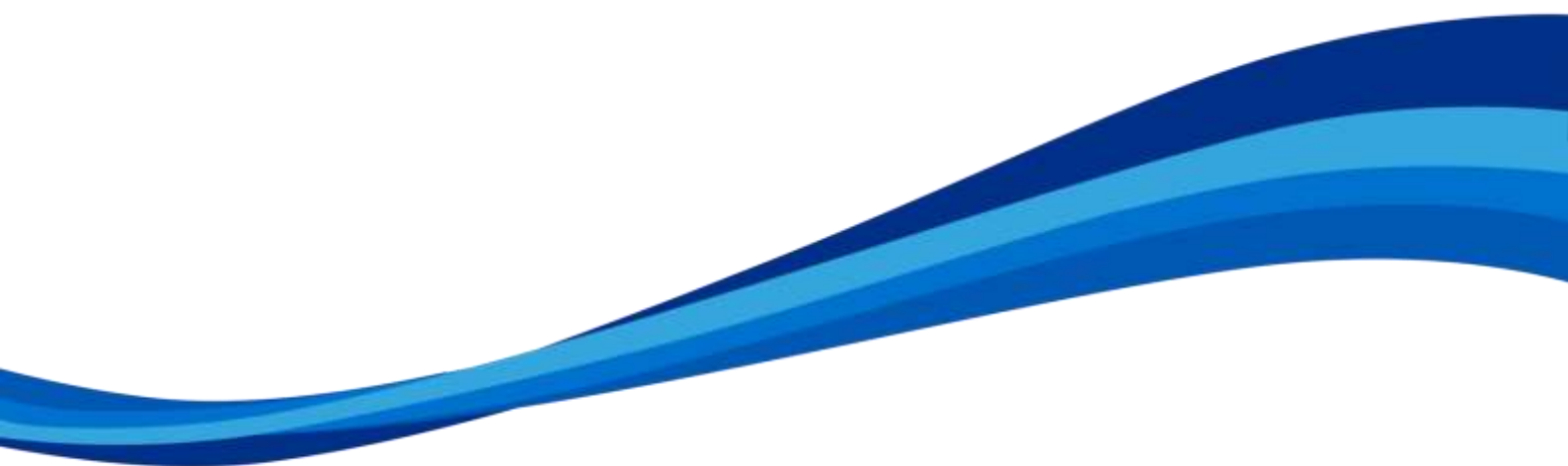


# Oncological Treatment of Urological Cancer

## Pathway of Care

Core Network Team



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## 1.0 OVERVIEW

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This document has been written to provide guidance on the treatment of Urological cancers in the Kent & Medway Cancer Collaborative.

Radiotherapy schedules are as defined in the Kent Oncology Centre Quality System Clinical Protocols.

All patients will be considered for entry into a clinical trial ([see appendix A](#)).

See network chemotherapy prescribing proformas for details of chemotherapy / anti-cancer regimens. In urology, all chemotherapy protocols with the exception of those used for germ cell tumours will be capped at a body surface area of 2.0 (unless otherwise specified on proforma). See Note on capping under [section 3.0](#).

All patients should be discussed within a multidisciplinary team meeting before commencing initial treatment.

Please note some of the drugs/doses recommended within this document are outside of the U.K. licensed marketing authorisation.

Erythropoiesis stimulating agents may be used as an option for treating anaemia in patients having chemotherapy.

### 1.1 Guidelines on the Management of Drug-specific Toxicity

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#### **DPD testing:**

Fluoropyrimidines are rapidly degraded by dihydropyrimidine dehydrogenase (DPD). Therefore, DPD deficiency can lead to severe toxicity or death following treatment with, for example, 5-FU or capecitabine. Homozygotes to DPD are rare (but likely to have severe toxicity or die). However, there are 3-5% of patient who are heterozygotes and are likely to develop toxicity; the clinician may reduce the fluoropyrimidine starting dose in this cohort.

The clinical recommendation of the NOG is to test all patients prior to treatment with a fluoropyrimidine.

Work is in process to identify whether there is equitable access to this test across Kent & Medway.

The following are intended as guidelines only. Individual cases should be discussed with the relevant consultant.

#### **Uridine triacetate:**

Uridine triacetate (Vistoguard) is an antidote for management of early-onset severe or life-threatening toxicity, including diarrhoea, within 96 hours following 5FU or capecitabine administration. It is not licensed in the UK, but is available on an unlicensed basis via a 24/7 emergency ordering service, via tel 0207 8872235.

The policy statement (link below) from NHSE contains information on inclusion / exclusion criteria and also dosing information.

[https://www.england.nhs.uk/wp-content/uploads/2020/03/1929\\_Policy\\_Statement\\_Final\\_v2.pdf](https://www.england.nhs.uk/wp-content/uploads/2020/03/1929_Policy_Statement_Final_v2.pdf)

## 2.0 PROSTATE

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See section 2.3 for a summary of Hormonal treatment of Prostate Cancer

### 2.1 Hormone Sensitive Prostate Cancer

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Hormone therapy may be prescribed as neo-adjuvant treatment prior to radical radiotherapy, as adjuvant treatment after radical radiotherapy for high risk disease and as primary treatment of locally advanced or metastatic disease. An LHRH analogue or anti-androgen may be prescribed for non-metastatic disease. An LHRH analogue is the drug of choice for metastatic disease.

#### Treatment of Hot Flashes:

- Offer medroxyprogesterone (20 mg per day), initially for 10 weeks, to manage troublesome hot flashes caused by long-term androgen suppression and evaluate the effect at the end of the treatment period.
- Consider cyproterone acetate or megestrol acetate (20 mg twice a day for 4 weeks) to treat troublesome hot flashes if medroxyprogesterone is not effective or not tolerated.
- The use of complementary therapies to treat troublesome hot flashes can be considered but no treatment specifically recommended.

#### 2.1.1 Neo adjuvant

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Given for 12 weeks pre-radiotherapy and for duration of radiotherapy: LHRH analogue (with anti-androgen for first 4 weeks to inhibit tumour flare) or Bicalutamide 150 mg daily with concurrent Tamoxifen 20 mg weekly to prevent gynaecomastia.

- Relugolix is recommended as an option for treating prostate cancer in adults with advanced hormone sensitive prostate cancer alongside radiotherapy for high-risk localised or locally advanced hormone-sensitive prostate cancer as neoadjuvant treatment before radiotherapy for high-risk localised or locally advanced hormone-sensitive prostate cancer

#### 2.1.2 Adjuvant

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Adjuvant hormone therapy may be considered for high risk localised disease for 2-3 years post radiotherapy:

- LHRH analogue or Bicalutamide 150 mgs + concurrent Tamoxifen 20 mgs each week to prevent gynaecomastia + anti-androgen for 4 weeks with first LHRH dose to inhibit tumour flare.
- Baseline DEXA scan should be considered.
- Calcium and Vitamin D should be prescribed, unless there are contraindications, to men receiving androgen deprivation therapy and bisphosphonates considered in patients who have a history of osteoporosis.
- In high risk cases, LHRH analogue and 6 cycles of Docetaxel could be considered. Funding approval required.
- Abiraterone and prednisolone for high risk patients as defined by the STAMPEDE trial.

### 2.1.3 PSA progression post radiotherapy in absence of distant metastasis

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Whilst hormone therapy can be very effective in reducing PSA, there is no evidence that early treatment improves survival and there is no consensus view on the timing of initiation of this treatment. The decision to start therapy will be an individual by individual decision based on patient preference, histology, PSA level and kinetics.

LHRH analogue or Bicalutamide/Tamoxifen combination may be used. Some patients may be offered intermittent therapy as per NICE guidance; consider reintroducing androgen suppression if PSA >10 nanogram/ml. Maximum androgen blockade can be offered if there is further rise in PSA (LHRH analogue + Bicalutamide 50mg).

### 2.1.4 First line non-metastatic hormone sensitive

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- Abiraterone and prednisolone with ADT

### 2.1.5 First line metastatic hormone sensitive

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- LHRH analogue or orchidectomy.
- Degarelix can be considered for advanced hormone dependent prostate cancer in patients with spinal metastases. (NICE TA 404 – Funding within tariff)

**Consider treatment escalation with:**

- Triple combination ADT + docetaxel + Darolutamide may be considered in appropriate cases.
- Enzalutamide in combination with ADT.
- Apalutamide in combination with androgen deprivation therapy for patient's ineligible for chemotherapy with docetaxel.
- Abiraterone and prednisolone with ADT.
- Docetaxel may be used to treat hormone naïve metastatic prostate cancer, as follows, in:
  - Men either commencing or who have commenced within 12 weeks, long-term ADT for metastatic disease for the first time; and
  - Men of sufficient performance status to be treated with 6 cycles of docetaxel chemotherapy.

## 2.2 Castration Resistant Prostate Cancer

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### 2.2.1 M0

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- Darolutamide in combination with androgen deprivation therapy (ADT) in patients who are at high risk of developing metastatic disease.  
NB Patients must not have received any previous 2nd generation androgen receptor inhibitors (such as enzalutamide, darolutamide, apalutamide) or CYP17 enzyme inhibitors (such as abiraterone) unless darolutamide has been accessed via a company early access scheme for this specific indication.
- Apalutamide with ADT for patients at high risk of developing metastatic disease (ie blood prostate specific antigen (PSA) level that has doubled in 10 months or less on continuous ADT).

### 2.2.2 M1

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#### 2.2.2.1 First line Systemic Anti-Cancer Therapy (SACT)

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Patients with performance status 0-1:

- Talazoparib and enzalutamide in patients who are treatment naïve to androgen receptor inhibitors and in whom chemotherapy is not yet clinically indicated or appropriate and
- abiraterone plus prednisolone is not tolerated

OR

- there are clinical conditions that preclude the use of abiraterone plus prednisolone (for this indication. NB: Chemotherapy may have been given for hormone-sensitive disease)
- Docetaxel + Prednisolone for up to 10 cycles in accordance with NICE guidance
- *It should be given only if the man is well enough to care for himself with occasional assistance.*
- *Treatment should be stopped at the end of a planned course of up to 10 cycles (or 'rounds') of docetaxel.*
- *The treatment should be stopped early if the man experiences serious side effects, or if the disease is getting worse.*

**NICE does not recommend using docetaxel again if the disease comes back after the first course of treatment has finished.**

- Patients not pre-exposed to ARSI who are unsuitable for chemotherapy or where chemotherapy is not yet indicated.
  - Abiraterone with prednisolone (NICE TA 387)
- or
- enzalutamide (NICE TA 377 – commissioned by NHSE from 26<sup>th</sup> April 2016).
- or
- Olaparib in combination with abiraterone

- If either abiraterone or enzalutamide has to be stopped within 3 months of its start solely as a consequence of dose limiting toxicity and in the clear absence of disease progression, the alternative agent may be commenced.
- Olaparib monotherapy for metastatic castration-resistant prostate cancer bearing germline and/or somatic BRCA 1 or 2 mutations that has progressed following previous treatment with an androgen receptor targeted agent.

### 2.2.2.2 Second line Systemic Anti-Cancer Therapy (SACT)

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Treatment options will be dependent on previous treatment management.

Patients with performance status 0-1:

- Abiraterone + Prednisolone on disease progression on or after previous treatment with one docetaxel containing regimen (NICE TA 259)
- Re-challenge with docetaxel if greater than or equal to 6 months after completing first line chemotherapy with docetaxel and had previous good response (algorithm deviation request required).
- Cabazitaxel + Prednisolone after the patient has had 225 mg/m<sup>2</sup> or more of docetaxel. Treatment with cabazitaxel must be stopped on disease progression or after a maximum of 10 cycles (whichever happens first). (NICE TA 391)
- Enzalutamide may be considered on disease progression on or after previous treatment with a docetaxel containing regimen and no previous treatment with abiraterone.
- Radium 223 Dichloride (see below).
- Olaparib monotherapy for metastatic castration-resistant prostate cancer bearing germline and/or somatic BRCA 1 or 2 mutations that has progressed following previous treatment with an androgen receptor targeted agent.

### 2.2.2.3 Third line Systemic Anti-Cancer Therapy (SACT)

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- Cabazitaxel + prednisolone (funding approval required) after previous treatment with docetaxel and abiraterone or enzalutamide based treatment.
- Abiraterone + Prednisolone or enzalutamide after previous treatment with docetaxel and cabazitaxel in the second line setting.
- Radium 223 Dichloride may be considered for selected patients with no visceral metastases or nodal disease greater than 3 cm following treatment with one ARPI and docetaxel.

### 2.2.2.4 Other treatment options (off protocol / funding required)

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- Carboplatin AUC 5 or AUC 6, after peer review discussion.
- Carboplatin (AUC 5) with cabazitaxel (20mg/m<sup>2</sup>), after peer review discussion.
- Ketoconazole
- Estramustine
- Oral cyclophosphamide
- Maximum Androgen Blockade - LHRH analogue/orchidectomy + Bicalutamide 50mg.
- Anti-androgen withdrawal.

- Dexamethasone 0.5mg od.
- Diethylstilbestrol 1-3 mgs + low dose aspirin and/or Dexamethasone 0.5-2 mgs daily or Prednisolone 5-10 mgs daily (proton pump inhibitor may be considered for those patients on both a steroid and aspirin).
- Tamoxifen 20 mg once a week or breast bud irradiation can be offered in the metastatic setting to prevent or treat gynaecomastia.
- LHRH analogue or Bicalutamide 150 mgs + concurrent Tamoxifen 20 mgs each week to prevent gynaecomastia + anti-androgen for 4 weeks with first LHRH dose to inhibit tumour flare.
- Maximum androgen blockade LHRH + Bicalutamide 50 mg.

## 2.3 Hormonal treatment of prostate cancer

Non-metastatic hormone-sensitive	Non-metastatic hormone-resistant	Newly diagnosed metastatic hormone-sensitive	Hormone-relapsed (castrate-resistant) metastatic before chemo	Hormone-relapsed (castrate-resistant) metastatic with PD on chemo
<b>ABI5</b> Abiraterone and prednisolone for high risk patients	<b>DARO1</b> Darolutamide in combination with androgen deprivation therapy (ADT) for the treatment of non-metastatic hormone-resistant (castration-resistant)	<b>DARO2</b> Darolutamide in combination with docetaxel and androgen deprivation therapy (ADT)	<b>ABI1</b> Abiraterone	<b>ABI2</b> Abiraterone
	<b>APA1</b> Apalutamide in combination with androgen deprivation therapy (ADT)	<b>ENZ3</b> Enzalutamide in combination with androgen deprivation therapy	<b>ENZ4</b> Enzalutamide	<b>ENZ5</b> Enzalutamide
		<b>APA2</b> Apalutamide in combination with androgen deprivation therapy ineligible for chemotherapy with docetaxel		
		<b>ABI4</b> Abiraterone and prednisolone with ADT (hormone-sensitive)		
		<b>DARO3</b> Darolutamide in combination with androgen deprivation therapy (ADT) in patients who are unsuitable for docetaxel		

## 2.4 Small Cell Prostate Cancer

- Carboplatin + Etoposide x 4-6 cycles

## 2.5 Management Of Bone Pain

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External beam radiotherapy may be considered for the palliation of bone pain.

Zoledronic acid is indicated for the prevention of skeletal related events in patients with advanced disease involving the bone when used as part of a pain management programme for symptomatic bone metastases.

- A dental examination with appropriate preventive dentistry and an individual benefit-risk assessment is recommended prior to treatment with bisphosphonates
- Patients should be encouraged to have regular dental check-ups whilst on treatment
- Resources are available from the UK chemotherapy board in relation to the management of medication related osteonecrosis of the jaw:  
<https://www.rcplondon.ac.uk/guidelines-policy/medication-related-osteonecrosis-jaw-guidance-oncology-multidisciplinary-team>
- <http://www.sdcep.org.uk/published-guidance/medication-related-osteonecrosis-of-the-jaw/> is considered an acceptable tool for the guidance on ONJ

Radium 223 Dichloride may be considered for selected patients with no visceral metastases.

## 2.6 Radiotherapy

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### 2.6.1 Management of early prostate cancer

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External beam radiotherapy is combined with 3-6 months neo adjuvant androgen deprivation. Brachytherapy (delivered at Maidstone Hospital) is the implantation of radioactive seeds into the prostate. It has the advantage of potentially maintaining erectile function, a shorter treatment time and less damage to normal tissues. It is not suitable for men with a large prostate, significant lower urinary tract symptoms (LUTS) or who have had a transurethral resection of the prostate (TURP) but may be considered as an alternative to external beam radiotherapy.

### 2.6.2 Management of locally advanced prostate cancer

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Radiotherapy combined with hormone therapy should be considered in T3 / T4 node positive disease. Patients with a high >20ng/ml PSA who are staging negative may also be considered for irradiation of the pelvic nodes as well as the prostate.

Salvage external beam radiotherapy with or without adjuvant hormone therapy may be considered for patients with biochemical failure following surgery with curative intent for early prostate cancer.

## 3.0 UROTHELIAL CANCER

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### 3.1 Chemotherapy

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#### 3.1.1 Intravesicular chemotherapy

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For more detail, refer to the KMCC document, 'The Management of Bladder Cancer: A Pathway of Care' available on the Network website <http://www.KMCC.nhs.uk/>.

#### 3.1.2 Neo adjuvant (bladder)

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##### Indications for neo-adjuvant chemotherapy pre-cystectomy

- Grade 2 or 3 bladder cancer
- Muscle invasive TCC
- PS 0-1
- Renal function as defined by chemotherapy prescription proforma
  
- Gemcitabine and Cisplatin x 3-4 cycles
- Gemcitabine and split dose Cisplatin x 3-4 cycles
- Gemcitabine and Carboplatin x 3-4 cycles

(Patients with locally advanced disease who are responding to neo adjuvant chemotherapy may receive 3 further cycles in adjuvant setting)

Neo adjuvant chemotherapy has recently been shown in meta-analysis to confer a small but significant survival benefit, and should be offered to high-risk patients.

#### 3.1.3 Adjuvant (post cystectomy or nephroureterectomy)

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##### Indications for adjuvant chemotherapy post-cystectomy

- Grade 3
- T3
- T4
- Node positive
- Other high-risk features
- Gemcitabine and Cisplatin x 4 cycles
- Gemcitabine and split dose Cisplatin x 4 cycles
- Gemcitabine and Carboplatin x 4 cycles
- Nivolumab maximum of 12 months, for tumour cell PD-L1 expression of  $\geq 1\%$  and in whom adjuvant treatment with platinum-based chemotherapy is unsuitable as per NICE guidance.

### 3.1.4 First line metastatic disease

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- Atezolizumab for patients unsuitable for platinum based chemotherapy and PDL1  $\geq 5\%$  with transitional cell carcinoma to continue until disease progression.
- Avelumab maintenance treatment following at least 4 cycles and no more than 6 cycles of combination platinum-based chemotherapy in patients with no evidence of progression after completion of chemotherapy.
- Enfortumab vedotin with pembrolizumab for the treatment of previously untreated, unresectable or metastatic urothelial cancer, which in the absence of enfortumab vedotin & pembrolizumab would have been deemed eligible for treatment with cisplatin or carboplatin.
- Gemcitabine and Cisplatin x 6 cycles
- Gemcitabine and Carboplatin x 6 cycles
- Gemcitabine and split dose Cisplatin x 6 cycles
- Paclitaxel and Carboplatin x 6 cycles

### 3.1.5 Second line and beyond metastatic disease

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- Atezolizumab for patients with transitional cell carcinoma previously treated with platinum-based chemotherapy.
- Gemcitabine and Cisplatin or Carboplatin re-challenge may be appropriate if previous response and adequate progression free disease interval.
- MVAC x 6 cycles OR Accelerated MVAC x 6 cycles
- MVACarbo x 6 cycles
- CMV x 6 cycles
- CarboMV x 6 cycles
- Paclitaxel & Carboplatin x 6 cycles
- Weekly Paclitaxel x 6 cycles
- Paclitaxel and Gemcitabine x 6 cycles

## 3.2 Radiotherapy and Chemoradiation

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Radiotherapy or Chemoradiation may be offered as an alternative to cystectomy as an attempt to conserve the bladder.

Radiotherapy may also be used to control haematuria in advanced bladder cancer.

Mitomycin C (day 1) and 5-Fluorouracil (days 1-5 of weeks 1 and 4) with radiotherapy or Mitomycin C (day 1) and capecitabine 650mg/m<sup>2</sup>/day in two divided doses days 1-5 during radiotherapy.

N.B. Three cycles of neo-adjuvant chemotherapy should be given prior to chemoradiotherapy in suitable patients.

Radiosensitization with nicotinamide (60mg/kg) and carbogen should be considered in patients as an alternative to chemoradiation.

### 3.3 Small Cell Urothelial Cancer

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- Carboplatin + Etoposide x 4-6 cycles
- Radiotherapy may also be considered

## 4.0 TESTICULAR CANCER

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Note: follow South East England Supraregional testicular cancer management protocol under revision.  
Note: chemotherapy doses should be capped at a body surface area (BSA) of 2.2 on first cycle.  
If patient tolerates first treatment increase to measured BSA at subsequent cycles.

Consider assessing patients commencing SACT using a validated risk assessment score for thromboprophylaxis. Reference should be made to 'Cancer-associated venous thrombosis in adults (second edition): A British Society for Haematology Guideline.

### 4.1 Neo Adjuvant Chemotherapy

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- Carboplatin AUC7 x1-2 cycles with radiotherapy

### 4.2 Adjuvant Chemotherapy

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- BEP 360 x 2 cycles
- Carboplatin AUC7 x 1 cycle

### 4.3 Radical Treatment

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- BEP 500 x 3 cycles
- BEP 360 x 4 cycles
- EP 360 x 4 cycles
- EP 500 x 4 cycles

N.B. Carboplatin may be used if patients unsuitable for cisplatin.

## 4.4 Radiotherapy

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### 4.4.1 Seminoma

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- Carboplatin + Etoposide x 4-6 cycles

Radiotherapy can be used in the following patient groups:

- Stage I high risk
- Stage IIa and IIb (alone and in combination with Carboplatin)
- Stage IIc, III, IV or extra gonadal primary (may be considered in patients with > 3 cm residual mass following chemotherapy)

### 4.4.2 Non seminoma

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Radiotherapy should be used in the following patient groups:

- Stage III-IV poor prognosis with brain metastasis (whole brain radiotherapy 4 weeks after chemotherapy)

## 5.0 RENAL CELL CANCER

### 5.1 Neo Adjuvant Chemotherapy

Consider clinical trials

### 5.2 Adjuvant Chemotherapy

Pembrolizumab 12 months as per NICE guidance

Consider clinical trials

### 5.3 Palliative Treatment

Treatment options will be guided by risk stratification, previous therapy and commissioning criteria.

#### 5.3.1 First line treatment

Consider stratifying patients according to Heng criteria in MDM.

1 <sup>st</sup> line	
Sunitinib	Sunitinib, pazopanib or tivozanib (in patients with a clear cell component) in accordance with NICE guidance. N.B. Where a patient is receiving 1st line sunitinib, pazopanib or tivozanib and is intolerant but responding to treatment, switch to an alternate first line TKI.
Pazopanib	
Tivozanib	
Avelumab & Axitinib	For unresectable locally advanced or metastatic renal cell carcinoma (RCC). Patients should be treatment-naïve, or if the patient has received prior systemic therapy in the context of adjuvant/neoadjuvant therapy, then such treatment was completed $\geq$ 12 months previously.
Cabozantinib	Cabozantinib for intermediate or poor risk metastatic or inoperable disease with a clear cell component
Nivolumab & Ipilimumab	For the treatment of unresectable locally advanced or metastatic renal cell adenocarcinoma (intermediate or poor risk RCC).
Lenvatinib & pembrolizumab	Lenvatinib in combination with pembrolizumab for use in treatment-naïve patients* with intermediate or poor risk advanced renal cell carcinoma for whom treatment with nivolumab plus ipilimumab would otherwise be suitable.
Cabozantinib & nivolumab	Cabozantinib (Cabometyx®) with nivolumab for use in treatment-naïve patients with intermediate or poor risk advanced renal cell carcinoma for whom combination treatment with either nivolumab plus ipilimumab or lenvatinib plus pembrolizumab would otherwise be suitable.

**Red box:** intermediate or poor risk

Sunitinib, pazopanib or tivozanib (in patients with a clear cell component) in accordance with NICE guidance. N.B. Where a patient is receiving 1<sup>st</sup> line sunitinib, pazopanib or tivozanib and is intolerant but responding to treatment, switch to an alternate first line TKI.

- Cabozantinib (Cabometyx®) with nivolumab for use in treatment-naïve patients with intermediate or poor risk advanced renal cell carcinoma for whom combination treatment with either nivolumab plus ipilimumab or lenvatinib plus pembrolizumab would otherwise be suitable.
- Zoledronic Acid and denosumab should be considered as treatment options for bone metastasis:
  - A dental examination with appropriate preventive dentistry and an individual benefit-risk assessment is recommended prior to treatment with bisphosphonates
  - Patients should be encouraged to have regular dental check-ups whilst on treatment
  - Resources are available from the UK chemotherapy board in relation to the management of medication related osteonecrosis of the jaw: <https://www.rcplondon.ac.uk/guidelines-policy/medication-related-osteonecrosis-jaw-guidance-oncology-multidisciplinary-team>
  - <http://www.sdcep.org.uk/published-guidance/medication-related-osteonecrosis-of-the-jaw/> is considered an acceptable tool for the guidance on ONJ

### 5.3.2 Second or third or 4<sup>th</sup> line treatment

2 <sup>nd</sup> line	3 <sup>rd</sup> line	4 <sup>th</sup> and subsequent line
Axitinib Only after cytokine or 1st line tyrosine kinase inhibitor		
Nivolumab		
Cabozantinib Only after VEGF-targeted therapy or anti-PD-1, anti-PD-L1, anti-PD-L2, anti-CD137, or anti-CTLA-4 antibody		
Lenvatinib + Everolimus Only after VEGF-targeted therapy Only for ECOG PS 0-1		
Sunitinib following nivolumab & ipilimumab		
Pazopanib following nivolumab & ipilimumab		
Tivozanib Following nivolumab & ipilimumab or avelumab & axitinib		
Everolimus TA432 Only after VEGF-targeted therapy		

## 5.4 Radiotherapy

Metastatic renal cell carcinoma may respond to radiotherapy if localised or symptomatic, e.g. bone secondaries.

## 6.0 PENILE CANCER

See supranetwork MDM guidance.

Refer to South West London Cancer Network “Guidelines for the referral, investigation, management and follow-up of patients with urological cancers” – Penile Cancer

Cisplatin and Capecitabine may be delivered in Kent and Medway under the direction of the South West London MDT.

### 6.1 Adjuvant chemotherapy

- Adjuvant chemotherapy regimens include Cisplatin and 5FU combination, Carboplatin and Capecitabine in combination.
- Concomitant Chemo-radiotherapy regimes include the use of weekly Cisplatin and a six week course of External beam radiotherapy.

Advice should be sought from the Supra-Regional Centre for individual patients if not already given in referral letter from the centre.

### 6.2 Neoadjuvant Chemotherapy for T4 Disease

Local standard therapy is a fluoropyrimidine (capecitabine or 5FU by continuous infusion) in combination with cisplatin. Carboplatin should be used in place of cisplatin in patients with:

- Impaired renal function (CrCl by EDTA or Cockcroft and Gault calculation of < 60mls / minute.
- Significant hearing impairment
- Impaired cardiac function. Patients with a confirmed or suspected history of cardiac failure or ischaemia heart disease should have an echocardiogram or MUGA scan prior to chemotherapy.
- Cisplatin should be avoided in patients with LVEF < 50%.

Cisplatin: 75 mg / m<sup>2</sup>. Day 1 of 21-day cycle.  
Capecitabine: 1000 mg / m<sup>2</sup>. Day 1-21 of 21-day cycle.

Cisplatin: 75 mg / m<sup>2</sup>. Day 1 of 21-day cycle.  
5-Fluorouracil: 2000 mg / m<sup>2</sup> / day. Day 1 of 21-day cycle.

Carboplatin: AUC 5. Day 1 of 21-day cycle.  
Capecitabine: 1000 mg / m<sup>2</sup>. Day 1-21 of 21-day cycle.

Carboplatin: AUC 5. Day 1 of 21-day cycle.  
5-Fluorouracil: 2000 mg / m<sup>2</sup> / day. Day 1 of 21-day cycle.

Indications for listed chemotherapy regimens in penile carcinoma

	Neoadjuvant	Adjuvant	Locally Advanced 1 <sup>st</sup> line	Metastatic 1 <sup>st</sup> line	LA / Metastatic 2 <sup>nd</sup> line
Cis+Cape	✓	✓	✓	✓	✓
Carbo+Cape	✓	✓	✓	✓	✓
Cis + 5FU	✓	✓	✓	✓	✓
Carbo+5FU	✓	✓	✓	✓	✓
PMB	✓	✓	✓	✓	✓
PMCarbo	✓	✓	✓	✓	✓
Paclitaxel					✓
TIP	✓				

## 6.2 Palliative treatment

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- Palliative radiotherapy regimes include 30Gy in 10# to the primary and /or nodes, 20Gy in 5# to nodes.
- Palliative chemotherapy includes agents listed above.

## 7.0 APPENDIX A: CLINICAL TRIALS

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Refer to the local research team who will provide on request an orientation handbook, list of current trials and associated trial protocols and summaries.

### Contact numbers

<b>MTW – Clinical Trials Office</b>	01622 225 033
<b>Darent Valley Hospital – Clinical Trials Office</b>	01322 428 100 ext 4810
<b>Medway Maritime Hospital – Clinical Trials Office</b>	01634 825 094
<b>East Kent Hospitals – Clinical Trials Office:</b>	
Solid Tumours (excluding Gynae)	01227 866 393
Gynae Clinical Trials	01843 234 343
Haematology Clinical Trials	01227 864 129

## 8.0 PERSONNEL AND CONTACT INFORMATION

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A comprehensive, up to date list of MDM contact details can be requested by NHS professionals by contacting the Kent & Medway Cancer Collaborative Email: [ekh-tr.KMCCInfo@nhs.net](mailto:ekh-tr.KMCCInfo@nhs.net)

## 9.0 GLOSSARY

Acronyms in common usage throughout KMCC documentation

BNF	British National Formulary
BOPA	British Oncology Pharmacist Association
CNB	Cancer Network Board
COSHH	Control of substances hazardous to health regulations.
CYP	Children & Young People (in relation to the IOG)
DCCAG	Diagnostic Cross Cutting Advisory Group
DOG	Disease Orientated Group (NSSG/TSSG/TWG)
DVH	Darent Valley Hospital
DGT	Dartford and Gravesham NHS Trust
EK	East Kent
EKHUFT	East Kent Hospitals University Foundation Trust
EPS	Electronic Prescribing System
FP10(HNC)	Prescriptions issued by hospital doctors for dispensing in the community
GP	General Practitioner
HoP	High Level Operational Policy
IOSC	Improving Outcomes: A Strategy for Cancer
IV	Intravenous
K&C	Kent & Canterbury Hospital, Canterbury, (EKHUFT)
KMCC	Kent & Medway Cancer Collaborative
KMCRN	Kent & Medway Cancer Research Network
KOMS	Kent Oncology Management System
LSESN	London & South East Sarcoma Network
MFT	Medway Foundation Trust
MTW	Maidstone & Tunbridge Wells NHS Trust
NHS	National Health Service
NMP	Non-medical prescriber
NPSA	National Patient Safety agency
NOG	Non Surgical Oncology Group <i>(Permanent oncologist sub group of the DOGs with a specific responsibility for chemo/rad pathways and advice to the DOG, Network and GEOGRAPHICAL LOCATIONS on new drugs)</i>
PoC	Pathway of Care <i>(Network agreed disease site specific clinical guidelines)</i>
QEQM	Queen Elizabeth the Queen Mother Hospital, Margate (EKHUFT)
QoL	Quality of life
QSI	Quality service information system
QST	Quality Surveillance Team
RAT	Research and Trial Group <i>(Permanent sub-group of the DOGs with a specific responsibility for taking forward the clinical trials agenda)</i>
RMH	Royal Marsden Hospital
RNOH	Royal National Orthopaedic Hospital
SACT	Systemic Anti-Cancer therapy
SACT regimen	Systemic Anti-cancer prescription on the electronic prescribing system
SACT protocol	Systemic Anti-cancer protocol on KMCC website
TTO	Treatment to take home

QVH	Queen Victoria Foundation Trust Hospital East Grinstead
UCLH	University College Hospital London
WHH	William Harvey Hospital, Ashford (EKHUFT)
WK	West Kent

## 10.0 DOCUMENT ADMINISTRATION

<b>Document Title</b>	Oncological Treatment of Urological Cancer
<b>Principle author</b>	Caroline Waters
<b>Co-author(s)</b>	Carys Thomas Urology NOG
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<b>Enquiries:</b>	
[[1] DOG, NOG, CCG Chair [2] DOG, NOG, CCG Vice Chair	Henry Taylor, Consultant Oncologist, Maidstone Hospital Caroline Waters, Lead Pharmacist, KMCC

<b>Revision History</b>			
Date of revision	New Version Number	Nature of Revision	Confirmation of Accuracy by
01.04.09	2	Minor change to section 2.1.2 comment in bracket moved to end of section	Urology NOG / C Waters
22.07.09	3	Minor change to section 3.3 change to number of cycles for EP 500 in radical treatment.	Urology NOG / S Wade
September 09	3.1-3.2	Changes to renal cell cancer pathway following published NICE guidance on sorafenib / sunitinib / temsirolimus	Urology NOG/ S Wade
November 2009	4	Changes approved	Urology NOG/S Wade
July 2010	4.1	Revision of all sections with regards to treatment pathways and options. Addition of section 5 for penile cancer.	Urology NOG
November 2010	V5	Changes approved	Urology NOG
March 2011	V5.1	Changes following final NICE guidance for pazopanib and addition of treatment pathway for penile cancers.	Urology NOG
April 2011	V6	Published	Urology NOG
June 2011	V6.1	Addition of Cabazitaxel to 2 <sup>nd</sup> line chemotherapy for hormone refractory prostate cancer.	Urology NOG

		Addition of Degarelix to 1 <sup>st</sup> line metastatic prostate cancer. Changes to wording of section 1.1.2	
September 2011 November 2011	V7 V7.1	Addition of Abiraterone to 2 <sup>nd</sup> line chemotherapy for hormone refractory prostate cancer.	Urology NOG Urology NOG
December 11 – February 2012	V7.2 -7.4	Re-working of headings under Prostate cancer section to clarify treatment options.	Urology NOG / H Taylor
March 2012	V8	Published	Urology NOG / H Taylor
May 2012 - May 2013	v8.1-8.4	Addition of option to change to alternate 1 <sup>st</sup> line TKI in RCC section 4.3	Urology NOG
		Updating funding arrangements required for Abiraterone, Degarelix and Denosumab. Addition of Abiraterone as 1st line treatment for chemo naïve patients – section 2.2.1.1 Updated in line with the NCDF list & NHSE baseline commissioning list	
June 2013	V9	Published	Carys Thomas/ Urology NOG
July 2013	V9.1	Addition of enzalutamide as a second line treatment option for metastatic, castration resistant prostate cancer	C Thomas/ Urology NOG
July 2013	V10	Published	
November 2013 – June 2014	v10.1	Draft – discussions at Urology NOG <ul style="list-style-type: none"> <li>• treatment of hot flushes added to section 2.1</li> <li>• removal of weekly docetaxel in section 2.2.1</li> <li>• addition of radium 223 Dichloride to section 2.4</li> <li>• addition of funding approval required to docetaxel options for metastatic urothelial</li> <li>• addition of everolimus as third line palliative option for renal cell cancer- section 5.5</li> </ul>	
July 2014	v11	Published	
September 14	v11.1	Updated in line with NICE TA 316 for Enzalutamide Addition of Abiraterone & Enzalutamide as options for 3 <sup>rd</sup> line treatment of CRPC Addition of Enzalutamide as an option for 1 <sup>st</sup> line treatment of CRPC in patients unfit for docetaxel.	
October 2014	12	Published	Urology NOG
March – November 2015	12.1	Updated in line with revised CDF list and NHSE funding arrangements for docetaxel in combination with ADT for hormone naïve MPC	
January 2016	13	Published	C Thomas

February 2016	V13.1	Updated in line with published NICE guidance for Enzalutamide and Radium 223. Updated in line with NHSE commissioning policy on docetaxel with ADT for hormone naïve MPC	
April 2016	V14	Published	C Thomas
June – August 2016	V14.1	Updated in line with NICE TA guidance for Abiraterone and Cabazitaxel. Updated in line with NICE Clinical guidance for management of Bladder Cancer Nivolumab added to section 5.4 for RCC	
Sept – Oct 2016	V 14.2	Revision of chemotherapy options for second and subsequent line urothelial cancer Updated for NICE TA 404 Degarelix – section 2.1.4 Addition of Carbo & Etop for seminoma 4.4.1	
Nov 2016	V14.3	Section 5 RCC updated following NICE TA 417 Nivolumab and subsequent changes to the CDF list.	
December 2016	V15	Published	C Thomas
March – July 2017	V15.1-15.3	Section 5.0 Renal Cell Cancer – treatment options updated in line with changes to NCDF	
August 2017	16	Published	C Thomas
January 29 <sup>th</sup> 2018	V16.1	Section 3.1.4 First line metastatic disease – Added Atezolizumab guidance	
February 12 <sup>th</sup> 2018	V16.3	Revision and additions to sections following NOG: 2.1.4 Amended Abiraterone guidance 2.4 Radium 223 guidance updated in line with CDF 3.1.4 Amended Atezolizumab guidance as per CDF update 3.1.5 Added Pembrolizumab guidance as per CDF changes Added cycle information to Paclitaxel & Carboplatin, Weekly Paclitaxel, Paclitaxel and Gemcitabine as per protocol 5.3 Sunitinib, pazopanib, temsirolimus guidance amended following NOG discussion 5.4 Second line and beyond or subsequent treatment drug list updated and amended according to current CDF. 3.1.1 & 8.0 updated web link	Following NOG 06/02/2018
8 <sup>th</sup> May 2018	V17	Published final version	C Thomas
6 <sup>th</sup> June 2018	V17.1 V18 published	3.1.5 updated to include atezolizumab	C Waters (approved by C Thomas)

1 <sup>st</sup> November 2018	V18.1-18.6	Amendment to section 5.3 including addition of proposed pathway. 6 Addition of cisplatin and capecitabine.	M. Archer
26 <sup>th</sup> February 2019	V18.7	Amendment to section 5.3.1	M. Archer
18 <sup>th</sup> June 2019	V18.7	Taken to NOG, further amendments required so not published.	From NOG 18/06/2019
18/07/2019	V18.8	Amendments to section 2.2 inclusion of M0 and M1. Reformatted following update	M. Archer
04/10/2019	V19	Published	M. Archer C. Thomas
Feb 2020	V19.1	Update to 5.3 Palliative treatment and pathway table. 2.4 dental assessment and link	From NOG Feb 2020
Feb 2021	V19.2-19.3	Section 2.2.1 darolutamide added Update to 5.3 Palliative treatment and pathway table. Covid interim treatment statement added Section 3.1.4 Avelumab added Reformatted by R.Patel	From NOG Feb 2021.
March 2021	V19.4	Mitoxantrone + Prednisolone removed as treatment option.	Agreed virtually by NOG
June 2021	V19.5	Remove pembrolizumab: commissioning withdrawn: section 3.1.5 Update enzalutamide: section 2.1.4	M.Archer  Agreed virtually at NOG 29.06.21
June 2021	V20	Published	C.Thomas
Nov 2021	V20.1	Reviewed at NOG Apalutamide added to section 2.1.4 and section 2.2.	Agreed at NOG Approved by C.Thomas at NOG
March 2022	V21	Published	C.Thomas
June 2022	V21.1-V21.2	Section 5.3 updated Section 5.3.2 tivozanib added	M.Archer
March 2023	V21.2-V21.5.1	Reviewed at NOG 20.03.2023 Multiple changes made throughout	M.Archer
April 2023	V21.6	Updated following clinician comments Section 2.1.2 Section 2.1.4 Section 2.2.2.1 and 2.2.2.2 olaparib added Sent to NOG for virtual approval 13.04.2023	M.Archer
June 2023	V22	Published	Urology NOG
June 2024	V22.1 V22.2	Draft Section 2.1.2 updated Section 2.2.2.1 addition of olaparib & abiraterone	

		Section 5.3.1 table adjusted and updated Section 5.3.2 table adjusted	
December 2024	V22.3	Section 2.1.1 addition of relugolix Section 4 updated thromboprophylaxis	Reviewed at NOG  Agreed virtually via email Jan 2025
January 2025	V23	Published	
	V23.1	Draft created MA Section 2.1.4 renumbered now 2.1.5, to allow new section Section 2.3 table updated	
February 2025	V23.2	Reviewed at NOG 10.02.2026  Updated Section 2.2.2.1 First line Systemic Anti-Cancer Therapy (SACT) added Talazoparib and enzalutamide Section 3.1.4 First line metastatic disease added Enfortumab vedotin with pembrolizumab	
April 2026	V24	Published	Approved by H. Taylor and Urology NOG