



Pharmacy Grand Rounds

200 First Street SW
Rochester, Minnesota 55905
<https://ce.mayo.edu/pharmacy-grandrounds-2024>

Bevacizumab for Brain Radiation Tissue Necrosis

Session Date: 09/17/2024

Session Time: 11:00 – 11:45 AM (CST)

Target Audience

This continuing education (CE) session was planned to meet the needs of professional staff who deal with the selection and monitoring of medication(s) as part of their patient care duties, including pharmacists, RNs, APRNs, PAs, MDs.

Activity Overview

Radiation necrosis of normal central nervous system (CNS) tissue represents one of the major serious complications of brain radiation. It typically develops after 6 months to 3 years of radiation therapy. Volume of irradiated area and total radiation dose are the most predictable risk factors of radiation necrosis. There are many theories on radiation brain necrosis development, an exact mechanism is unknown, however, a vascular mechanism is widely accepted. Increased capillary permeability causing extracellular edema is thought to be the cause of radiation necrosis. Endothelial dysfunction, tissue hypoxia, and subsequent necrosis maintain this process. Early vascular endothelial growth factor (VEGF) blocking is thought to be a potential strategy to slow progression of tissue necrosis by decreasing vascular permeability.

Bevacizumab is a recombinant human monoclonal antibody that binds VEGF preventing it from binding to its receptors on the endothelial cells. This plays a major role in angiogenesis and regulating vascular permeability making it an optimal drug to treat radiation brain necrosis. As a result of its vascular mechanism of action, dose-dependent adverse events of bevacizumab can arise including thrombosis, gastrointestinal perforation, impaired wound healing, and hypertension.

Learning Objectives

At the conclusion of this knowledge-based CE session, participants should be able to:

- 1) Define radiation oncology and radiation tissue necrosis
- 2) Describe the role of bevacizumab in radiation tissue necrosis
- 3) Discuss current literature assessing the use of bevacizumab for tissue necrosis

Faculty Information

Milisia Labib, PharmD
PGY2 Oncology Pharmacy Resident
Mayo Clinic Hospital - Rochester, MN

Milisia Labib received a Doctor of Pharmacy degree from Ohio State University College of Pharmacy. She completed her PGY-1 at Cleveland Clinic Akron General and is a current PGY2 oncology pharmacy resident at Mayo Clinic Hospital – Rochester. Her practice interests include hematology/oncology, CNS tumors, and solid tumors.



Approved Provider Statement



JOINT ACCREDITATION™
INTERPROFESSIONAL CONTINUING EDUCATION

In support of improving patient care, this activity is planned and implemented by Mayo Clinic College of Medicine and Science. Mayo Clinic College of Medicine and Science is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

Credit Statements

AMA

Mayo Clinic College of Medicine and Science designates this live activity for a maximum of 0.75 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

ACPE



ACPE Universal Activity Number (UAN): JA0000238-0000-24-004-L01-P

Mayo Clinic College of Medicine and Science designates this educational activity for a maximum of 0.75 ACPE Knowledge-based contact hours. Participants should claim only the credit commensurate with the extent of their participation in the activity

ANCC

Mayo Clinic College of Medicine and Science designates this activity for a maximum of 0.75 ANCC contact hours. Nurses should claim only the credit commensurate with the extent of their participation in the activity.

AAPA



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Educational Format and CE Requirements

This CE session is available as a live presentation, including live webcast.

Participants must complete the following to record attendance and obtain CE credit:

1. Attend the entire session.
2. Text the session code to 507-200-3010 within 48 hours of the live presentation to record attendance.
 - a. This number is only used for receiving text messages related to tracking attendance
 - b. Employees are encouraged to create a contact in their mobile phone, as the same number is used to record attendance for every session
3. Complete the online evaluation for the respective session within 2 weeks of live presentation.

Pharmacist CE credit is electronically transferred to the National Association of Boards of Pharmacy CPE Monitor. To track CE, please go to [NABP CPE Monitor](#).

Non-pharmacist attendees can print out a record of attendance at ce.mayo.edu after completing the evaluation and claiming credit.

[Live Webcast](#) - access during presentation times

Disclosure Summary

As a provider accredited by Joint Accreditation for Interprofessional Continuing Education, Mayo Clinic College of Medicine and Science must ensure balance, independence, objectivity and scientific rigor in its educational activities. All who are in a position to control the content are required to disclose all financial relationships with any ineligible company. Faculty will also identify any off-label and/or investigational use of pharmaceuticals or instruments discussed in their content for FDA compliance.

Listed below are individuals with control of the content of this program:

The faculty report the following relationships:

- Milisia Labib, PharmD
 - Declares no financial relationship(s) pertinent to this session
 - Declares off-label use of medications will be discussed during this presentation:

Bevacizumab (Mvasi) Amegen, Bevacizumab (Alymsys) mAbxience, Bevacizumab (Avastin) Genentech, Bevacizumab (Vegzelma) Abbvie, Bevacizumab (Zirabev) Pfizer

Course Director and Planning Committee Members declare no relevant financial relationship(s) pertinent to this session. Members include:

- Jennifer Elmer, DNP, APRN, CCNS
- Andrew Herber, PA-C
- Sarah Jane Kotval, BSW, RSS Coordinator
- Scott Nei, PharmD, BCPS, BCCCP, FCCM, FMSHP
- Wayne Nicholson, MD, PharmD, BCPS
- Sara Thompson, PharmD, MEd, BCACP

All relevant financial relationships have been mitigated.

For additional disclosure information regarding Mayo Clinic School of Continuous Professional Development accreditation review committee members visit ce.mayo.edu, About Us, Disclosures - or -

<https://ce.mayo.edu/content/disclosures>

System and Technical Requirements

For participants viewing the webcast, sessions are delivered via Mayo Clinic intranet web browser and Adobe® PDF. For participants viewing outside the Mayo Clinic firewall, a VPN connection is required for remote access. Recommended web browser includes Google Chrome. This session is planned and coordinated by **the Department of Pharmacy, Mayo Clinic.**