NCODA

SETs

Student Educational Talks

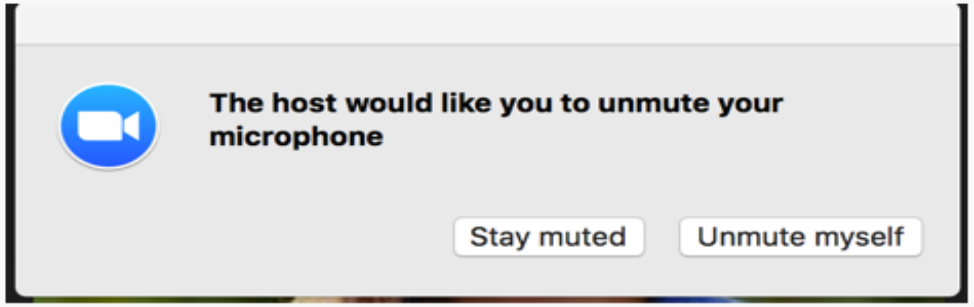
Wednesday, February 26th, 2020

Zoom Controls

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

2. The host will be notified that you've raised your hand.
3. Click **Lower Hand** to lower it if needed.

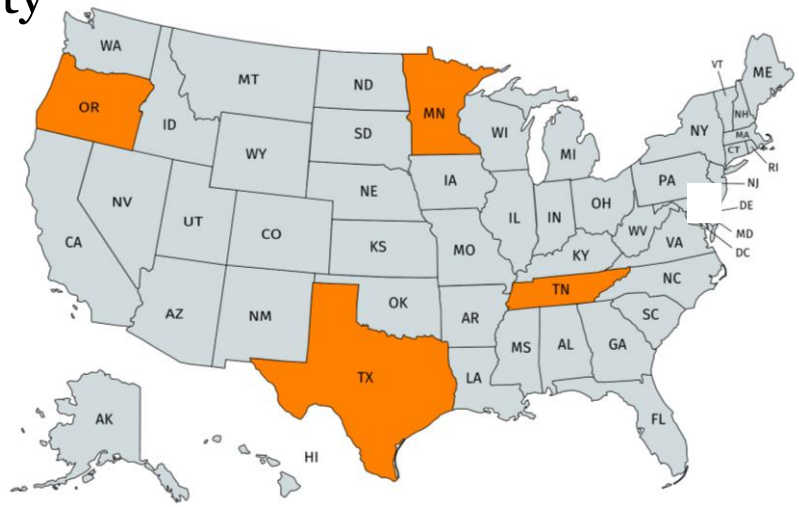
1. If the host allows you to talk, you will receive a notification.



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

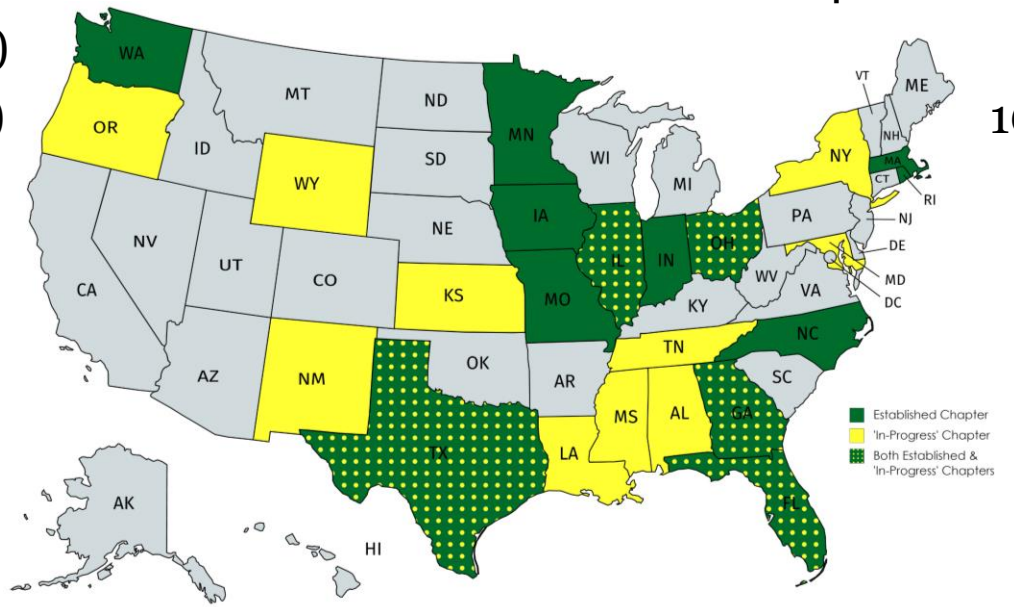
Our vision is to be the world leader in oral oncology by building a patient-centered medically integrated community whose focus is to innovate the continuity of cancer care so every patient receives the maximum benefit from their cancer treatment.

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)

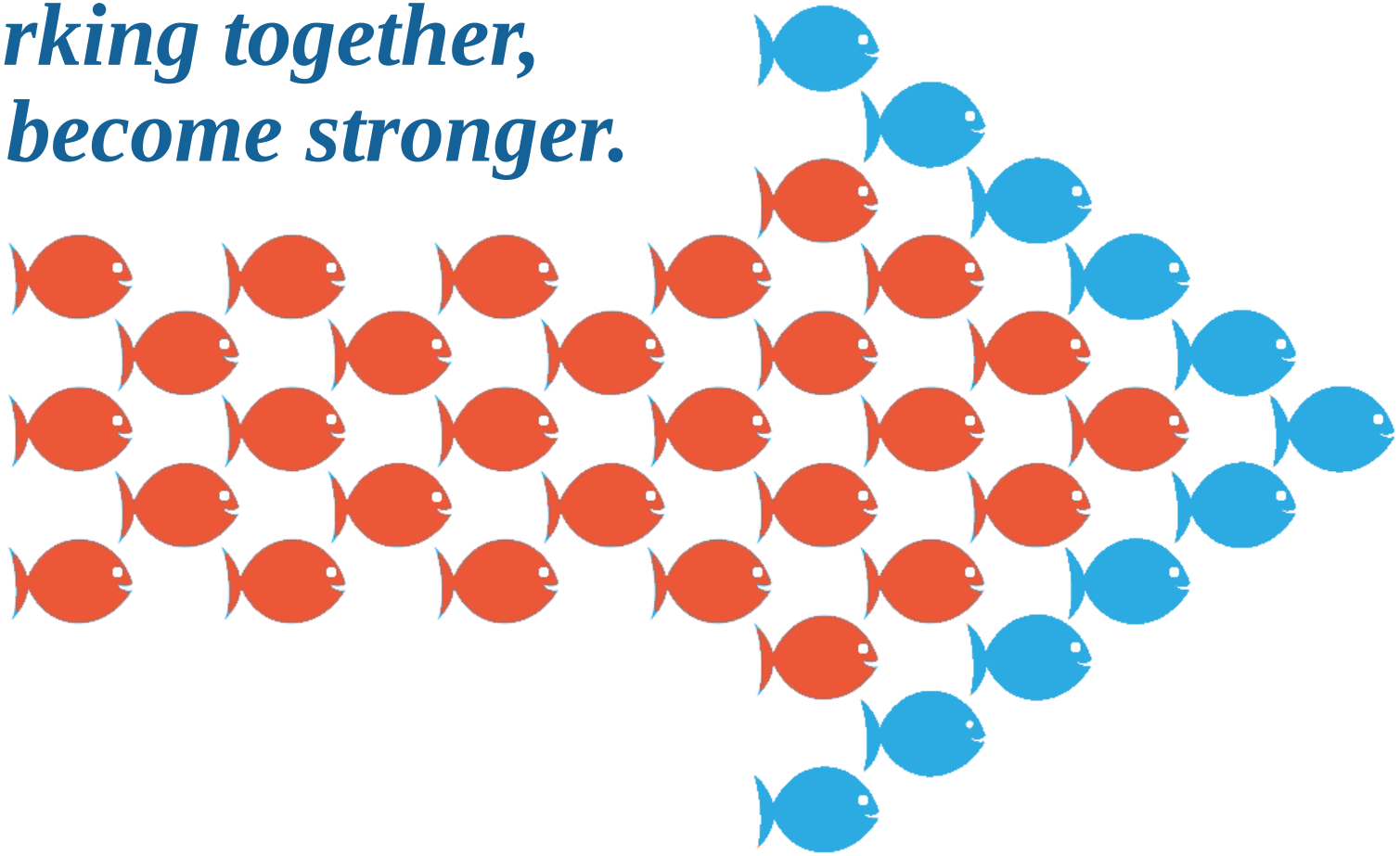


NCODA SETs Student Educational Talks

Welcome all Students!

2,110 + Members and 470 + Practices Strong!

Working together,
we become stronger.



Tyrosine Kinase Inhibitors (TKI)

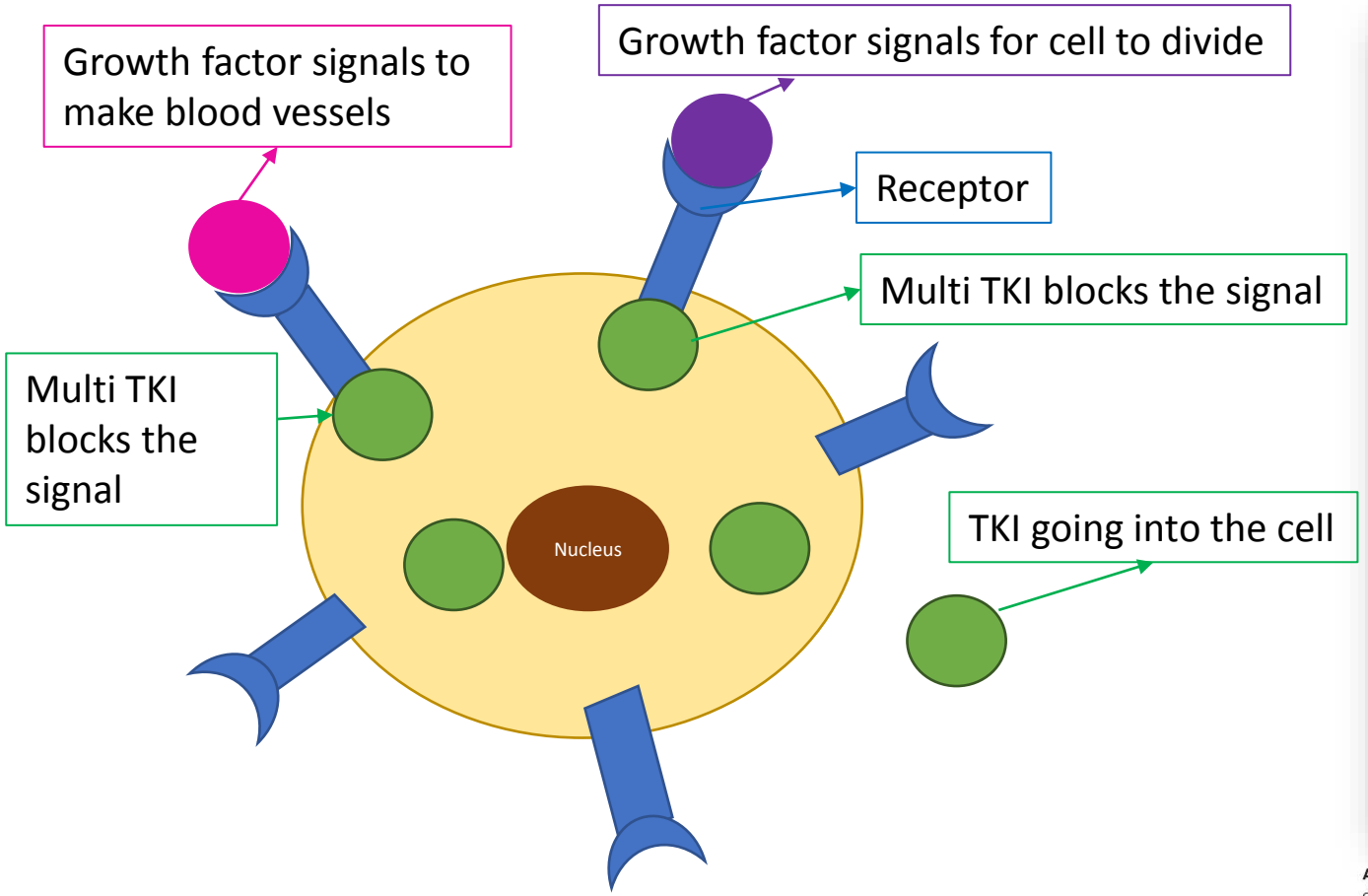
An Overview

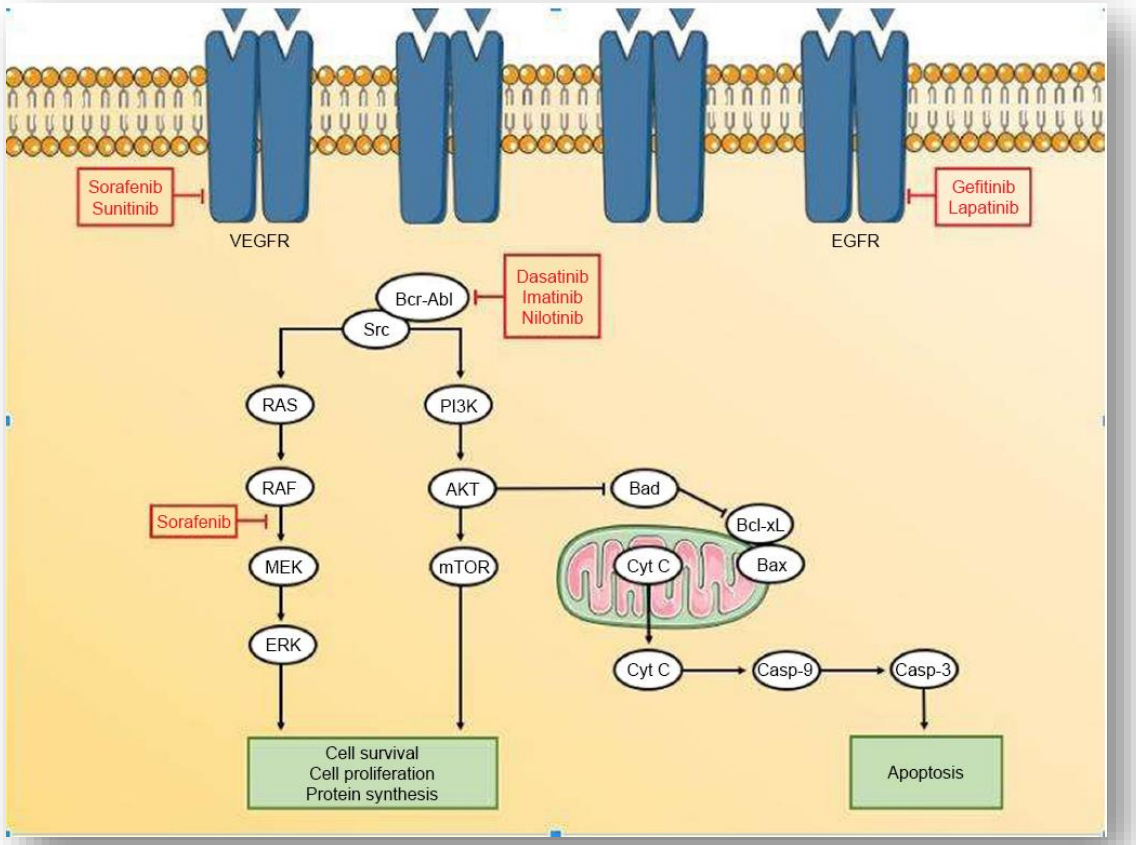
Sara Moran Smith, PharmD, BCOP
Oncology Clinical Pharmacist
M Health Fairview

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





Abbreviations: AKT, protein kinase B; Bad, Bcl-2-associated death protein; Bax, Bcl-2-associated X protein; Bcl-xL, B-cell lymphoma extra large protein; Bcr-Abl, breakpoint cluster region-Abelson protein; Casp-3, caspase 3 protein; Casp-9, caspase 9 protein; Cyt C, cytochrome C protein; EGFR, epidermal growth factor receptor; ERK, extracellular signal regulated kinase; MEK, aka MAPK – mitogen activated protein kinase; mTOR, mammalian target of rapamycin protein; PI3K, phosphoinositide 3 kinase; RAF, rapidly accelerated fibrosarcoma protein; Src, sarcoma proto-oncogene; Ras, Ras protein superfamily; VEGFR, vascular endothelial growth factor receptor.

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

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!

Jiao, Q., Bi, L., Ren, Y. *et al. Mol Cancer* **17,** 36 (2018).

Indications

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

Abbreviations: TKI: tyrosine kinase inhibitor, STKI: serine/threonine kinase inhibitor, LKI: lipid kinase inhibitor, CML: chronic myeloid leukemia, ALL: acute lymphoid leukemia, ASM: aggressive systemic mastocytosis, HES/CEL: hypereosinophilic syndrome/chronic eosinophilic leukemia, DFSP: dermatofibrosarcoma protuberans, GIST: gastrointestinal stromal tumors, NSCLC: non-small cell lung cancer, RCC: renal cell carcinoma, HCC: hepatocellular carcinoma, DTC: differentiated thyroid cancer, pNET: pancreatic neuroendocrine tumors, HR: hormone receptor, GI- NET: gastrointestinal NET, TSC: tuberous sclerosis complex, SEGA: subependymal giant cell astrocytoma, CRC: colorectal cancer, MCL: mantle cell lymphoma, SLL: small lymphocytic lymphoma, WM: Waldenstrom's macroglobulinemia, MZL: marginal zone lymphoma, cGVHD: chronic graft versus host disease, AML: acute myeloid leukemia.

Jeon JY. Clin Pharmacol Ther. 2017 Nov; 102(5): 726–730.

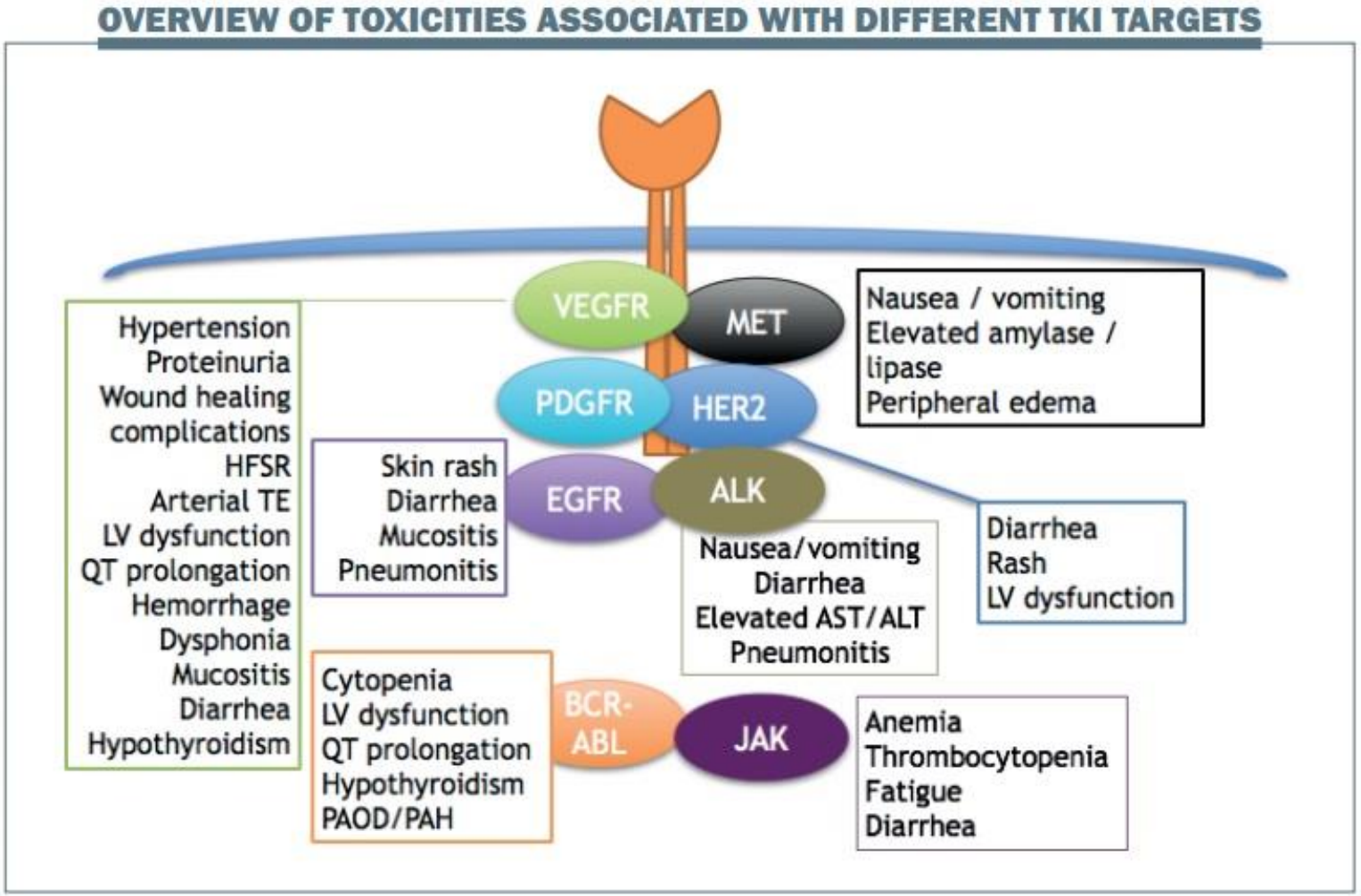
Indications

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

Abbreviations: TKI: tyrosine kinase inhibitor, STKI: serine/threonine kinase inhibitor, LKI: lipid kinase inhibitor, CML: chronic myeloid leukemia, ALL: acute lymphoid leukemia, ASM: aggressive systemic mastocytosis, HES/CEL: hypereosinophilic syndrome/chronic eosinophilic leukemia, DFSP: dermatofibrosarcoma protuberans, GIST: gastrointestinal stromal tumors, NSCLC: non-small cell lung cancer, RCC: renal cell carcinoma, HCC: hepatocellular carcinoma, DTC: differentiated thyroid cancer, pNET: pancreatic neuroendocrine tumors, HR: hormone receptor, GI- NET: gastrointestinal NET, TSC: tuberous sclerosis complex, SEGA: subependymal giant cell astrocytoma, CRC: colorectal cancer, MCL: mantle cell lymphoma, SLL: small lymphocytic lymphoma, WM: Waldenstrom's macroglobulinemia, MZL: marginal zone lymphoma, cGVHD: chronic graft versus host disease, AML: acute myeloid leukemia.

Jeon JY. Clin Pharmacol Ther. 2017 Nov; 102(5): 726–730.

Adverse Effects



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

Jeong W, Doroshow J, Kummar S. Curr Probl Cancer. 2013; 37(3):110-144

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

Mayor S. Cancer World November-December 2015

Jeong W, Doroshow J, Kummar S. Curr Probl Cancer. 2013; 37(3):110-144

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

Jeong W, Doroshow J, Kummar S. Curr Probl Cancer. 2013; 37(3):110-144

Black Box Warnings

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

Jeong W, Doroshow J, Kummar S. Curr Probl Cancer. 2013; 37(3):110-144

Questions?

ssmith57@Fairview.org

Renal Cell Carcinoma

Robin Terry-Purnell, PharmD, MBA
Clinical Pharmacy Operations Manager
West Cancer Center
Memphis, TN

Disclaimer

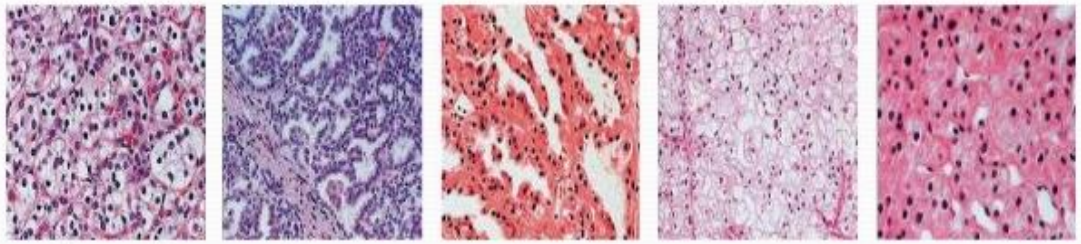
National Community Oncology Dispensing Association, Inc. (NCODA), has developed the Student Educational Talks presentation. This platform represents a brief summary of medications' uses and therapy options derived from information provided by the drug manufacturer and other resources. This platform is 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.

Renal Cell Carcinoma (RCC)

- Renal cell carcinoma is the most common type of kidney cancer
- 80% to 85% of all kidney cancers are attributed to RCC

RCC is not one disease…

It is made up of no. of different types of cancers with different histology, different clinical courses and caused by different gene.



Type	Clear cell	Papillary type 1	Papillary type 2	Chromophobe	Oncocytoma
Incidence (%)	*75%*	*5%*	*10%*	*5%*	*5%*
Associated mutations	*VHL*	*c-Met*	*FH*	*BHD*	*BHD*

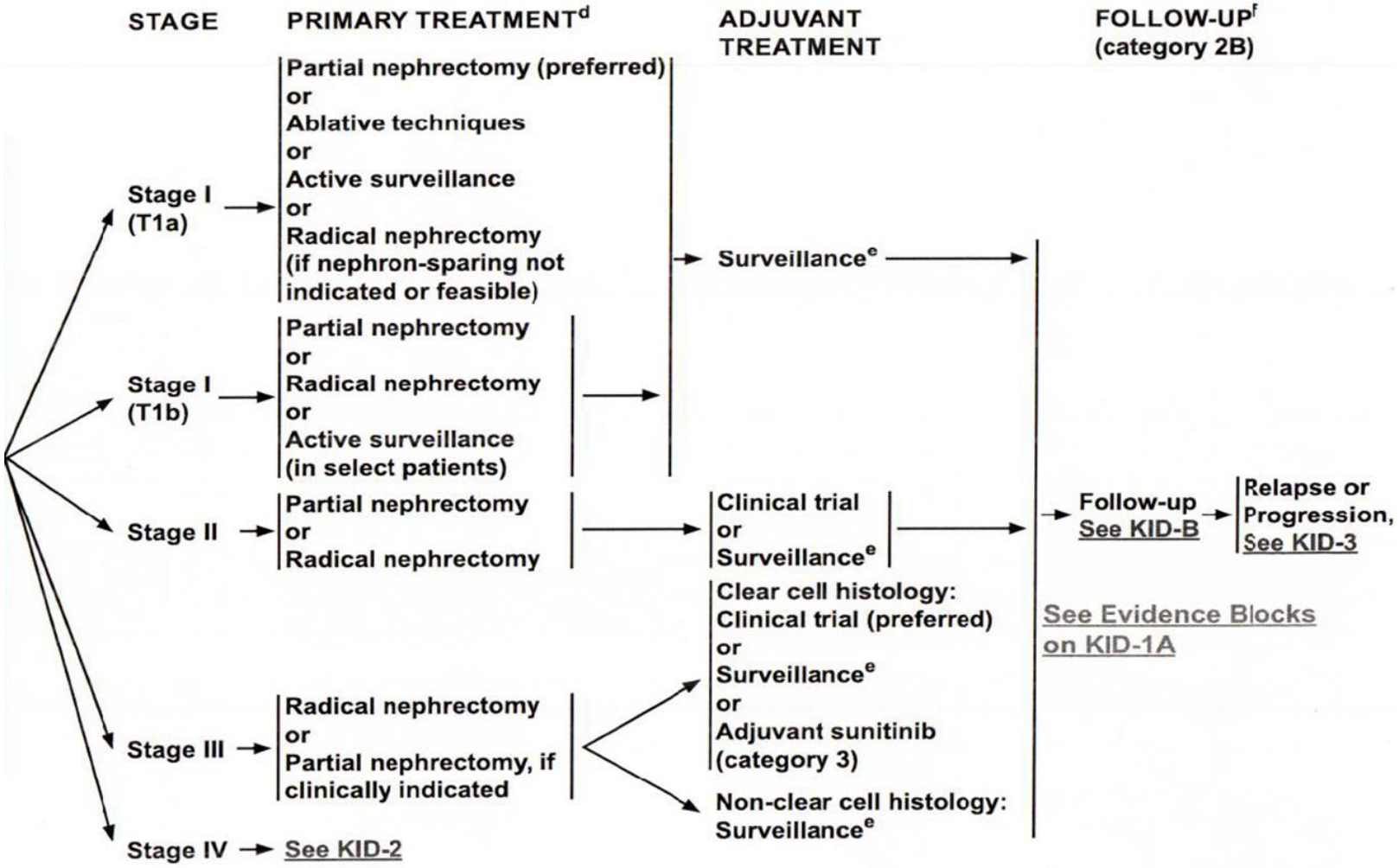
A sarcomatoid variant represents1% to 6% of renal cell carcinoma and these tumors are associated with a significantly poorer prognosis.

BHD=Birt-Hogg-Dubé; FH=fumarate hydratase; VHL=von Hippel-Lindau.

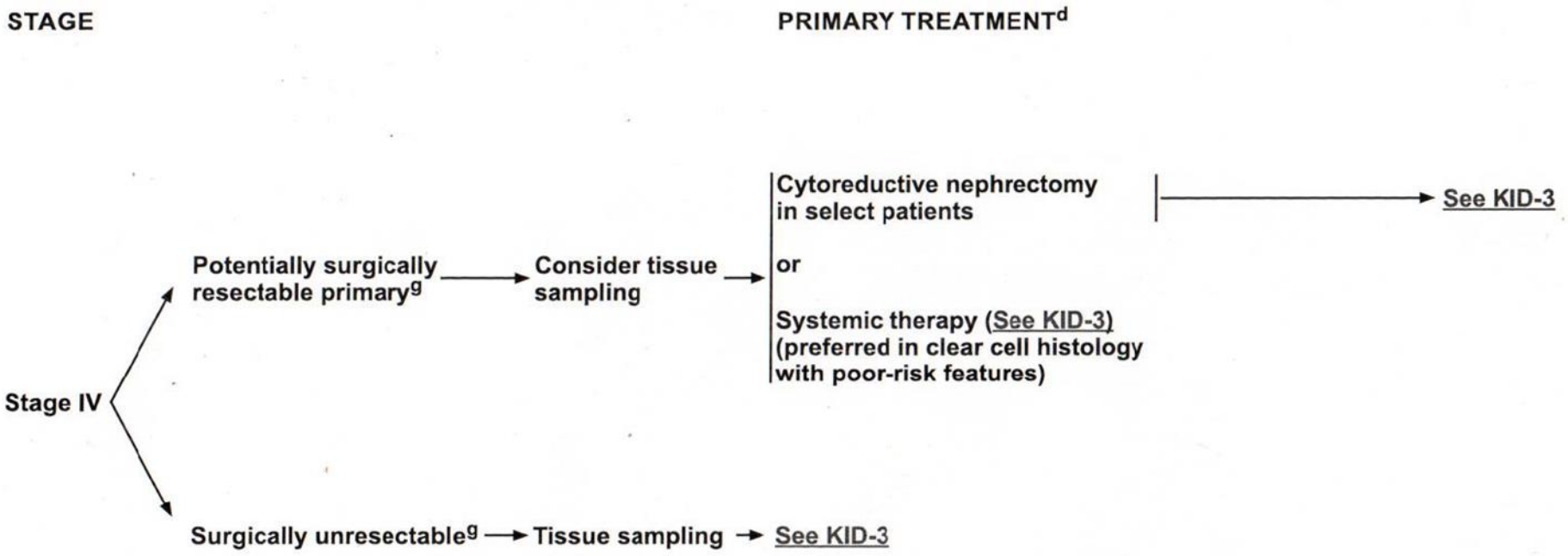
Renal Cell Carcinoma

- 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



Treatment Options



Oral Therapy

- Tyrosine Kinase Inhibitors

Clear Cell Histology

National Comprehensive Cancer Network®

NCCN Guidelines Version 2.2020
Kidney Cancer

NCCN Guidelines Index
Table of Contents
Discussion

PRINCIPLES OF SYSTEMIC THERAPY FOR RELAPSE OR STAGE IV DISEASE

FIRST-LINE THERAPY FOR CLEAR CELL HISTOLOGY			
Risk	Preferred regimens	Other recommended regimens	Useful under certain circumstances
Favorable[a]	• Axitinib + pembrolizumab • Pazopanib • Sunitinib	• Ipilimumab + nivolumab • Cabozantinib (category 2B) • Axitinib + avelumab	• Active surveillance[b] • Axitinib (category 2B) • High-dose IL-2[c]
Poor/ intermediate[a]	• Ipilimumab + nivolumab (category 1) • Axitinib + pembrolizumab (category 1) • Cabozantinib	• Pazopanib • Sunitinib • Axitinib + avelumab	• Axitinib (category 2B) • High-dose IL-2[c] • Temsirolimus[d]

SUBSEQUENT THERAPY FOR CLEAR CELL HISTOLOGY		
Preferred regimens	Other recommended regimens	Useful under certain circumstances
• Cabozantinib (category 1) • Nivolumab (category 1) • Ipilimumab + nivolumab	• Axitinib (category 1) • Lenvatinib + everolimus (category 1) • Axitinib + pembrolizumab • Everolimus • Pazopanib • Sunitinib • Axitinib + avelumab (category 3)	• Bevacizumab or biosimilar[e] (category 2B) • Sorafenib (category 2B) • High-dose IL-2 for selected patients[c] (category 2B) • Temsirolimus[d] (category 2B)

Clear Cell Histology-1st 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 SUBSTITIUTE 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

National Comprehensive Cancer Network®

NCCN Guidelines Version 2.2020
Kidney Cancer

NCCN Guidelines Index
Table of Contents
Discussion

PRINCIPLES OF SYSTEMIC THERAPY FOR RELAPSE OR STAGE IV DISEASE

SYSTEMIC THERAPY FOR NON-CLEAR CELL HISTOLOGY[f]		
Preferred regimens	Other recommended regimens	Useful under certain circumstances
• Clinical trial • Sunitinib	• Cabozantinib • Everolimus	• Axitinib • Bevacizumab or biosimilar[e] • Erlotinib • Lenvatinib + everolimus • Nivolumab • Pazopanib • Bevacizumab or biosimilar[e] + erlotinib for selected patients with advanced papillary RCC including hereditary leiomyomatosis and renal cell cancer (HLRCC) • Bevacizumab or biosimilar[e] + everolimus • Temsirolimus[d] (category 1 for poor-prognosis risk group; category 2A for other risk groups)

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

- https://www.healthline.com/health/rcc/types-renal-cell-carcinoma
- Key statistics about kidney cancer. https://www.cancer.org/cancer/kidney-cancer/about/key-statistics.html
- Micromedex. www.micromedexsolutions.com

Questions?

Gallbladder and Bile Duct Cancer Review

Tara Magallon,

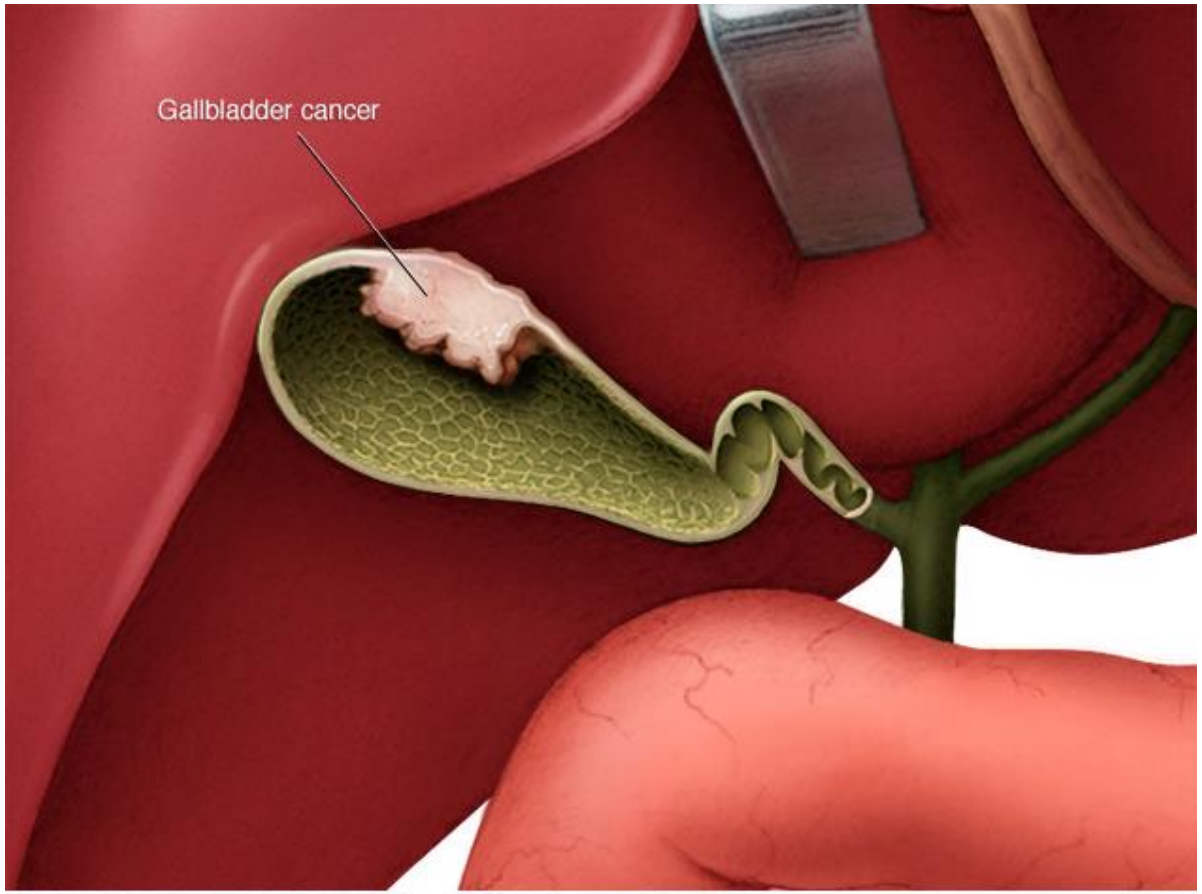
PharmD Candidate 2021

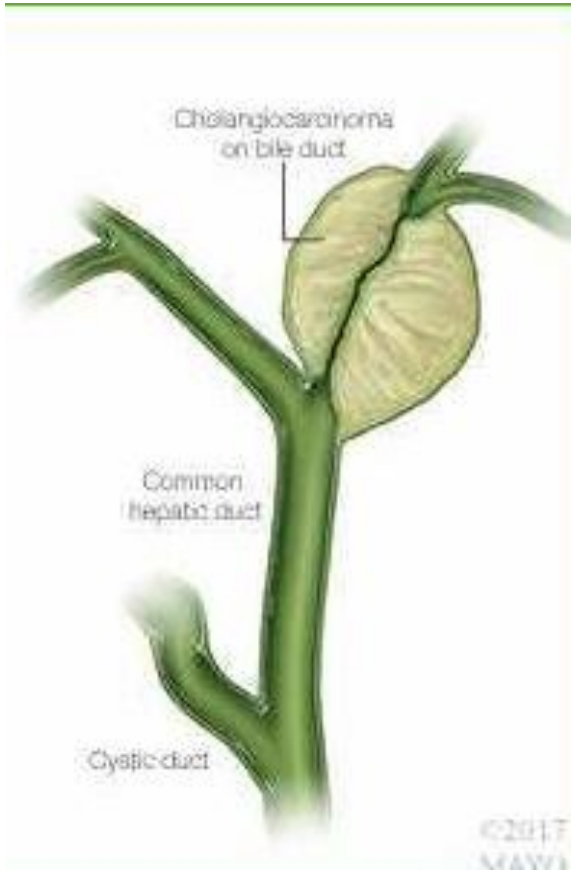
University of North Texas System College of Pharmacy

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.

Gallbladder and Bile Duct Cancer



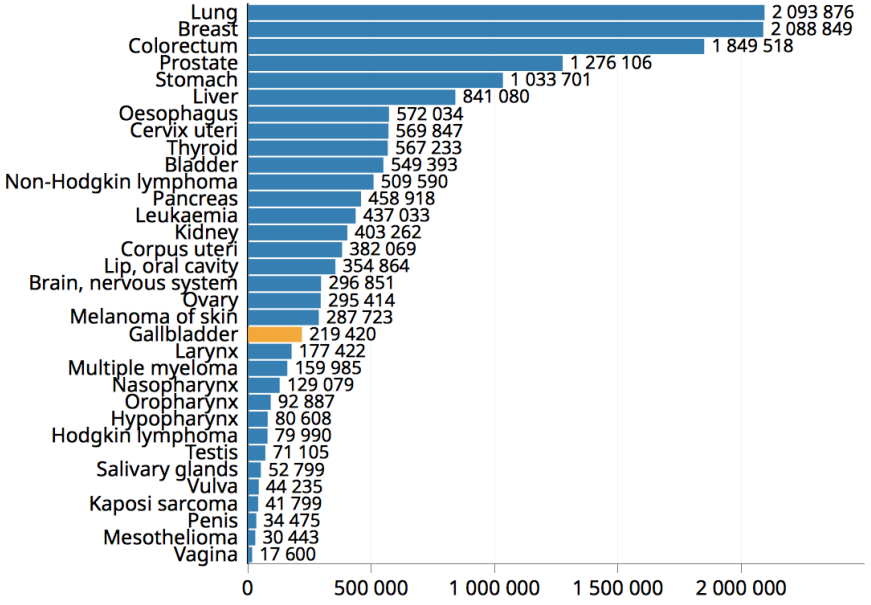


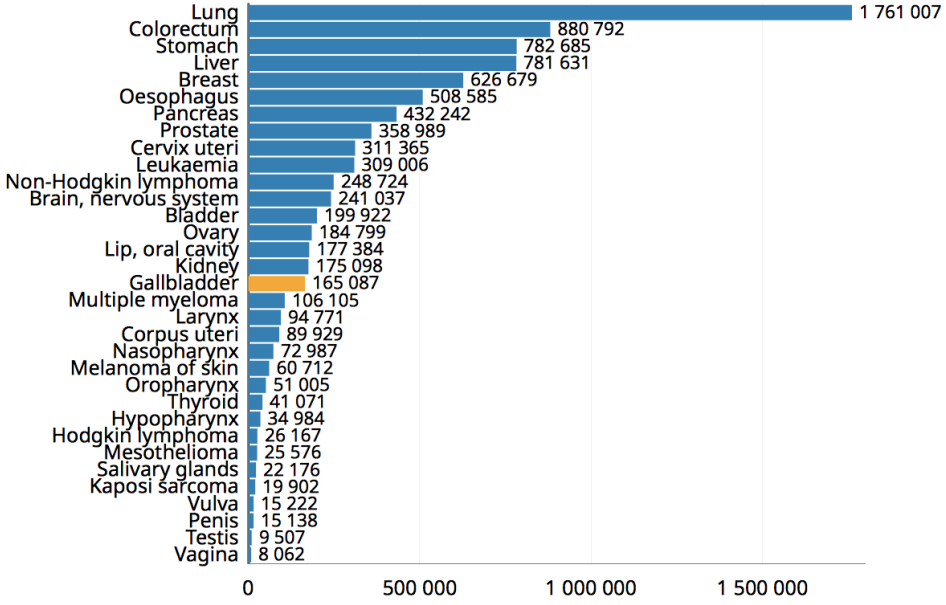
Mayo Clinic. Diseases and Conditions: Gallbladder Cancer. Available at https://www.mayoclinic.org/diseases-conditions/gallbladder-cancer/symptoms-causes/syc-20353370.
Mayo Clinic. Advancing the Science: Chemo first for better outcomes in bile duct cancer. says new research. Available at https://advancingthescience.mayo.edu/2019/10/04/chemo-first-for-better-outcomes-in-bile-duct-cancer-says-new-research/.

Epidemiology

Gallbladder

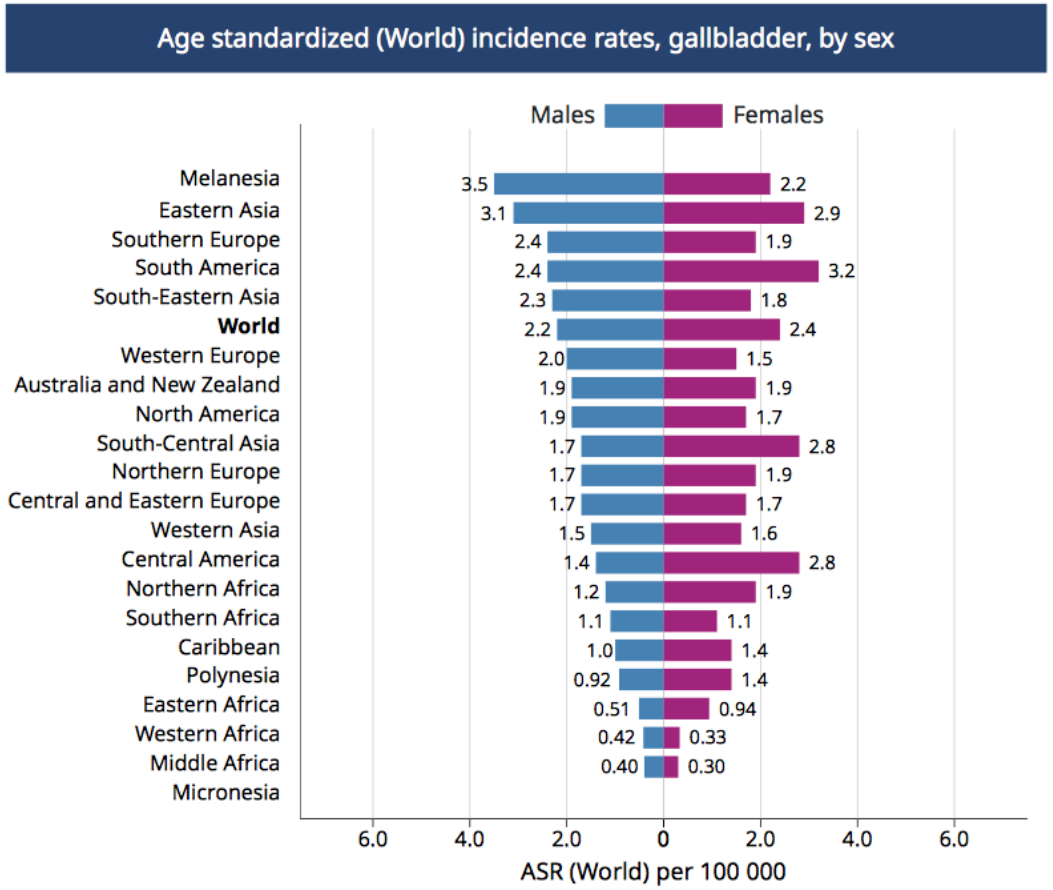
Source: Globocan 2018

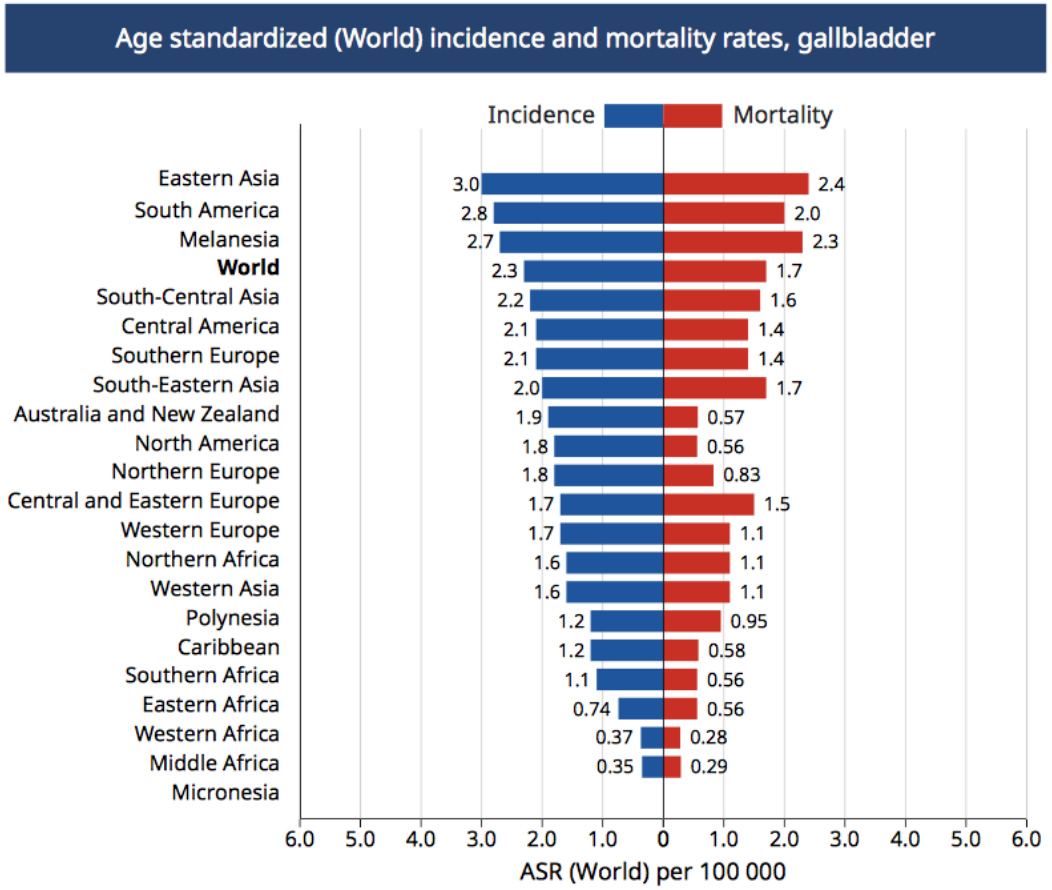




International Agency for Research on Cancer. The Global Cancer Observatory. Available at https://gco.iarc.fr/today/data/factsheets/cancers/12-Gallbladder-fact-sheet.pdf

Epidemiology Cont.





International Agency for Research on Cancer. The Global Cancer Observatory. Available at https://gco.iarc.fr/today/data/factsheets/cancers/12-Gallbladder-fact-sheet.pdf

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

Conquer Magazine. February is Gallbladder and Bile Duct Cancer Awareness Month. Available at https://conquer-magazine.com/web-exclusives/891-february-is-gallbladder-and-bile-duct-cancer-awareness-month.

Risk Factors for Gallbladder and Bile Duct Cancer

Obesity

Older Age

Family History

Inflammation of the bile ducts

American Cancer Society. Gallbladder Cancer Causes, Risk Factors, and Prevention. Available at https://www.cancer.org/cancer/gallbladder-cancer/causes-risks-prevention/risk-factors.html.

American Cancer Society. Bile Duct Cancer Causes, Risk Factors, and Prevention. Available at https://www.cancer.org/cancer/bile-duct-

Questions?

Tara Magallon,

PharmD Candidate 2021

University of North Texas System College of Pharmacy

NCODA | SETs

Student Educational Talks

Thank you for attending!

Oral Agents in Lung Cancer

Christine Ibarra,
PharmD, BCPS
Baptist Health
South Florida

Pediatric Cancer Overview

Anthony Cirincione,
PharmD
Memorial Sloan Kettering
Cancer Center

Spring Forum Review

Maren Campbell,
PharmD Candidate '21
University of Minnestota
College of Pharmacy

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