ 31 Gy	≈ 40 Gy
45 Gy / 25# (1.8 Gy)	≈ 44 Gy	≈ 43 Gy
50 Gy / 25# SIB (2.0 Gy)	≈ 50 Gy	≈ 50 Gy

α/β = 10 (tumour/acute), 3 (late). Note SCRT delivers a **higher late-effect dose per fraction** — relevant to re-irradiation tolerance and to why immediate-surgery SCRT downstages less.

∴ WHY AN SIB (NOT A SEPARATE BOOST PHASE)

The pelvis carries micrometastatic risk and is dose-limited by small bowel, so the elective volume gets 45 Gy while only the gross disease is simultaneously lifted to 50 Gy **within the same 25 fractions**. This shortens overall treatment time and improves conformality versus a sequential boost. Dose-escalation beyond this (e.g. contact brachytherapy boost) is explored for **organ preservation**, not routine resectable disease.

◆ VIVA PEARL

Quote constraints as **principles** ("keep small-bowel V45 down, respect bladder and femoral heads, watch marrow with concurrent chemo") rather than memorised decimals — examiners want to see you understand the dose-limiting organs.

10 Organ Preservation — Watch & Wait

cCR after TNT → non-operative management
cCR ≠ pCR · regrowth ~25–30%, mostly salvageable

Confirming clinical complete response (cCR)

Modality	cCR appearance
DRE	No palpable tumour, no mass/ulcer
Endoscopy	Flat white scar, telangiectasia; no ulcer/nodularity
MRI (incl. DWI)	mrTRG 1–2, no residual tumour signal, no suspicious node

Surveillance schedule

- DRE + endoscopy every **3 months** for 1–2 yrs, then less often
- Pelvic **MRI** regularly; serial **CEA**
- CT chest/abdomen for distant disease
- **Regrowth** → **salvage TME** with curative intent

⌖ EVIDENCE BASE

Habr-Gama (pioneer cohorts) · **OPRA** (consolidation arm ~50% organ preservation) · **International Watch & Wait Database (IWWD)** — regrowth ~25%, >95% in first 2 yrs, most salvageable; survival comparable when surveillance rigorous.

◆ VIVA PEARL — COUNSELLING

Be explicit: **radiological/clinical CR is not pathological CR**. W&W trades the morbidity and stoma risk of TME for a **lifelong commitment to intensive surveillance** and acceptance of a ~25–30% regrowth risk. It suits a **motivated, reliable patient** who can attend frequent follow-up.

∴ WHY CONSOLIDATION BEATS INDUCTION HERE

OPRA showed **consolidation** chemo (chemo *after* CRT) gave higher sustained organ preservation than induction — the longer interval from RT to assessment allows maximal tumour regression before the response is judged.

▲ COMMON TRAP

Don't **biopsy a cCR scar** routinely — a negative superficial biopsy doesn't exclude deep residual disease and risks poor healing. Judge response on the **triad** (DRE + endoscopy + MRI), not biopsy.

▲ COMMON TRAP

Surveillance must be **more intensive** than for resected patients — regrowth is salvageable **only if caught early**. A patient who can't commit to this is not a W&W candidate.

11 Systemic Therapy & Immunotherapy

Chemotherapy regimens

Setting	Regimen
Concurrent (radiosensitiser)	**Capecitabine** 825 mg/m² BD on RT days (or infusional 5-FU)
TNT — consolidation/induction	**CAPOX** or **FOLFOX**; PRODIGE-23 used **FOLFIRINOX** induction
Adjuvant (selected)	FOLFOX / CAPOX — weaker evidence than colon; per path & MDT
Metastatic	FOLFOX/FOLFIRI ± bevacizumab; anti-EGFR if RAS/BRAF WT & left-sided

∴ WHY FLUOROPYRIMIDINE CONCURRENT

5-FU/capecitabine radiosensitises and improves **local control & pCR**; oxaliplatin **concurrently** adds toxicity without benefit (ACCORD-12, STAR-01) — reserve oxaliplatin for the **systemic** (induction/consolidation) phase.

Immunotherapy — dMMR / MSI-H

Scenario	Therapy	AU access
Metastatic **dMMR**	Pembrolizumab 1st-line (KEYNOTE-177)	**PBS-listed** (Aug 2021)
Metastatic **pMMR**	Chemo ± biologics (bevacizumab; anti-EGFR if RAS/BRAF WT & left-sided)	PBS per criteria
Neoadjuvant dostarlimab (LA rectal, dMMR)	Cercek cohort / **AZUR-1** — very high cCR, organ preservation without RT/surgery	**Trial only — not TGA/PBS approved for rectal**

◆ VIVA PEARL

The **dostarlimab** data (100% cCR in dMMR rectal cohorts; Cercek & **AZUR-1** phase II registrational study, AACR 2025) is among the most striking in oncology — flag it as **practice-evolving**. In Australia it is **investigational / trial-only for rectal** (**AZUR-1** — phase II monotherapy, dMMR LA rectal; cf. **AZUR-2** — phase III perioperative dostarlimab in dMMR *colon*), and dostarlimab is TGA/PBS-approved here only for **dMMR endometrial**. With Breakthrough Therapy designation it is **likely to reach the PBS for rectal in the near future**. Check MMR on **every** rectal cancer up front and consider trial referral.

▲ COMMON TRAP

dMMR tumours respond **poorly to fluoropyrimidine chemoRT** — recognising dMMR flags immunotherapy as the evolving direction (and trial eligibility) rather than a reason to intensify chemoRT.

12 Landmark Trials

Who · broad result · why we still care (viva level)

Trial	Cohort	Main result	Practice-changing message
German CAO/ARO/AIO-94 (Sauer)	cT3–4 / N+ rectal; pre- vs post-op CRT	Pre-op ↓ local recurrence, ↓ toxicity, ↑ sphincter preservation	Established **neoadjuvant** chemoRT as standard
Dutch TME	Resectable rectal; SCRT + TME vs TME	SCRT halved local recurrence	RT adds to good surgery; **TME** is the surgical standard
MRC CR07	SCRT vs selective post-op CRT	SCRT superior local control	Pre-op > selective post-op approach
Stockholm III	SCRT timing / delay to surgery	SCRT + delay = downstaging, ↓ toxicity	Legitimised **SCRT with delay** as a downstaging route
RAPIDO	High-risk; SCRT→consolidation chemo (TNT)	↓ treatment failure, ↑ pCR, ↓ distant mets	Validated **TNT**; front-load systemic therapy
PRODIGE-23	cT3–4; induction FOLFIRINOX→CRT (TNT)	↑ DFS & metastasis-free survival	Induction-chemo TNT improves distant control
OPRA	TNT for organ preservation	~50% organ preservation; consolidation > induction	Framework for **non-operative management**
PROSPECT	Intermediate-risk; FOLFOX ± selective RT	Non-inferior DFS; RT omitted in most	**RT can be safely omitted** in selected patients
Cercek / AZUR-1 (dostarlimab)	dMMR locally advanced rectal	Striking cCR; organ preservation without RT/surgery	Immunotherapy **practice-evolving** in dMMR — **trial-only in AU** (AZUR-1; not yet PBS for rectal)

◆ VIVA PEARL — THE NARRATIVE ARC

Tell the story, don't list numbers: **TME** fixed surgery → **neoadjuvant RT** (German trial) cut local recurrence → **TNT** (RAPIDO/PRODIGE-23) front-loaded systemic therapy and raised pCR → that pCR enabled **organ preservation** (OPRA) → and we now **de-escalate** by omitting RT (PROSPECT) or using **immunotherapy** in dMMR. The field is moving from "more therapy for all" to "the right therapy for each."

13 Recurrent & Metastatic Disease

Recurrence / metastatic — restage (MRI, CT, PET, CEA), MDT

LOCAL / PELVIC

RT-naïve → CRT then surgery.
Prior RT → re-irradiation (hyperfx 1.2 Gy BD) ± surgery; exenteration in fit, resectable

OLIGOMETASTATIC

Metastasectomy (liver/lung) ± peri-op chemo; SBRT to oligomets

DISSEMINATED

Palliative systemic therapy; dMMR → checkpoint inhibitor; palliative RT for bleeding/pain/obstruction

Pattern	Key options
Isolated pelvic, RT-naïve	Long-course CRT → surgical resection (curative intent)
Pelvic, previously irradiated	Re-RT (≈30–40 Gy, 1.2 Gy BD) ± surgery / exenteration; IORT in selected centres
Liver/lung oligomets	Resection / SBRT ± systemic therapy
Widespread	Palliative chemo ± biologics; IO if dMMR; symptom-directed RT

◆ VIVA PEARL — RE-IRRADIATION

Pelvic re-RT uses **hyperfractionation (1.2 Gy BD)** to respect previously-irradiated late-responding tissue; quote cumulative bowel/bladder tolerance and emphasise **MDT + careful informed consent** regarding fistula/toxicity risk.

⌖ PALLIATIVE MENU

30 Gy/10#, 25 Gy/5#, or 5 Gy×5 (then optional further) for bleeding, pain or obstruction — choose by prognosis and fitness.

▲ COMMON TRAP

An **oligometastatic dMMR** patient may be better served by **immunotherapy** than aggressive local ablation alone — always check MMR status before committing to a purely local strategy.

14 Common Viva Traps

The mistakes examiners are listening for

▲ UPPER RECTUM ≠ MID/LOW RECTUM

Upper-third / rectosigmoid tumours are **intraperitoneal** — treat like colon (surgery ± chemo); RT often unnecessary.

▲ THREATENED CRM = INVOLVED

Tumour/EMVI/node **≤1 mm** from MRF mandates downstaging neoadjuvant therapy — don't wait for frank invasion.

▲ SCRT ≠ DOWNSTAGING IF IMMEDIATE SURGERY

For a threatened margin use LC-CRT, or SCRT **with deliberate delay ± consolidation chemo**.

▲ RT IS NOT ALWAYS REQUIRED

PROSPECT: selected intermediate-risk (MRF clear, no APR needed) can have **FOLFOX alone**, omitting pelvic RT.

▲ CONCURRENT OXALIPLATIN ADDS TOXICITY, NOT BENEFIT

Keep oxaliplatin for the systemic phase; capecitabine/5-FU is the concurrent radiosensitiser.

▲ CCR ≠ PCR

Watch & wait carries ~25–30% regrowth; only safe with intensive, reliable surveillance.

▲ DON'T BIOPSY THE CCR SCAR ROUTINELY

Negative superficial biopsy doesn't exclude deep residual; judge on DRE + endoscopy + MRI triad.

▲ ADJUVANT CHEMO EVIDENCE IS WEAKER IN RECTAL

Compliance is poor post-op — a key reason to deliver systemic therapy as **TNT**.

▲ LATERAL PELVIC NODES ESCAPE TME

Internal iliac/obturator nodes need **RT boost** or selective dissection — surgery alone misses them.

▲ ALWAYS CHECK MMR STATUS

dMMR redirects management toward **immunotherapy** and away from intensified chemoRT.

▲ EMVI IS INDEPENDENTLY PROGNOSTIC

EMVI+ predicts distant relapse and pushes toward TNT even with otherwise "intermediate" features.

▲ DON'T FORGET THE PATIENT

Continence, sphincter function, stoma acceptance and fitness shape the choice between LAR, APR and organ preservation as much as the stage does.

15 One-Page Cram Sheet

2-minute pre-viva review · tables only

MRI — the 4 questions

1	Height from anal verge
2	mrT + extramural depth (T3a–d)
3	CRM: clear / threatened / involved (≤1 mm)
4	EMVI + nodes (mesorectal vs lateral)

Risk → strategy

GOOD	cT1–2/T3a-b N0, MRF clear → **TME**
BAD	cT3/N+, MRF clear → TME ± SCRT / **FOLFOX (PROSPECT)**
UGLY	CRM+/T4/EMVI+/low → **TNT** → TME ± W&W

Key doses (EViQ)

LC elective	45 Gy/25#
SIB primary/nodes	50 Gy/25# + capecitabine 825 BD
Short course	25 Gy/5#
Palliative	30/10, 25/5, 5×5

TNT regimens

RAPIDO	SCRT 25/5 → consolidation CAPOX/FOLFOX → TME
PRODIGE-23	Induction FOLFIRINOX → LC-CRT → TME → adjuvant
OPRA	Consolidation > induction for organ preservation (~50%)

Systemic / immuno

Concurrent	Capecitabine 825 mg/m² BD (no concurrent oxali)
dMMR LA rectal	Dostarlimab — **trial only (AZUR-1)**
Metastatic dMMR	Pembrolizumab 1st-line (PBS)

OAR (principles)

Small bowel	V45 < 195 cc — the dose-limiter
Bladder	V45 < 50–60%
Femoral heads / marrow	Respect with concurrent chemo

Watch & wait

cCR triad	DRE + endoscopy (white scar) + MRI (mrTRG1–2)
Regrowth	~25–30%, >95% <2 yr → salvage TME
Caveat	cCR ≠ pCR; needs intensive surveillance

Trial one-liners

German (Sauer)	Pre-op > post-op CRT
Dutch TME / CR07	SCRT ↓ local recurrence
RAPIDO / PRODIGE-23	TNT ↑ pCR, ↓ distant mets
PROSPECT	Omit RT in selected
Cercek	dMMR → IO, organ preservation

▲ TOP TRAPS

Upper rectum = colon · threatened CRM = involved · check MMR · RT omissible (PROSPECT) · cCR ≠ pCR · lateral nodes escape TME.

Low/good risk · Intermediate · High-intermediate · High / locally advanced · Viva pearl · Common trap · Why box · Planning