Zoom Controls

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

![Zoom Controls](image)

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

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

![Zoom Controls](image)

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

![Notification](image)

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.
NCODA WEBINAR SERIES

Supporting Patients and Practices Through the COVID-19 Pandemic

Hear From 3 Expert Panelists
Student Educational Talks Agenda

• NCODA PSO Mission Statement & Updates
  • Danielle Armbruster, PharmD Candidate 2021, University of Minnesota

• Biosimilars – An Overview
  • Conor McGladrigan, PharmD, JD, BCSCP, Massachusetts General Hospital

• Melanoma & Skin Cancer Review
  • Manny Alfonso, PharmD Candidate 2021, Nova Southeastern University & National Vice President of Community Service of NCODA PSO

• NCODA PSO National Executive Board Update
  • Jason Darmanin, PharmD Candidate 2021, University of Rhode Island & National President of NCODA PSO
PSO Mission Statement

Our focus is to offer an international community for healthcare students with passion in oncology and pharmaceutical industry.

We provide education, leadership, mentorship and opportunities in research and community outreach.

We promote unique and dynamic experiences for students to collaborate with all oncology stakeholders.
Welcome Established NCODA PSO Chapters

1. South University (SC & 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)
12. Albany College of Pharmacy and Health Sciences (NY)
13. University of Iowa (IA)
14. Lake Erie College of Osteopathic Medicine (FL)
15. Auburn University (AL)
16. University of Missouri-Kansas City (MO)
Welcome “In-Progress” NCODA PSO Chapters

1. Mercer University (GA)
2. Notre Dame University of Maryland (MD)
3. Oregon State University (OR)
4. South Dakota State University (SD)
5. Texas Southern University (TX)
6. The Ohio State University (OH)
7. University of Florida (FL)
8. University of Houston (TX)
9. University of Illinois at Chicago (IL)
10. University of Kansas (KS)
11. University of Maryland Eastern Shore (MD)
12. University of Mississippi (MS)
13. University of New Mexico (NM)
14. University of Tennessee (TN)
15. University of Texas at El Paso (TX)
16. University of Wyoming (WY)
17. Virginia Commonwealth University (VA)
Welcome all Students!
2,220 + Members and 480 + Practices Strong!

Working together, we become stronger.
Stay up to date: Follow our Facebook Page!

https://www.facebook.com/NCODAProfessionalStudentOrganizations/
Biosimilars in Oncology

Conor McGladrigan, PharmD, JD, BCSCP
Outpatient Hematology/Oncology Pharmacist
Massachusetts General Hospital
Objectives

• Characterize differences between small molecule drugs and biologics
• Understand generic and biosimilar drug approval pathways
• Identify practical implications of biosimilar use in oncology
• Patient case
What is a Biosimilar?

• Biologics are large compounds used for treating and preventing disease
  • Vaccines, Blood derivatives, Proteins, Monoclonal Antibodies, etc.
• Biosimilars are generic versions of these large molecule drugs
• Biologics are so complex they cannot be duplicated exactly
Comparing Biologics to Small Molecule Drugs

• Small Molecule Drugs
  • <1kDa (20-100 atoms)
  • Oral or Parenteral Administration
  • Chemical manufacturing process

• Biologics
  • 1000s of kDa
  • Parenteral Administration
  • Recombinant DNA technology manufacturing process
What is a Biosimilar?
How are Drugs Approved?
Small Molecule Drugs

• New Drug Application (NDA)
  • Safety and Efficacy Studies

• Drug Price Competition and Patent Term Restoration Act (Hatch-Waxman)
  • Abbreviated New Drug Application (ANDA)
  • Bioequivalence Studies
How are Drugs Approved?

Biologics

• Biologics License Application (BLA)
  • Safety, Purity, and Potency

• Biologics Price Competition and Innovation Act (BPCIA)
  • Abbreviated Biologics License Application (aBLA)
  • Structural Similarity & No Clinically Meaningful Difference in Safety, Purity, and Efficacy
Biosimilar Required Studies for Approval

• Analytical Studies
  • Structural similarity

• Animal Studies
  • Toxicity assessment

• Clinical Trials
  • Safety, Purity, and Potency for at least one indication
Practical Considerations of Biosimilars in Oncology

- Interchangeability
  - No interchangeable biosimilars

- Insurance Reimbursement
  - Medicare, Medicaid, Private Insurers

- Novel Delivery Mechanisms
  - Neulasta OnPro
  - Rituxan Hycele
  - Herceptin Hylecta

- Naming Conventions
  - -wxyz
Patient Case

- MC is a 57 year-old breast cancer patient starting adjuvant TCHP (Taxotere/Carboplatin/Herceptin/Perjeta) with growth factor support. Her oncologist has insisted the cancer center where she will be treated utilizes biosimilars whenever possible, though the patient is skeptical of this practice. She has read in the news that biosimilars are not the same as the brand name and insurances don’t always pay for them. You are teaching her today about her planned chemotherapy and she wants to know more about the biosimilars that she will receive.
Patient Case

Taxotere (docetaxel)

Herceptin (trastuzumab)

Paraplatin (carboplatin)

Perjeta (pertuzumab)
Patient Case

- Taxotere (docetaxel)- small molecule drug
- Paraplatin (carboplatin)- small molecule drug
- Herceptin (trastuzumab)- biologic
  - Biosimilars include:
    - Kanjini (trastuzumab-anns), Trazimera (trastuzumab-qyyp), Ontruzant (trastuzumab-dttb), Herzuma (trastuzumab-pkrb), Ogivri (trastuzumab-dkst)
  - Brand alternatives: Herceptin Hylecta Subcutaneous Injection
- Perjeta (pertuzumab)- biologic
  - No approved biosimilars
Supportive Medications

- Growth Factors- Filgrastim and Pegfilgrastim
- Neupogen (filgrastim)
  - Biosimilars include:
    - Nivestym (filgrastim-aafi), Zarxio (filgrastim-sndz)
    - Granix (tbo-filgrastim)
- Neulasta (pegfilgrastim)
  - Biosimilars include:
    - Ziextenzo (pegfilgrastim-bmez), Udenyca (pegfilgrastim-cbqv), Fulphila (pegfilgrastim-aafi)
Thank you!

Questions?
Stay up to date:
Follow our Facebook Page!

https://www.facebook.com/NCODAPhysicalStudentOrganizations/
Melanoma & Skin Cancer Review

Manny Alfonso
PharmD Candidate 2021
Nova Southeastern University College of Pharmacy
NCODA PSO National Vice President of Community Service
# Epidemiology

## Melanoma of skin

Source: Globocan 2018

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

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>New Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>2,063,876</td>
</tr>
<tr>
<td>Breast</td>
<td>2,688,849</td>
</tr>
<tr>
<td>Colon / Rectum</td>
<td>1,376,166</td>
</tr>
<tr>
<td>Prostate</td>
<td>1,640,518</td>
</tr>
<tr>
<td>Stomach</td>
<td>841,080</td>
</tr>
<tr>
<td>Liver</td>
<td>1,007,233</td>
</tr>
<tr>
<td>Cervix uteri</td>
<td>1,007,233</td>
</tr>
<tr>
<td>Bladder</td>
<td>572,056</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>566,847</td>
</tr>
<tr>
<td>Thyroid</td>
<td>567,228</td>
</tr>
<tr>
<td>Kidney</td>
<td>549,993</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>560,980</td>
</tr>
<tr>
<td>Pancreas</td>
<td>568,178</td>
</tr>
<tr>
<td>Leukemia</td>
<td>437,032</td>
</tr>
<tr>
<td>Corpus uteri</td>
<td>382,069</td>
</tr>
<tr>
<td>Lip, oral cavity</td>
<td>354,964</td>
</tr>
<tr>
<td>Brain, nervous system</td>
<td>396,351</td>
</tr>
<tr>
<td>Melanoma of skin</td>
<td>287,728</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>219,420</td>
</tr>
<tr>
<td>Larynx</td>
<td>159,985</td>
</tr>
<tr>
<td>Multiple myeloma</td>
<td>129,679</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>122,827</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>92,887</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>80,608</td>
</tr>
<tr>
<td>Hodgkin lymphoma</td>
<td>79,950</td>
</tr>
<tr>
<td>Testis</td>
<td>71,105</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>52,799</td>
</tr>
<tr>
<td>Vulva</td>
<td>40,225</td>
</tr>
<tr>
<td>Kaposi sarcoma</td>
<td>41,759</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>36,448</td>
</tr>
<tr>
<td>Vagina</td>
<td>17,609</td>
</tr>
</tbody>
</table>

### Number of deaths in 2018, both sexes, all ages

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>1,761,007</td>
</tr>
<tr>
<td>Colon / Rectum</td>
<td>883,792</td>
</tr>
<tr>
<td>Prostate</td>
<td>782,685</td>
</tr>
<tr>
<td>Stomach</td>
<td>761,631</td>
</tr>
<tr>
<td>Liver</td>
<td>548,242</td>
</tr>
<tr>
<td>Cervix uteri</td>
<td>535,369</td>
</tr>
<tr>
<td>Bladder</td>
<td>311,442</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>288,734</td>
</tr>
<tr>
<td>Thyroid</td>
<td>251,037</td>
</tr>
<tr>
<td>Kidney</td>
<td>159,922</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>184,799</td>
</tr>
<tr>
<td>Pancreas</td>
<td>177,384</td>
</tr>
<tr>
<td>Leukemia</td>
<td>117,399</td>
</tr>
<tr>
<td>Corpus uteri</td>
<td>160,687</td>
</tr>
<tr>
<td>Lip, oral cavity</td>
<td>100,178</td>
</tr>
<tr>
<td>Brain, nervous system</td>
<td>94,773</td>
</tr>
<tr>
<td>Melanoma of skin</td>
<td>72,987</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>72,987</td>
</tr>
<tr>
<td>Larynx</td>
<td>70,712</td>
</tr>
<tr>
<td>Multiple myeloma</td>
<td>70,712</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>52,005</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>41,071</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>36,984</td>
</tr>
<tr>
<td>Hodgkin lymphoma</td>
<td>26,167</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>25,276</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>22,176</td>
</tr>
<tr>
<td>Kaposi sarcoma</td>
<td>19,502</td>
</tr>
<tr>
<td>Vulva</td>
<td>15,222</td>
</tr>
<tr>
<td>Testis</td>
<td>15,198</td>
</tr>
<tr>
<td>Vagina</td>
<td>9,407</td>
</tr>
<tr>
<td></td>
<td>8,982</td>
</tr>
</tbody>
</table>

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Diagnosis
**ABCDE’s**

<table>
<thead>
<tr>
<th><strong>NORMAL</strong></th>
<th><strong>CANCEROUS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://example.com/image1.png" alt="Image" /></td>
<td><img src="https://example.com/image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>
| **“A” is for Asymmetry**  
  • If you draw a line through the middle of the mole, the halves of a melanoma won’t match in size. |
| ![Image](https://example.com/image3.png)  | ![Image](https://example.com/image4.png) |
| **“B” is for Border**  
  • The edges of an early melanoma tend to be uneven, crusty or notched. |
| ![Image](https://example.com/image5.png)  | ![Image](https://example.com/image6.png) |
| **“C” is for Color**  
  • Healthy moles are uniform in color. A variety of colors, especially white and/or blue, is bad. |
| ![Image](https://example.com/image7.png)  | ![Image](https://example.com/image8.png) |
| **“D” is for Diameter**  
  • Melanomas are usually larger in diameter than a pencil eraser, although they can be smaller. |
| ![Image](https://example.com/image9.png)  | ![Image](https://example.com/image10.png) |
| **“E” is for Evolving**  
  • When a mole changes in size, shape or color, or begins to bleed or scab, this points to danger. |
What is the NEB?

• NEB: National Executive Board
• 5 total positions
  • National President
  • National President-Elect
  • National Vice President of Communications
  • National Vice President of Community Service
  • National Vice President of International Meetings
What does the NEB do?

• Responsibilities
  • Face of the NCODA Professional Student Organization
  • Reach out potential new schools
  • Meet every other week to discuss growing opportunities
  • Develop content for students
    • Advertisements
    • Social Media posts
    • PSO Monthly Agenda
    • SETs Topics
    • Mission & Vision Statement for NCODA PSO
  • Available resource to all students

ncoda.org
Benefits to Being Elected

• Expanded opportunities for international presentations
  • OPTA & SETs presentations
  • Leading NCODA Webinars
  • Presenting on NCODA National Monthly Webinar
  • Poster development and presentation

• Expanded opportunities for professional and personal development
• One-on-one mentoring with NCODA staff & members
• Complimentary NCODA National Meetings
• Preferred candidate for NCODA APPE
• Preferred candidate for NCODA Fellowship
How to get on the NEB track

• Register as a national member of NCODA
• Participate and share ideas during Monthly PSO calls
• Attend NCODA SETs and National Monthly Webinars
• Reach out to potential new schools
• Run for a local chapter E-Board position
• Reach out to current NEB members

ncoda.org
Additional Questions?

National President-Elect
Madison Motzner
Washington State University

National President
Jason Darmanin
University of Rhode Island

National Vice President of Communications
Tara Magallon
University of North Texas

National Vice President of Community Service
Manny Alfonso
Nova Southeastern University

National Vice President International Meetings
Maren Campbell
University of Minnesota

Contact your NEB today!
Thank you for attending!

Join us next month on June 24th at 8 PM EST!