### Zoom Controls

1. **Click Raise Hand** in the Webinar Controls.

![Zoom Controls](image1.png)

2. The host will be notified that you've raised your hand.

3. **Click Lower Hand** to lower it if needed.

![Zoom Controls](image2.png)

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1. **If the host allows you to talk, you will receive a notification.**

![Notification](image3.png)

2. Your audio settings will now change to a Mute/Unmute button. You can still access the audio settings by click on the ^ arrow next to the Unmute/Mute button.
Student Educational Talks Agenda

• NCODA Mission and Vision Statements
  • Jasan Khangura, PharmD Candidate 2022, Oregon State University

• Tyrosine Kinase Inhibitor Class Overview
  • Sara Moran-Smith, PharmD, BCOP, Fairview Maple Grove

• Renal Cell Carcinoma
  • Robin Terry-Purnell, PharmD, MBA, West Cancer Center

• Gallbladder & Bile Duct Cancer Awareness Month
  • Tara Magallon, PharmD Candidate 2021, University of North Texas
Mission Statement

Our focus is to advance the value of dispensing practices for oncology physicians.

We will provide leadership, expertise, quality standards, and sharing of best practices with all members.

We will deliver positive outcomes through collaboration with all stakeholders involved in the care of oncology patients.
Vision Statement

Our vision is to be the world leader in oral oncology by building a patient-centered medically integrated community whose focus is to innovate the continuity of cancer care so every patient receives the maximum benefit from their cancer treatment.
Welcome Established NCODA PSO Chapters

1. South University (NC & GA)
2. University of Rhode Island (RI)
3. Midwestern University (IL)
4. North Texas University (TX)
5. Washington State University (WA)
6. Texas Tech University (TX)
7. Purdue University (IN)
8. Nova Southeastern University (FL)
9. Massachusetts College of Pharmacy and Health Sciences University (MA)
10. University of Minnesota (MN)
11. University of Toledo (OH)
Welcome “In-Progress” NCODA PSO Chapters

1. Albany College of Pharmacy and Health Sciences (NY)
2. Auburn University (AL)
3. Lake Erie College of Osteopathic Medicine (FL)
4. Mercer University
5. Oregon State University (OR)
6. Texas Southern University (TX)
7. The Ohio State University (OH)
8. University of Florida (FL)
9. University of Houston (TX)
10. University of Illinois at Chicago (IL)
11. University of Iowa (IA)
12. University of Kansas (KS)
13. University of Maryland Eastern Shore (MD)
14. University of Missouri-Kansas City (MO)
15. University of Mississippi (MS)
16. University of New Mexico (NM)
17. University of Tennessee (TN)
18. University of Wyoming (WY)
Welcome all Students!
2,110 + Members and 470 + Practices Strong!

Working together, we become stronger.
Tyrosine Kinase Inhibitors (TKI)

An Overview
Sara Moran Smith, PharmD, BCOP
Oncology Clinical Pharmacist
M Health Fairview
Disclaimer

National Community Oncology Dispensing Association, Inc. (NCODA), has developed the Student Educational Talks presentation. This platform represents a brief summary of medications’ uses and therapy options derived from information provided by the drug manufacturer and other resources. This platform is intended as an educational aid and does not provide individual medical advice and does not substitute for the advice of a qualified healthcare professional. This platform does not cover all existing information related to the possible uses, directions, doses, precautions, warning, interactions, adverse effects, or risks associated with the medications discussed in the platform and is not intended as a substitute for the advice of a qualified healthcare professional. The materials contained in this platform are for informational purposes only and do not constitute or imply endorsement, recommendation, or favoring of this medication by NCODA, which assumes no liability for and does not ensure the accuracy of the information presented. NCODA does not make any representations with respect to the medications whatsoever, and any and all decisions, with respect to such medications, are at the sole risk of the individual consuming the medication. All decisions related to taking these medications should be made with the guidance and under the direction of a qualified healthcare professional.
Mechanism of Action

Growth factor signals to make blood vessels

Growth factor signals for cell to divide

Receptor

Multi TKI blocks the signal

Nucleus

Multi TKI blocks the signal

TKI going into the cell

Chaar M, Kamta J, Ait-Oudhia S. Onco Targets Ther. 2018;11:6227-6237

Abbreviations: AKT, protein kinase B; Bcl, Bcl-2-associated death protein; Bax, Bcl-2-associated X proteins; Bcl-xL, B-cell lymphoma extra large protein; Bcr-Abl, breakpoint cluster region-Ablon proteins; Casp-3, caspase 3 protein; Casp-9, caspase 9 protein; Cdc2, cyclin dependent kinase 2; Cyt C, cytochrome C; FGF, fibroblast growth factor; receptor; ERK, extracellular signal regulated kinase; MEK, mitogen-activated protein kinase; mTOR, mammalian target of rapamycin; PI3K, phosphoinositide 3 kinase; RAF, rapidly accelerated fibrosarcoma protein; Src, src proto-oncogenes; Ras, ras protein superfamily; VEGFR, vascular endothelial growth factor receptor.
TKI Acquired Resistance

• T790M – *osimertinib*
• cMET gene amplification
• Loss of PTEN expression
• IGF-1R-mediated EGFR downstream pathway activation
• EML4-ALK fusion gene
• Amplification of ALK fusion gene copy number
• Activation of signal bypass
• Epithelial mesenchymal transformation
• And many others!

### Indications

<table>
<thead>
<tr>
<th>Generic name (brand name)</th>
<th>Presumed target(s)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gefitinib (Iressa)</td>
<td>EGFR</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Erlotinib (Tarceva)</td>
<td>EGFR</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Afatinib (Gilotrif)</td>
<td>EGFR, HER2/4</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Osimertinib (Tagrisso)</td>
<td>EGFR</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Lapatanib (Tykerb)</td>
<td>EGFR, HER2</td>
<td>HER2+ breast cancer</td>
</tr>
<tr>
<td>Neratinib (Nerlynx)</td>
<td>EGFR, HER2/4, MAPK, AKT</td>
<td>HER2+ breast cancer</td>
</tr>
<tr>
<td>Vandetanib (Caprelsa)</td>
<td>EGFR, VEGFR, RET, BRK TIE2, SRC</td>
<td>Thyroid cancer</td>
</tr>
<tr>
<td>Crizotinib (Xalkori)</td>
<td>ALK, ROS1</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Alectinib (Alecensa)</td>
<td>ALK, RET</td>
<td>NSCLC</td>
</tr>
<tr>
<td>Ceritinib (Zykadia)</td>
<td>ALK, IGF1-R, InsR, ROS1</td>
<td>NSCLC</td>
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<tr>
<td>Brigatinib (Alunbrig)</td>
<td>ALK, ROS1, IGF-1R</td>
<td>NSCLC</td>
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<tr>
<td>Axitinib (Inlyta)</td>
<td>VEGFR</td>
<td>RCC</td>
</tr>
<tr>
<td>Lenvatinib (Lenvima)</td>
<td>VEGFR, FGFR, PDGFR, KIT, RET</td>
<td>DTC, RCC</td>
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<tr>
<td>Imatinib (Gleevec)</td>
<td>Bcr-Abl, c-Kit, PDGFR, SCF</td>
<td>Ph+ CML, Ph+ ALL, MDS/MPD, c-Kit ASM, HES/CEL, DFSP, c-Kit+ GIST</td>
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<tr>
<td>Dasatinib (Sprycel)</td>
<td>Bcr-ABL, SRC, KIT, EPHA2, PDGFRβ</td>
<td>Ph+ CML, Ph+ ALL</td>
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<tr>
<td>Nilotinib (Tasigna)</td>
<td>Bcr-Abl</td>
<td>Ph+ CML</td>
</tr>
<tr>
<td>Bosutinib (Bosulif)</td>
<td>Bcr-Abl, SRC</td>
<td>Ph+ CML</td>
</tr>
<tr>
<td>Venurafenib (Zelboraf)</td>
<td>BRAF</td>
<td>BRAF V600 melanoma</td>
</tr>
</tbody>
</table>


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<tr>
<td>Sorafenib (Nexavar)</td>
<td>Multikinase</td>
<td>RCC, HCC, DTC</td>
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<tr>
<td>Sunitinib (Sutent)</td>
<td>Multikinase</td>
<td>GIST, RCC, pNET</td>
</tr>
<tr>
<td>Pazopanib (Votrient)</td>
<td>Multikinase</td>
<td>RCC, advanced soft tissue sarcoma</td>
</tr>
<tr>
<td>Ponatinib (Iclusig)</td>
<td>Multikinase</td>
<td>CML, Ph+ ALL</td>
</tr>
<tr>
<td>Cabozantinib (Cabometyx)</td>
<td>Multikinase</td>
<td>RCC</td>
</tr>
<tr>
<td>Regorafenib (Stivarga)</td>
<td>Multikinase</td>
<td>CRC, GIST, HCC</td>
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<tr>
<td>Nintedanib (Ofev)</td>
<td>Multikinase</td>
<td>Idiopathic pulmonary fibrosis</td>
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<tr>
<td>Midostaurin (Rydapt)</td>
<td>Multikinase</td>
<td>FLT3-ITD+ AML</td>
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<tr>
<td>Dabrafenib (Tafinlar)</td>
<td>BRAF</td>
<td>BRAF V600 melanoma</td>
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<tr>
<td>Ruxolitinib (Jakafi)</td>
<td>JAK1/2</td>
<td>Myelofibrosis, polycythemia vera</td>
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<tr>
<td>Tolactinib (Xaljanz)</td>
<td>JAK3</td>
<td>Rheumatoid arthritis</td>
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<tr>
<td>Trametinib (Mekinist)</td>
<td>MEK1/2</td>
<td>BRAF V600 melanoma</td>
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<tr>
<td>Cobimetinib (Cotellic)</td>
<td>MAPK, MEK1/2</td>
<td>BRAF V600 melanoma</td>
</tr>
<tr>
<td>Idelalisib (Zydelig)</td>
<td>PI3K</td>
<td>CLL, follicular B-cell non-Hodgkin lymphoma, SLL</td>
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<tr>
<td>Ibrutinib (Imbruvica)</td>
<td>BTK</td>
<td>MCL, CLL/SLL, WM, MZL, cGVHD</td>
</tr>
<tr>
<td>Acalabrutinib (Calquence)</td>
<td>BTK</td>
<td>MCL</td>
</tr>
</tbody>
</table>


Adverse Effects

OVERVIEW OF TOXICITIES ASSOCIATED WITH DIFFERENT TKI TARGETS

- **Hypertension**
- **Proteinuria**
- **Wound healing complications**
  - HFSR
  - Arterial TE
  - LV dysfunction
  - QT prolongation
  - Hemorrhage
  - Dysphonia
  - Mucositis
  - Diarrhea
  - Hypothyroidism

- **VEGFR**
- **MET**
- **PDGFR**
- **HER2**
- **EGFR**
- **ALK**
- **BCR-ABL**
- **JAK**

**Nausea / vomiting**
- Elevated amylase / lipase
- Peripheral edema

**Diarrhea**
- Rash
- LV dysfunction

**Cytopenia**
- LV dysfunction
- QT prolongation
- Hypothyroidism
- PAOD / PAH

**Anemia**
- Thrombocytopenia
- Fatigue
- Diarrhea

Mayor S. Cancer World November-December 2015
EGFR Inhibitors Adverse Effects

• Rash
  • Acneiform (*most common*), pustular, or maculopapular
  • Moisturize skin, minimize sun exposure and use sunscreen, avoid irritants
  • Dose reduce only if ≥ grade 3 rash despite above interventions

• Diarrhea
  • Antimotility agents (e.g. loperamide)
  • “BRAT” diet – bananas, rice, applesauce, toast
  • Dose reduce only if ≥ grade 3 despite above interventions

• Mucositis
  • Good oral hygiene
  • Mouth rinses at first signs of tingling sensation
  • Hold if ≥ grade 3

VEGFR Inhibitors Adverse Effects

• Hand-Foot Skin Reaction
  • Occur at pressure points
  • Moisturize hands and feet at least 2x per day
  • Urea cream for hyperkeratosis
  • Hold if impacting patient’s quality of life

• Hypertension
  • Occurs mostly in the first or second month
  • Monitor BP and treat with antihypertensives

• Left Ventricular Dysfunction
  • Measure left ventricular ejection fraction (LVEF) at baseline and periodically while on therapy
  • If symptoms occur, LVEF <50% or >10% drop in LVEF from baseline
Adverse Effects

• Hepatotoxicity
  • Rule out other causes
  • Hold grade 3/4 toxicity, dose reduce once < grade 1

• Pneumonitis (ALK inhibitors)
  • Rule out other causes
  • Stop treatment and treat with steroids

• Hematologic Toxicities (ABL and JAK inhibitors)
  • Thrombocytopenia, neutropenia, and anemia
  • Managed with dose reduction or temporary discontinuation
  • Blood transfusions or growth factors may be warranted

TSH=thyroid stimulating hormone

Black Box Warnings

- Fatal Hepatic Failure
  - Lapatinib, pazopanib, regorafenib, sunitinib, ponatinib
- Arterial Thrombosis
  - Ponatinib
- Torsade de pointes
  - Nilotinib, vandetanib
- Perforation, Fistula, and hemorrhage
  - cabozantinib
Questions?

ssmith57@Fairview.org
Renal Cell Carcinoma

Robin Terry-Purnell, PharmD, MBA
Clinical Pharmacy Operations Manager
West Cancer Center
Memphis, TN
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Renal cell carcinoma is the most common type of kidney cancer.

80% to 85% of all kidney cancers are attributed to RCC.
Renal Cell Carcinoma

• The American Cancer Society’s most recent estimates for kidney and renal pelvis cancers in the United States for 2020 are:
  • About 73,750 new cases of kidney cancer will occur
    • 45,520 in men and 28,230 in women
  • About 14,830 people will die from the disease
    • 9,860 men and 4,970 women
Treatment Options

STAGE

- **Stage I (T1a)**
  - Partial nephrectomy (preferred)
  - Ablative techniques
  - Active surveillance
  - Radical nephrectomy (if nephron-sparing not indicated or feasible)

- **Stage I (T1b)**
  - Partial nephrectomy
  - Radical nephrectomy
  - Active surveillance (in select patients)

- **Stage II**
  - Partial nephrectomy
  - Radical nephrectomy

- **Stage III**
  - Radical nephrectomy
  - Partial nephrectomy, if clinically indicated

- **Stage IV**
  - See KID-2

PRIMARY TREATMENT

ADJUVANT TREATMENT

- Surveillance

FOLLOW-UP (category 2B)

- Clinical trial or Surveillance
  - Clear cell histology: Clinical trial (preferred) or Surveillance
  - Non-clear cell histology: Surveillance

Follow-up

Relapse or Progression, See KID-3

See Evidence Blocks on KID-1A

See KID-B
Treatment Options

**STAGE**

- Potentially surgically resectable primary
  - Consider tissue sampling

- Stage IV

- Surgically unresectable
  - Tissue sampling

**PRIMARY TREATMENT**

- Cytoreductive nephrectomy in select patients
  - or
  - Systemic therapy (See KID-3)
    (preferred in clear cell histology with poor-risk features)

- See KID-3
Oral Therapy

Tyrosine Kinase Inhibitors
### Clear Cell Histology

**NCCN Guidelines Version 2.2020**

**Kidney Cancer**

#### PRINCIPLES OF SYSTEMIC THERAPY FOR RELAPSE OR STAGE IV DISEASE

<table>
<thead>
<tr>
<th>FIRST-LINE THERAPY FOR CLEAR CELL HISTOLOGY</th>
<th>Other recommended regimens</th>
<th>Useful under certain circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk</strong></td>
<td><strong>Preferred regimens</strong></td>
<td><strong>Axitinib + pembrolizumab</strong></td>
</tr>
<tr>
<td>Favorable&lt;sup&gt;3&lt;/sup&gt;</td>
<td>• Axitinib + pembrolizumab</td>
<td>• ipilimumab + nivolumab</td>
</tr>
<tr>
<td></td>
<td>• Pazopanib</td>
<td>• Cabozantinib (category 2B)</td>
</tr>
<tr>
<td></td>
<td>• Sunitinib</td>
<td>• Axitinib + avelumab</td>
</tr>
<tr>
<td>Poor/Intermediate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>• ipilimumab + nivolumab (category 1)</td>
<td>• Active surveillance&lt;sup&gt;B&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>• Axitinib + pembrolizumab (category 1)</td>
<td>• Axitinib (category 2B)</td>
</tr>
<tr>
<td></td>
<td>• Cabozantinib</td>
<td>• High-dose IL-2&lt;sup&gt;C&lt;/sup&gt;</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBSEQUENT THERAPY FOR CLEAR CELL HISTOLOGY</th>
<th>Other recommended regimens</th>
<th>Useful under certain circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred regimens</strong></td>
<td><strong>Axitinib (category 1)</strong></td>
<td><strong>Bevacizumab or biosimilar&lt;sup&gt;5&lt;/sup&gt; (category 2B)</strong></td>
</tr>
<tr>
<td>• Cabozantinib (category 1)</td>
<td>• Lenvatinib + everolimus (category 1)</td>
<td>• Sorafenib (category 2B)</td>
</tr>
<tr>
<td>• Nivolumab (category 1)</td>
<td>• Axitinib + pembrolizumab</td>
<td>• High-dose IL-2 for selected patients&lt;sup&gt;5&lt;/sup&gt; (category 2B)</td>
</tr>
<tr>
<td>• Ipilimumab + nivolumab</td>
<td>• Everolimus</td>
<td>• Temsirolimus&lt;sup&gt;D&lt;/sup&gt; (category 2B)</td>
</tr>
<tr>
<td></td>
<td>• Pazopanib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sunitinib</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Axitinib + avelumab (category 3)</td>
<td></td>
</tr>
</tbody>
</table>
Clear Cell Histology-1^{st} line therapy

- Relapse or Stage IV disease
  - Tyrosine Kinase Inhibitors
    - Inlyta (axitinib)
    - Votrient (pazopanib)
    - Sutent (sunitinib)
Inlyta (axitinib)

• Blood pressure should be well-controlled prior to initiation of treatment

• First-line metastatic RCC
  • 5 mg orally twice daily; increases at 2-week intervals to 7 mg twice daily, then 10 mg twice daily
  • Regimen-axitinib + pembrolizumab (Keytruda) 200mg IV q3w

• Advanced RCC, after failing 1 systemic therapy
  • 5 mg orally twice daily; increases at 2-week intervals to 7 mg twice daily, then 10 mg twice daily

• Swallow whole

• Take with or without food
Votrient (pazopanib)

- Advanced RCC
  - 800 mg orally once daily without food
    - 1 hour before or 2 hours after a meal
  - Dose reduction-400 mg
    - Additional dose decreases or increases in 200-mg increments based on tolerability
  - MAX dose 800 mg/day
Sutent (sunitinib)

- **Adjuvant therapy following nephrectomy**
  - 50mg PO daily x4 weeks, followed by 2 weeks off
  - Nine 6-week cycles

- **Advanced RCC**
  - 50mg PO daily x4 weeks, followed by 2 weeks off; repeat q6w
  - Off-label dosing
    - 50mg PO daily weekday-on, weekend-off (BSA ≥ 1.62m²)
    - 37.5mg PO daily weekday-on, weekend-off (BSA < 1.62m²)
Adverse Effects

- Hypertension
- Mucositis
- Diarrhea
- N/V
- Hair loss
- Hypothyroidism
- Elevated LFTs
- BLACK BOX WARNING
  - Hepatoxicity
2nd line therapy

- Cabometyx (cabozantinib)
- Opdivo
- Yervoy + Opdivo
- Lenvima (lenvatinib)
- Afinitor (everolimus)
- Nexavar (sorafenib)
Cabometyx (cabozantinib malate)

- DO NOT SUBSTITUTE tablets with capsules
- D/C treatment at least 3 weeks prior to scheduled surgery
- 60mg PO daily WITHOUT food until disease progression or unacceptable toxicity
  - Administer 1 hour before or 2 hours after eating
Opdivo (nivolumab)

- Monoclonal antibody: Programmed death-1 inhibitor resulting in decreased tumor growth
- Single agent
  - Received prior treatment
- 240mg IV q2w OR 480mg IV q4w until disease progression or unacceptable toxicity
- Adverse Effects
  - Fatigue
  - Pulmonary (pneumonitis, dyspnea, cough)
  - Elevated LFTs
Yervoy (ipilimumab)

- Recombinant, human monoclonal antibody: binds cytotoxic T-lymphocyte-associated antigen 4 (CTLA-4)
- *1st therapy in RCC-advanced disease with intermediate or poor risk*
  - Nivolumab 3mg/kg IV followed by ipilimumab 1mg/kg on the same day q3w x4 doses
  - Maintenance with nivolumab 240mg IV q2w or 480mg IV q4w
Lenvatinib (Lenvima)

- Tyrosine kinase inhibitor of VEGFR1, VEGFR2, VEGFR3 to inhibit tumor growth and cancer progression
- Advanced RCC + everolimus after 1 prior anti-angiogenic therapy
  - 18mg once daily in combination with everolimus 5mg once daily until disease progression or unacceptable toxicity
- Adverse Effects
  - Hypertension
  - Peripheral edema
  - Hemorrhage
  - Cough
NexAVAR (sorafenib)

- Category 2B
- Orphan drug designation for RCC
- 400mg PO twice daily WITHOUT FOOD until disease progression or unacceptable toxicity
- Adverse Effects
  - Elevated LFTs
  - Hypertension
  - Infectious disease
  - Abdominal pain
  - Decreased appetite
  - Rash
Afinitor (everolimus)

- Rapamycin inhibitor - reduced cell proliferation, angiogenesis, and glucose uptake
- 10mg po daily until disease progression or unacceptable toxicity
- Adverse Effects
  - Fatigue
  - Hyperglycemia
  - Rash
  - Hyperlipidemia
  - Diarrhea
  - Constipation
# Non-Clear Cell Histology

## NCCN Guidelines Version 2.2020
### Kidney Cancer

### Principles of Systemic Therapy for Relapse or Stage IV Disease

<table>
<thead>
<tr>
<th>Preferred regimens</th>
<th>Other recommended regimens</th>
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<tbody>
<tr>
<td>Clinical trial</td>
<td>Cabozantinib</td>
<td>Axitinib</td>
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<tr>
<td>Sunitinib</td>
<td>Everolimus</td>
<td>Bevacizumab or biosimilar⁶</td>
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<td></td>
<td>Erlotinib</td>
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<tr>
<td></td>
<td></td>
<td>Nivolumab</td>
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<tr>
<td></td>
<td></td>
<td>Pazopanib</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bevacizumab or biosimilar⁶ + erlotinib for selected patients with advanced papillary RCC including hereditary leiomyomatosis and renal cell cancer (HLRCC)</td>
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<tr>
<td></td>
<td></td>
<td>Bevacizumab or biosimilar⁶ + everolimus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temsirolimus³ (category 1 for poor-prognosis risk group; category 2A for other risk groups)</td>
</tr>
</tbody>
</table>
Non-Clear Cell Histology

• Avastin (bevacizumab) or biosimilar
  • Humanized monoclonal IgG1 antibody; VEGF inhibitor
  • Inhibits proliferation of endothelial cells and formation of new blood vessels
  • 10mg/kg IV q2weeks

• Adverse Effects
  • Hypertension
  • Impaired wound healing
  • Proteinuria
  • Nose bleeds
Sources

- Micromedex. [www.micromedexsolutions.com](http://www.micromedexsolutions.com)
Gallbladder and Bile Duct Cancer Review

Tara Magallon,
PharmD Candidate 2021
University of North Texas System College of Pharmacy
Disclaimer

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Epidemiology

Gallbladder
Source: Globocan 2018

Number of new cases in 2018, both sexes, all ages

Number of deaths in 2018, both sexes, all ages


SIGNS AND SYMPTOMS OF GALLBLADDER AND BILE DUCT CANCER

**Gallbladder Cancer:**
- Abdominal pain
- Abdominal bloating
- Fever
- Unintended weight loss
- Nausea
- Yellowing of the skin & eyes

**Bile Duct Cancer:**
- Yellowing of the skin & eyes
- Intensely itchy skin
- White-colored stools
- Fatigue
- Abdominal pain
- Unintended weight loss

All information courtesy of the Mayo Clinic.
## Risk Factors for Gallbladder and Bile Duct Cancer

<table>
<thead>
<tr>
<th>Risk Factor</th>
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<tbody>
<tr>
<td>Obesity</td>
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<td>Older Age</td>
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<tr>
<td>Family History</td>
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<td>Inflammation of the bile ducts</td>
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Questions?

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Thank you for attending!
The next NCODA SET will be Wednesday, March 25th at 8 PM EST!