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# THE ONCOLOGY BULLETIN

Student Oncological Advocates in Pharmacy

## Meet Our '23-24 Exec Board!



Our amazing SOAP members continue to exhibit passion, dedication, and fellowship that connects our organization with not only the school but the community. As we continue to expand and provide opportunities to students interested in oncology pharmacy, our exec positions become highly valued and competitive. Please welcome our new executive board for the 2023-2024 school year! (pictured below)

President: **Trey Fulford**

President-Elect: **Molly Studebaker**

Director, Education: **Alisa Siebenmorgan**

Director, Professional Programming: **Anna Darke**

Director, Finances & Fundraising: **Mackensi Phillips**

Secretary: **Emily Slocumb**

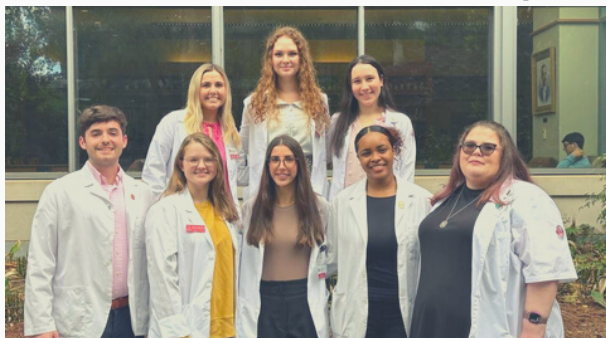
Fundraising Chair: **Sarah Alleva**

Newsletter Editor: **Alyssa Sangalang**

Journal Club Coordinator: **Jess Osborn\***

Augusta Liaison: **Alex Shehan\***

*\*Not pictured*



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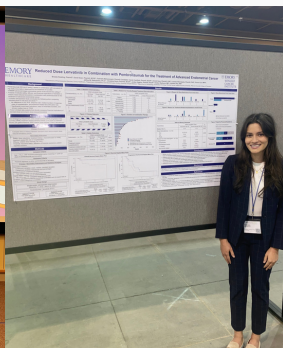
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## Semester Recap

BY LAUREN TWITTY

I am always amazed by the dedication of our members, as on top of their studies, they devote endless hours towards organizing and preparing several events we host throughout the year. This semester was especially packed with educational and awareness opportunities, including guest speakers, journal clubs, fundraising events, and volunteering. We accomplished so much and hope to continue spreading awareness surrounding oncology and pharmacy.

This semester SOAP partnered with our national organization, NCODA, to form Project OPSE (Oncology, Prevention, Screening, and Equity) as well as Project SAL (Save A Life). Both committees have the mission to expand our impact further into the community. In February, OPSE and BSPO (Black Student Pharmacist Organization) teamed up for Black History Month to spread information on breast cancer awareness and self-examinations, with a focus on the disproportionate impact of breast cancer on Black women. This was a great event and was held at the Browns Chapel Baptist Church. Our Miracle Chair, Molly Studebaker, coordinated multiple fundraising events, including a bake sale, candy grams, and buttons, which all were very successful. The annual Pillympics Competition was also a huge hit (and so much fun), gaining the most participation in history! This year we hosted 12 teams, each competing in pharmacy-themed events. We would like to give a huge thank you to Alisa Siebenmorgan (VP of Membership and Education) for organizing, decorating, and co-hosting this event. In April, Trey Fulford (President-Elect) helped us partner with Be The Match® to attain bone marrow drive donations. We collected almost 90 swabs, which will be used to match donors with patients that need bone marrow or umbilical cord blood transplantation.

Finally, our very own President, Gabrielle McCammack, presented on treatment dosing for advanced endometrial cancer at the annual National Hematology/Oncology Pharmacy Association (HOPA) conference! We are super proud of Gabrielle and all that she accomplished as president this past year.



## Events:

- 2/10: UGA Miracle Bake Sale
- 2/28: OSPE/BSPO Raising Breast Cancer Awareness Event
- 3/23: Annual Pillympics
- 4/10-4/13: Be the Match Bone Marrow Drive



# MULTICANCER EARLY DETECTION BLOOD TESTS: A BREAKTHROUGH IN CANCER SCREENING

BY JAMIE LE  
PHARM.D, CLASS OF 2026

Multicancer early detection (MCED) blood tests have emerged as a promising new method for detecting cancer at an early stage in people with no symptoms. Designed to identify several types of cancer through a simple blood draw, these tests have significant implications for reducing cancer-related deaths by enhancing early detection sensitivity.<sup>1</sup> In this article, we will explore the purpose of multi-cancer early-detection blood tests, how they work, pricing, and their potential impact on the future of cancer screening as a complementary test.

## Discovery and Development

The development of multicancer early detection blood tests is entering the forefront of cancer research with the emergence of more large-scale clinical trials designed to confirm its efficacy. Early detection in cancer diagnosis is life-saving because it increases the chances of successful treatment and improved outcomes. When cancer is detected early, it is often more localized and easier to treat with more treatment options for patients, including surgery resection. Compared to detection at later, more aggressive stages, this opens the door to higher survival rates, reduced morbidity and healthcare costs, and a better overall prognosis.

In a press release from the European Society for Medical Oncology (ESMO), researchers presented data that the average MCED test demonstrated a high detection rate for individuals with cancer and an outstanding specificity rate for those who did not.<sup>1</sup> The process of confirming cancer in single-cancer screening tests is often complicated and invasive, with imperfect imaging tests and biopsies that may lead to unnecessary confirmation testing.<sup>2</sup> Standard multicancer tests present an even greater challenge, as the patient may need to undergo whole-body scanning or consider the test to be a false positive, leading to further testing and potential harm.<sup>2</sup> The development of MCED tests aims to address these challenges by providing a more efficient and accurate way to detect cancer signals, reducing the need for invasive testing.

## Purpose/How it Works

Through utilizing tumor biomarker technology such as cell-free DNA (cfDNA) sequencing combined with machine learning algorithms, MCED blood tests can detect and predict cancer signal origins (CSO) precisely at earlier stages by identifying distinguished methylation signals released by cancer cells in DNA, RNA, or proteins circulating in the blood.<sup>3</sup> Based on a Cell-free Genome Atlas (CCGA) case-control study done across 3 sub-studies by Klein et. al, the tests can detect over 50 types of cancer such as early-stage pancreatic and stomach cancers with a specificity rate of over 99%, a low false positive rate of 0.5%, and a high positive predictive value (PPV) of confirmed positives.<sup>3</sup> Additionally, earlier versions of the test projected an absolute decline of approximately 26% of all cancer deaths.<sup>3</sup> Combined with current screening methods, earlier detection has positive implications on outcomes and reduced mortality.

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## Value-Based Pricing

Currently, various MCED tests are in development and clinical trials. However, none have been approved by the FDA or recommended by medical societies. GRAIL, a biotech company, launched the first commercially available MCED test in the US called the Galleri test.<sup>4</sup> Some other companies, including Exact Sciences, Freenome, and Singlera Genomics, have also developed tests that use different cancer detection methods in addition to circulating tumor DNA.<sup>4</sup>

Deemed at market value, GRAIL's Galleri test is priced at \$949. To make it more accessible, the company offers a payment plan for people who cannot afford to pay out of pocket.<sup>4</sup> However, MCED tests are currently not covered by insurance, despite their growing presence in the healthcare market. Fortunately, Congress has introduced legislation to provide Medicare coverage for MCED tests once they receive FDA approval.<sup>4</sup> This is an encouraging development that could significantly improve accessibility to this vital screening measure in several ways. As Medicare already covers certain cancer screenings for high-risk individuals, incorporating MCED testing for other types of cancers into routine check-ups and visits could be a natural extension of existing coverage, providing a more comprehensive and cost-effective approach to cancer screening and detection for Medicare beneficiaries.

According to a study by Tafazzoli et al. published in *Pharmacoeconomics*, a 53% reduction in stage IV cancer diagnoses with the addition of MCED resulted in decreased cancer treatment costs by \$54215. The projected survival of individuals diagnosed with cancer and the number of cancers detected earlier by MCED had the greatest impact on outcomes. Based on a willingness-to-pay threshold of \$100,000 per quality-adjusted life-year gained, the potential value-based price of an MCED test was estimated at \$11965. Compared to the commercial price of GRAIL's Galleri test, these findings suggest that MCED testing can be cost-effective and offer significant benefits compared to standard screening and care for cancer detection.

## Projected Success and Impact

In conclusion, the projected success and potential impact of multi-cancer early detection tests are highly promising. The 5-year longitudinal follow-up of the CCGA study will assess the long-term effectiveness of MCED in detecting cancer at an early stage and its correlation with patient's health over time.<sup>3</sup> At its most preliminary basis, the MCED test opens boundaries and offers hope for the early detection of previously unscreenable cancers such as pancreatic, stomach, and small bowel cancers that are usually detected at a much later stage.<sup>3</sup> This breakthrough can potentially enhance accessibility to screening facilities for disproportionately underserved populations and minimize overdiagnosis, reducing the cost of unnecessary, extraneous testing to rule out false positives. Incorporating MCED testing into routine medical check-ups and visits has the potential to improve cancer detection rates, decrease the cost of care, and lower cancer mortality rates by reaching a larger population. However, these tests still require to be refined to distinguish tumor DNA from other DNA in the blood and undergo comparative trials to determine their true clinical efficacy on morbidity and mortality.<sup>1</sup> With continued research and development, multi-cancer early detection tests have the potential to revolutionize cancer screening and early diagnosis and replace current screening methods, making cancer detection more inclusive and accessible.

*Resources on page 5...*

## Resources

1. ESMO. (2022). A New Era of Early Cancer Detection With Blood Test May Change Cancer Screening Paradigms [ESMO Congress 2022 Press Release]. *ESMO*. <https://www.esmo.org/newsroom/press-releases/a-new-era-of-early-cancer-detection-with-blood-test-may-change-cancer-screening-paradigms>
2. Etzioni, R., Gulati, R., & Weiss, N. S. (2022). Multicancer Early Detection: Learning From the Past to Meet the Future. *Journal of the National Cancer Institute*, 114(3), 349-352. <https://doi.org/10.1093/jnci/djab168> (5)
3. Klein, E.A., Richards, D., Cohn, A., et al. (2021). Clinical validation of a targeted methylation-based multi-cancer early detection test using an independent validation set. *Annals of Oncology*, 32(9), 1167-1177. <https://doi.org/10.1016/j.annonc.2021.05.806> (1)
4. Nadauld, L., & Goldman, D. (2022). Considerations in the implementation of multicancer early detection tests. *Future Oncology*, 18(14), 1883-1886. <https://doi.org/10.2177/fon-2022-0223>
5. Tafazzoli, A., Ramsey, S. D., Shaul, A., et al. (2022). The Potential Value-Based Price of a Multi-Cancer Early Detection Genomic Blood Test to Complement Current Single Cancer Screening in the USA. *PharmacoEconomics*, 40, 1107-1117. <https://doi.org/10.1007/s40273-022-01181-3>

physical therapy. I went to physical therapy for 2 weeks, but it wasn't helping, and I was still getting worse. At this point I was roughly 1 week out before being diagnosed and I also developed blurry vision. After talking to my PCP, I was scheduled for an MRI of my thoracic and lumbar spine and my PCP sent me immediately to my optometrist. My PCP also ran blood tests which showed abnormally high protein levels. I visited my optometrist who sent me to an ophthalmologist the same day, the ophthalmologist then sent me to a retina specialist the next day. It was then decided by the retina specialist that my blurry vision in both eyes was concerning and there seemed to be an underlying condition causing this. The diagnosis was multiple myeloma by the ER physicians on Thursday, January 27, 2022.



## CANCER SURVIVOR SPOTLIGHT

BY MARRIE BENNETT  
PHARM.D, CLASS OF 2024

**Introduction:** In this Cancer Survivor Spotlight I am interviewing Tracy Barnett who was diagnosed with multiple myeloma in January of 2022. With this interview I hope readers will be able to gain an understanding of the patient's experience with cancer. In this interview she will discuss her symptoms leading to her diagnosis as well as side effects of her therapy regimens.

### How, when, and what were you diagnosed with?

Before being diagnosed I had been having back pain for about 3 months. I initially thought it was caused by a fall in October 2021. I assumed it was a pulled muscle and time would help it heal, but it just continued to get worse. I finally went to my PCP (primary care provider) and then I was sent for an X-ray. It showed a fracture, but it was mostly healed so my doctor didn't pursue it and decided to send me to

### Where did you get treated?

Emory Winship Cancer Institute

### What treatments did you go through and what information did you get from treatment about what to expect? What were the side effects?

My treatments began immediately, I had 2 rounds of plasmapheresis to remove the excess protein in my blood. My chemotherapy began on January 28, and I had my first dose of Velcade® (bortezomib)....

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These treatments took place at Northeast Georgia Hospital, but I was then transferred to Emory. My schedule consisted of 4 rounds of chemo, 21 days each, which consisted of Velcade® (bortezomib), daratumumab, dexamethasone, and Revlimid® (lenalidomide). The chemo round was 14 days on and 7 days off. My oncology physician's assistant (P.A.) talked about possible side effects with me, and I was also given several pages of information on what to expect. The side effects I experienced with this chemo were nausea, constipation, and fatigue and they improved throughout treatment. My doctor decided I would get an autologous stem cell transplant in May, so after my final round of chemo I began preparing for my stem cell transplant. The two drugs I took during this process were Neupogen® (filgrastim) and Melphalan. The filgrastim side effect was bone pain and during the stem cell harvest I experienced rapid heart rate. The melphalan side effects I experienced were nausea, fatigue, "chemo brain," and alopecia. In general, the stem cell transplant caused major fatigue and continued for months afterward.

### **How did this affect your life overall?**

The primary barrier to living my life normally was being immunocompromised during treatment. It was especially concerning with COVID being so prevalent. The next biggest issue was fatigue. My strength slowly came back after getting the stem cell transplant, but it took a while and I had to remind myself to rest.

### **What other medications (supportive care) did you receive?**

I have to take Zometa® (zoledronic acid) for 2 years until August of 2024. I took Bactrim® (sulfamethoxazole and trimethoprim) during chemo and for the first 5 months after my stem cell transplant to help prevent infection. I continue to take valacyclovir and will for an indefinite time period. Additionally, during chemo I took a stool softener and anti-nausea medication during the stem cell transplant and for 2 weeks after my stem cell treatment.

### **What interactions did you have with a pharmacist?**

The primary interaction I had with a pharmacist was at the CVS clinic. Every time I refill lenalidomide the pharmacist counsels me on the drug and informs me of the side effects.

### **What treatment do you still receive and what impact or potential barriers does this add to your life?**

I take lenalidomide 10mg as my maintenance drug and will take it for 10 years total. I also take an 81mg aspirin daily to help prevent blood clots (which can be a side effect of lenalidomide). I take valacyclovir once a day as well and my understanding is that I will be on it for an indefinite time period. I have experienced few side effects from my current maintenance regimen and don't have many barriers to living a regular life now.

### **Overall, how has this diagnosis impacted your life?**

I see the doctor a lot more than I ever wanted to. Initially with my diagnosis I was afraid of what would happen, but now I just feel grateful for how treatable my disease is. I am grateful for my family and friends who have supported me throughout this, and I hope we will find a cure for this soon. I am thankful that I have been able to resume a normal life mostly. Although, I still do not eat at buffets or feel comfortable eating in crowded restaurants. I have tried to maintain a healthy lifestyle too. I eat a primarily plant-based diet, avoiding processed foods and added sugars and continue to exercise daily.

### **Is there anything you would want your providers/pharmacists to know or do differently or advise to new pharmacists taking care of patients with cancer?**

I think my doctors and pharmacists are doing an excellent job taking care of me and I wouldn't change anything.



# PATIENTS WITH MEDICAID OR NO INSURANCE HAVE WORSE SURVIVAL OUTCOMES IN CLINICAL TRIALS

BY ALEX SHEHAN  
PHARM.D, CLASS OF 2025

Cancer is a complex and multifactorial disease state which devastates not only the patient diagnosed with the malignancy, but also their entire family and community. Despite advances in technology and innovative medical therapies to treat different cancers, cancer remains a leading cause of death worldwide. According to the International Agency for Research on Cancer, sponsored by the World Health Organization, there were more than 18 million new cases of cancer, excluding non-melanoma skin cancers, and nearly 9.9 million cancer deaths reported in 2020.<sup>1</sup> Clinical trials are an essential part in ascertaining the efficacy and safety of new cancer treatments in a population who desperately needs them. However, some patients may not benefit as much from experimental therapy in clinical trials when compared to other population groups undergoing the same treatment, even if the treatment itself showed positive results overall. In fact, according to two recently published studies, patients who are underinsured, either with no insurance or Medicaid, showed no benefit from novel cancer treatments and had a worse overall survival rate than patients with private insurance.<sup>2,3</sup>

The study by Unger et. al aimed to investigate the relationship between patient demographics, insurance status, and survival outcomes in positive, stage 3 clinical trials conducted in the SWOG Cancer Research Network between 1984 and 2012, with ethnicity and insurance status only routinely being collected in trials post-1991 and 1992 respectively.<sup>2</sup> In total, patient data from 10,804 patients in 19 different clinical trials was pooled and analyzed to determine if age, race/ethnicity, sex, or insurance status were significant predictors of overall survival outcomes.<sup>2</sup> In general, this study found added overall survival benefits in all demographic populations who received experimental treatment except for patients with Medicaid or no insurance and, in fact, they experienced a greater risk of death when receiving experimental therapy compared to the current standard of care.<sup>2</sup> These differences manifested within the first year of initiation of the experimental treatment; thereby distorting the initial positive effects of improved progression-free survival, which was already lower than for privately-insured patients.<sup>2</sup> Even when beginning on a level playing field of eligibility staging and treated via protocol in a clinical trial setting, suboptimal insurance status still has overall negative effects on cancer and non-cancer survival outcomes.<sup>2</sup>

While similar in its findings, the study by Zhao et. al explored health insurance status and cancer stage at diagnosis with survival outcomes using patient data collected between 2010 and 2013 from the American Cancer Society's US National Cancer Database (NCDB), which includes more than 70% of all newly diagnosed cancer cases from more than 1500 facilities in the United States.<sup>3</sup> Patient data was stratified into multiple demographic, socioeconomic, and insurance status categories, along with a classification into either early (I or II) or late (III or IV) stage diagnosis.<sup>3</sup> These factors were used for analyzing the effects of insurance status on cancer stage at initial presentation and overall survival outcomes following treatment.<sup>3</sup>

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It was discovered that uninsured and Medicaid-insured patients were more likely to present with advanced stages of cancer at all cancer sites, including those which have screening tools such as colon and breast cancers, when compared to patients with private insurance.<sup>3</sup>



Insurance status was also negatively associated with survival outcomes, with underinsured patients presenting with stage I disease in non-Hodgkin lymphoma or in the prostate, colorectal, oral cavity, or esophageal sites having worse survival outcomes than privately-insured patients with stage II disease.<sup>3</sup> This study highlights the importance of early detection and equal access to cancer screening tools to improve overall cancer outcomes and reduce disparities in cancer treatment along the continuum of care.<sup>3</sup>

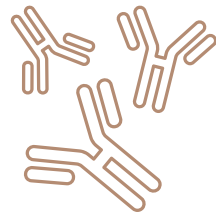
In conclusion, insurance status plays a major role in determining both stage at presentation and overall survival of patients, in both the clinical trial setting and active practice sites. Patients with no insurance may face significant financial barriers, leading to delayed or inadequate cancer care and potentially worsened survival outcomes among the poorest of patients. In contrast, privately-insured patients have better access to cancer care, including clinical trials, as evidenced by only 24.8% of patients in the clinical trial analysis having Medicaid or no insurance<sup>2</sup>, furthering the divide between those with financial means and those without. However, these Medicaid or uninsured patients who were fortunate enough to be enrolled into a clinical trial experienced worse outcomes in the trials overall, cementing the importance of access and coverage of post-clinical trial follow-up care. Addressing insurance status as a barrier to cancer care and screening is critical in ensuring equitable access to both experimental and standard treatment, hopefully improving cancer outcomes for all patients.

## References

1. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F (2020). Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available from: <https://gco.iarc.fr/today>, accessed 01 March 2023.
2. Unger JM, Blanke CD, LeBlanc M, et al. Association of patient demographic characteristics and insurance status with survival in cancer randomized clinical trials with positive findings. *JAMA Network Open*. 2020;3(4). doi:10.1001/jamanetworkopen.2020.3842
3. Zhao J, Han X, Nogueira L, et al. Health Insurance Status and cancer stage at diagnosis and survival in the United States. *CA: A Cancer Journal for Clinicians*. 2022;72(6):542-560. doi:10.3322/caac.21732

# THE ROLE OF BISPECIFIC ANTIBODIES IN CANCER THERAPY

BY MONICA NGO  
PHARM.D, CLASS OF 2026



Bispecific antibodies (bsAbs) are two antibodies that are artificially engineered to join together to recognize multiple antigens as a single molecule, binding to two different targets concurrently.<sup>1</sup> Bispecific antibodies are different to monoclonal antibodies (mAbs), which have been used for treating cancers, except that the mechanism for mAbs is they can only bind to one specific target. The ability to bind multiple target sights allows bispecific antibodies to be more potent and specific, which is useful when treating cancers.

Bispecific antibodies have different binding specificities through formats. The different formats can either target two different antigens on the same cell or target two different cells. The formats are: bispecific T-cell engagers (BiTEs), IgG-like bsAbs, and dual variable domain antibodies (DVDs). BiTEs are antibodies that redirect T-cells to tumor cells, which has been an advancement for tumor immunotherapy.<sup>2</sup> Bispecific T-cell engagers specifically bind to tumor-associated antigens and CD3 receptors on T cells, which activates the T-cell to kill cancer cells. Bispecific T-cell engagers also are composed of two different single-chain variable fragments (scFvs) that are linked together by a short linker. Blinatumomab, an anti-CD19/CD3 BiTE, was approved by the FDA in 2014 for adult Philadelphia chromosome-negative relapsed or refractory B cell progenitor acute lymphoblastic leukemia (B-ALL).<sup>2,3</sup> Blinatumomab has an anti-CD19 scFV in a VL-VH orientation linked with a G4 S linker to the anti-CD3 scFV with the VL-VH orientation.<sup>4</sup> Blinatumomab targets CD19 on B cells and CD3 on T cells. Catumaxomab (TrioMab) has a “trifunctional mode of

action”. TrioMab is designed to target three different proteins: epithelial cell adhesion molecules (EpCAM) on tumor cells, CD3 on T cells, and Fc gamma receptors (FcγR) on cells like natural killer cells, macrophages, and dendritic cells.<sup>3</sup> In 2009, catumaxomab was approved for treatment of a specific cancer called malignant ascites, which is a buildup of fluid in the abdomen, in ovarian cancer.<sup>1</sup>

Ig-G like bsAbs are typically composed of two different antibody binding domains (Fab) and a Fc region. When a bsAb involves an Fc region, it can be more segmented into a component that is structurally similar to an IgG molecule and those that have additional binding sites.<sup>4</sup> The mirroring of a natural IgG molecule allows for the bsAb to be more stable. Zenocutuzumab (MCLA-128) is an Ig-G like bsAb that simultaneously binds HER2 and HER3.<sup>3</sup> Since there is NRG1 (Neuregulin 1 protein) binding and ERK and PI3K-AKT pathways involved, Zenocutuzumab has the potential to be an effective drug in NRG1-fused tumors.<sup>3</sup>

Dual variable domain antibodies, or DVDs, are smaller in size than Ig-G like bsAbs and are able to penetrate tissues a lot easier. Dual variable domain antibodies have additional four variable domains that are integrated by a linking to N termini of the heavy and light chains of IgG molecules.<sup>5</sup> One aspect of DVDs is their involvement with proteolytic cleavage sites in-between the inner and outer VL domains. The cleavage allows the DVD to target the outer binding site and additionally bind to another antigen after the cleavage,...

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allowing DVDs to go against ICAMs and TNFs to heighten specificity of inflammation sites. Dual variable domain antibodies also lowers specificity for “off-target” TNF by releasing that binding in the inflamed tissues.<sup>4</sup>

Overall, bispecific antibodies are a class of therapeutic agents that have the potential to impact the way that illnesses are treated. Bispecific antibodies' ability to concurrently target two distinct antigens or cells can lead to new opportunities for the treatment of infectious illnesses, cancer, and autoimmune conditions. Despite there being challenges to overcome, including manufacturing, clinical validation, and regulatory approval, with further research and time BsAbs can allow for more effective therapies.

## References

1. You G, Won J, Lee Y, et al. Bispecific Antibodies: A Smart Arsenal for Cancer Immunotherapies. *Vaccines*. 2021;9(7):724. doi:<https://doi.org/10.3390/vaccines9070724>
2. Tian Z, Liu M, Zhang Y, Wang X. Bispecific T cell engagers: an emerging therapy for management of hematologic malignancies. *Journal of Hematology & Oncology*. 2021;14(1). doi:<https://doi.org/10.1186/s13045-021-01084-4>
3. Wu Y, Yi M, Zhu S, Wang H, Wu K. Recent advances and challenges of bispecific antibodies in solid tumors. *Experimental Hematology & Oncology*. 2021;10(1). doi:<https://doi.org/10.1186/s40164-021-00250-1>
4. Brinkmann U, Kontermann RE. The making of bispecific antibodies. *mAbs*. 2017;9(2):182-212. doi:<https://doi.org/10.1080/19420862.2016.1268307>
5. Yang F, Wen W, Qin W. Bispecific Antibodies as a Development Platform for New Concepts and Treatment Strategies. *International Journal of Molecular Sciences*. 2016;18(1):48. doi:<https://doi.org/10.3390/ijms18010048>

# NEW DRUG UPDATE: IMFINZI®

BY ANNA DARKE  
PHARM.D, CLASS OF 2026

Imfinzi®, also known as durvalumab, serves as a programmed death-ligand blocking antibody. Durvalumab binds to PD-L1 and blocks the interaction of PD-L1 with PD-1 and CD80. The barrier of PD-L1/PD-1 and PD-L1/CD80 interactions releases the inhibition of immune responses, without inducing antibody dependent cell-mediated cytotoxicity.<sup>1</sup>

Durvalumab proves to be an innovative therapy approved for the treatment of adult patients with unresectable Stage III non-small cell lung cancer whose disease has not progressed following simultaneous platinum-based chemotherapy and radiation therapy. In combination with Imjudo® (tremelimumab), along with platinum-based chemotherapy, durvalumab is suggested for the treatment of adult patients with metastatic non-small cell lung cancer with no sensitizing epidermal growth factor receptor mutations or anaplastic lymphoma kinase genomic tumor aberrations. Additionally, this combination is effective in the treatment of adult patients with unresectable hepatocellular carcinoma. In combination with etoposide and either carboplatin or cisplatin, durvalumab is indicated for the first-line treatment of adult patients with extensive-stage small cell lung cancer. In combination with gemcitabine and cisplatin, durvalumab is indicated for the treatment of adult patients with locally advanced or metastatic biliary tract cancer. Durvalumab is administered as an intravenous infusion over an hour after dilution.<sup>1</sup>

The combination of durvalumab with gemcitabine and cisplatin for the treatment of locally advanced or metastatic biliary tract cancer in adult patients was approved by the FDA on September 2, 2022. This combination therapy is the first and only FDA approved first line treatment for locally advanced or metastatic biliary tract cancers including cholangiocarcinoma and gallbladder cancer.<sup>1,2,3</sup>

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The effectiveness of this combination therapy of durvalumab with gemcitabine and cisplatin was assessed in a randomized, double-blind, placebo-controlled, multiregional trial known as TOPAZ-1 with the major efficacy outcome measure being overall survival. This trial enrolled 685 patients with histologically verified locally advanced unresectable or metastatic biliary tract cancer who had not previously received systemic therapy for advanced disease. A statistically significant improvement in overall survival was demonstrated in patients randomized to receive durvalumab with gemcitabine and cisplatin compared to those randomized to receive placebo with gemcitabine and cisplatin. Median overall survival was 12.8 months and 11.5 months in the durvalumab and placebo arms, respectively. The median progression-free survival was 7.2 months and 5.7 months in the durvalumab and placebo arms, respectively. Investigator-assessed overall response rate was 27% and 19% in the durvalumab and placebo arms, respectively.<sup>1,2</sup> The most common adverse reactions with this combination therapy include fatigue, nausea, constipation, decreased appetite, abdominal pain, rash, and pyrexia.<sup>1</sup> Immune-mediated adverse reactions are always a possibility for patients on Imfinzi including pneumonitis, hepatitis, colitis, endocrinopathies, nephritis, dermatological reactions, pancreatitis, and others. Occurrence of such reactions may require the discontinuation of durvalumab or corticosteroid treatment.<sup>1</sup>

Overall, the recent approval of durvalumab proves to be an effective option for patients with unresectable Stage III non-small cell lung cancer, metastatic non-small cell lung cancer, unresectable hepatocellular carcinoma, extensive-stage small cell lung cancer, or locally advanced or metastatic biliary tract cancer.

## References

1. IMFINZI® (durvalumab) [Prescribing Information]. Wilmington, DE: AstraZeneca Pharmaceuticals LP; 2022.
2. Oh DY, He AR, Qin S, et al. Durvalumab plus gemcitabine and cisplatin in advanced biliary tract cancer. *NEJM Evidence*. 2022. doi:10.1056/EVIDoa2200015.
3. Oncology (cancer)/hematologic malignancies approval notifications. US Food and Drug Administration. Updated July 14, 2022. Accessed March 3, 2023. <https://www.fda.gov/drugs/resources-information-approved-drugs/oncology-cancer-hematologic-malignancies-approval-notifications>

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Lauren Twitty, Newsletter Editor