Evaluation of Chemotherapy-Induced Myelosuppression in Patients with Extensive-Stage Small Cell Lung Cancer Treated with Trilaciclib: Retrospective Analysis of Florida Community Oncology Practice Data

Lowell Hart, MD[1], Augustina Ogbonnaya, MPH[2], Kristen Boykin, PharmD[1], Kathryn Deyoung, MS[2], Ray Bailey, RPh[1], Trevor Heritage, PhD[1], Lorena Lopez-Gonzalez, PhD[3], Huan Huang, PhD[3], Lucio Gordan, MD[1]

[1]Florida Cancer Specialists & Research Institute, Fort Myers, FL, USA;
[2]Xcenda, Carrolton, TX, USA;
[3]G1 Therapeutics®, Inc., Research Triangle Park, NC, USA

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Corresponding author: Lowell Hart, MD, Scientific Director of Clinical Research, Florida Cancer Specialists & Research Institute, 8981 Colonial Center Dr Fort Myers, FL 33905, Email: llhart@flcancer.com

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Chemotherapy-induced myelosuppression is a major dose limiting toxicity of chemotherapy for ES-SCLC[1-4]

Myelosuppressive hematologic adverse events (HAEs), resulting from cytotoxic damage to hematopoietic stem and progenitor cells in the bone marrow, are common complications of chemotherapy among patients with cancer[1,4-6]

Myelosuppression commonly manifests as:

	Traditional Lineage Specific Management Strategies
Neutropenia (fewer neutrophils)[7]	▪ G-CSF (supportive care) ▪ Chemotherapy dose reduction or delay
Anemia (fewer RBCs)[8]	▪ RBC transfusion (supportive care) ▪ Chemotherapy dose reduction or delay ▪ ESA (supportive care)
Thrombocytopenia (fewer platelets)[4]	▪ Platelet transfusion (supportive care) ▪ Chemotherapy dose reduction or delay

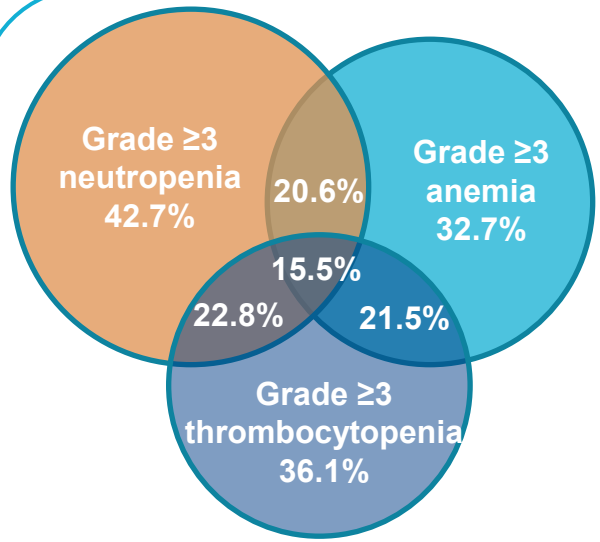
ESA, erythropoiesis-stimulating agent; ES-SCLC, extensive-stage small cell lung cancer; G-CSF, granulocyte colony stimulating factor; HAE, hematologic adverse event; RBC, red blood cell.

1. Kurtin S. *J Adv Pract Oncol*. 2012;3:209–24. **2.** Aapro M, et al; ESMO Guidelines Committee. *Ann Oncol*. 2018;29(suppl 4):iv96–110. **3.** Crawford J, et al. *Support Care Cancer*. 2020;28:925–32. **4.** Kuter DJ. *Oncology (Williston Park)*. 2015;29:282–94. **5.** Barreto JN, et al. *J Pharm Pract*. 2014;27:440–6. **6.** Lyman GH. *Clin Cornerstone*. 2006;8 suppl 5:S12–8. **7.** Hashiguchi Y, et al. *Anticancer Drugs*. 2015;26:1054–60. **8.** Bryer E, Henry D. *Int J Clin Transfus Med.* 2018;21–31.

Previous study of Florida Cancer Specialists[1,a] clinics reported over 60% of chemotherapy treated ES-SCLC patients experienced grade ≥3 HAEs in at least one lineage

94% of patients started chemotherapy as first line and 87% received platinum/etoposide-containing regimen with or without IO

Prevalence of grade ≥3 HAEs after chemotherapy initiation



n=1,235[b]

- **62.1%** had grade ≥3 HAEs in ≥1 lineage (neutropenia, anemia, or thrombocytopenia)
- **33.9%** had grade ≥3 HAEs in ≥2 lineages (neutropenia, anemia, and/or thrombocytopenia)

	(n=1,239)
Supportive care utilization	
G-CSF	89.7%
Mean (SD) [median] G-CSF administrations among all patients	5.7 (6.8) [4]
IV hydration	52.1%
RBC transfusion eligible[c,d]	32.6%
Platelet transfusion eligible[d,e]	24.4%

[a] Retrospective cohort study of patients with ES-SCLC who were treated with chemotherapy using Florida Cancer Specialists & Research Institute, a large community oncology/hematology practice, electronic medical records. Patients were on average 66.9 years old, 50.3% were female, and 58.0% were White. Outcomes were evaluated after chemotherapy initiation including all lines of therapy [b] Percentages were calculated using the number of patients with laboratory value(s) for the corresponding endpoint(s) as the denominator. [c] Eligibility for RBC transfusion based on hemoglobin <8 g/dL. [d] Transfusion administration was not available in the structured EMR data. [e] Eligibility for platelet transfusion based on platelets <10,000/μL.

ESA, erythropoiesis-stimulating agent; ES-SCLC, extensive-stage small cell lung cancer; HAE, hematological adverse event; IO, immunotherapy.

1. Hart L, et al. Burden of CIM among patients with ES-SCLC: a retrospective study of data from community oncology practices [poster]. AMCP Annual Meeting, Dec 11-14, 2021.

Another RWD study suggested a trend toward increasing healthcare utilization among SCLC patients with grade ≥ 3 HAEs in more than 1 cell lineage

Myelosuppressive AE category [1,a]	Patients, n	Patients with each type of supportive treatment or visit within 12 months after chemotherapy initiation, %				
		G-CSF	RBC transfusion	Platelet transfusion	IP visits [b]	ED visits
No grade ≥3 myelosuppressive AEs	132	25	11	0	60.6	26.5
Grade ≥3 AE in one lineage only	***90***	***54***	***37***	***7***	***63.3***	***45.6***
Neutropenia only	46	59	11	2	54.3	45.7
Anemia only	33	45	76	12	72.7	42.4
Thrombocytopenia only	11	64	27	9	72.7	54.5
Grade ≥ AEs in two lineages	***61***	***66***	***77***	***20***	***85.2***	***49.2***
Neutropenia and anemia	41	68	80	15	85.4	46.3
Neutropenia and thrombocytopenia	10	70	40	20	80	50
Anemia and thrombocytopenia	10	50	100	40	90	60
Grade ≥3 AEs in all three lineages (neutropenia, anemia, and thrombocytopenia)	***55***	***67***	***85***	***49***	***85.5***	***56.4***
Total population	338	47	42	13	69.8	41.7

Retrospective cohort analysis of 338 patients with SCLC who were treated with chemotherapy within an integrated health system (40 oncology clinics associated with community hospitals across 7 states in the US) from January 2016 to December 2019. AE, adverse event; ED, emergency department; ESA, erythropoiesis-stimulating agent; G-CSF, granulocyte colony–stimulating factor; IP, inpatient; RBC, red blood cell; RWD, real world data; SCLC, small cell lung cancer.

[a] Grade 1/2 myelosuppressive AEs were not included in the analysis. Patients reported as having no grade ≥3 AEs or grade ≥3 AEs in a particular lineage (e.g., neutropenia only) may also have had lower-grade AEs affecting other blood cell lineages. [b] Includes IP and ED to IP visits. ED to IP includes patients who were treated in the ED and then admitted to the same or a different hospital for IP services.

1. Epstein RS, et al. *J Med Econ*. 2022;25:108–18.

Traditional supportive care treatments in ES-SCLC are suboptimal[1,2]

- Limitations with traditional treatment strategies for myelosuppression: [1,2]
  - Specific to single lineage
  - Administered after the start of chemotherapy when damage to red blood cells, neutrophils, or platelets is underway
  - May be associated with side effects (e.g., bone pain associated with G-CSF)
- Multilineage myelosuppression may lead to greater health care resource utilization of both supportive care interventions, inpatient admissions, and ER visits[3]
- Unmet need remains for treatment that can minimize side effects by providing multilineage protection from myelosuppression[1] in patients with ES-SCLC

1. Lyman GH, et al. *Front Oncol.* 2021;11:1-11; ***2.*** Sbrana A, et al. *Support Care Cancer*. 2022;3(9):7057-7060, **3.** Epstein RS, et al. *J Med Econ*. 2022;25:108–18.

Study objectives

To evaluate real-world outcomes (myelosuppression, supportive care utilization and treatment pattern) in patients with ES-SCLC treated with trilaciclib in Florida community oncology setting

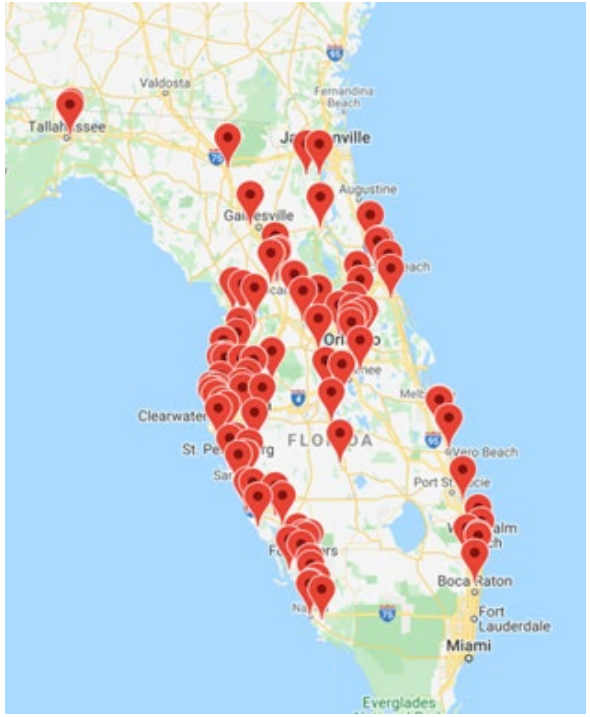
- A first-in-class intervention that provides multilineage bone marrow protection (myeloprotection) among patients with ES-SCLC receiving a platinum/etoposide- or topotecan-containing chemotherapy regimen
- Received FDA approval in February 2021 to decrease the incidence of chemotherapy-induced myelosuppression in adult patients when administered prior to a platinum/etoposide-or topotecan-containing chemotherapy regimen for ES-SCLC[1]
- In March 2021, the NCCN Guidelines added trilaciclib as a prophylactic option to manage chemotherapy-induced myelosuppression when administrated prior to chemotherapy in patients with ES-SCLC to Guidelines for Small Cell Lung Cancer[2] and for Hematopoietic Growth Factors[3]

ES-SCLC, extensive-stage small cell lung cancer; NCCN, National Comprehensive Cancer Network.

1. Cosela® (trilaciclib) for injection [package insert]. Durham, NC: G1 Therapeutics, Inc; 2021. Please see Important Safety Information, full Prescribing Information, and Patient Information for Cosela at https://www.g1therapeutics.com/cosela/pi/ **2.** NCCN. SCLC. NCCN clinical practice guidelines in oncology. Version 2.2022. Available at: https://www.nccn.org/professionals/physician_gls/pdf/sclc.pdf. **3.** NCCN. Hematopoietic growth factors. NCCN clinical practice guidelines in oncology. Version 1.2022. Available at: https://www.nccn.org/professionals/physician_gls/pdf/growthfactors.pdf.

Real-world data from FCS community oncology clinics

Data from Florida Cancer Specialists & Research Institute structured EMR data[a], which includes over 80 facilities across Florida serving nearly 80,000 new patients annually

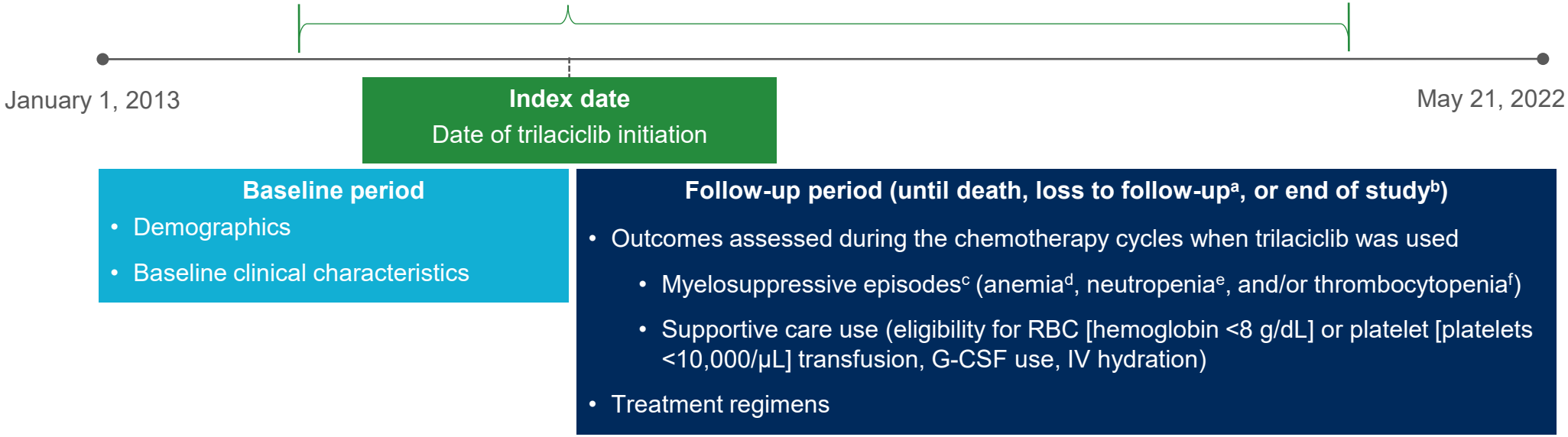


[a] FCS EMR data were supplemented with vital status provided by the US Social Security Administration's Limited Access Death Master File.

EMR, electronic medical record; FCS, Florida Cancer Specialists & Research Institute.

Retrospective observational study design

Adult ES-SCLC patients who initiated trilaciclib during chemotherapy between February 1, 2021–May 31, 2022 were identified
(Patients in clinical trials were excluded)



[a] Last visit = last physical encounter. [b] Whichever occurred first. [c] CIM episodes included events within 21 days from the start of a treatment cycle with trilaciclib administration. [d] Anemia defined as hemoglobin <8 g/dL (grade 3). [e] Neutropenia defined as ANC of 500–1000/μL (grade 3) or ANC <500/μL (grade 4). [f] Thrombocytopenia defined as platelets of 25,000–50,000/μL (grade) or platelets <25,000/μL (grade 4).

ANC, absolute neutrophil count; CIM, chemotherapy-induced myelosuppression; EMR, electronic medical record; ES-SCLC, extensive-stage small cell lung cancer; G-CSF, granulocyte colony stimulating factor; RBC, red blood cells.

Patient characteristics and trilaciclib use

66% of patients initiated trilaciclib during first line chemotherapy, 80% received platinum/etoposide-containing regimen with or without IO, and 14% received topotecan-containing regimen

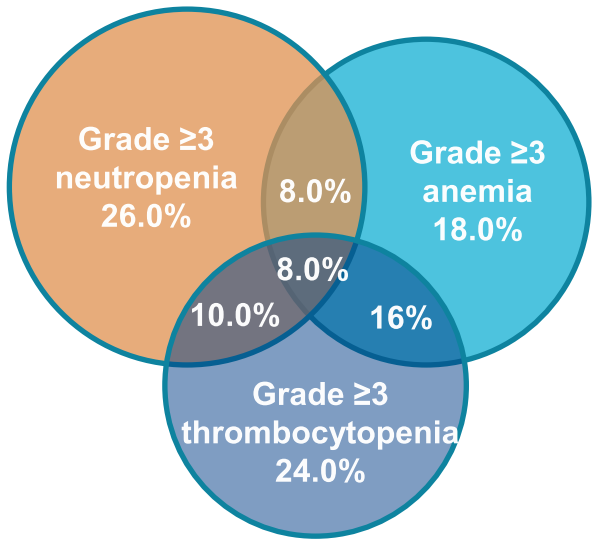
Demographic and clinical characteristics	(n=50)
Age, years, mean (SD) [median]	67.8 (8.3) [68.5]
Female sex, n (%)	28 (56.0)
Follow up duration from initiation of index treatment, months, mean (SD) [median]	4.0 (3.2) [2.7]
Index chemotherapy during use of trilaciclib, n (%)	
Platinum/etoposide-containing regimen with or without IO	40 (80.0)
Topotecan-containing regimen	7 (14.0)
Start of trilaciclib by, n (%)	
LOT 1	32 (64.0)
LOT 2	7 (14.0)
LOT 3 or later	11 (22.0)

ES-SCLC, extensive-stage small cell lung cancer; n, number of patients; IO, immunotherapy; LOT, line of therapy; SD, standard deviation.

Prevalence of myelosuppression during chemotherapy cycles when trilaciclib was used

After trilaciclib initiation, 42.0% had grade ≥3 HAEs in at least 1 lineage, 18.0% of patients had grade ≥3 HAEs in 2 lineages, and 8.0% had grade ≥3 HAE in all 3 lineages

Prevalence of grade ≥3 HAEs after trilaciclib initiation

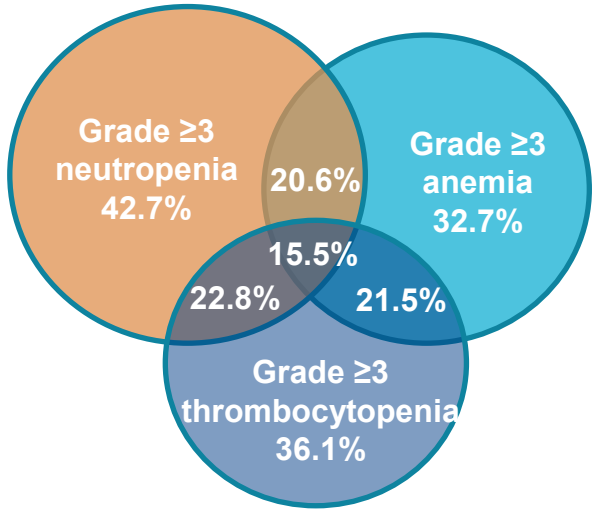


n=50[a]
42.0% had grade ≥3 HAEs in ≥1 lineage
18.0% had grade ≥3 HAEs in ≥2 lineages

Current study

Previous study

Previous RWD study among patients who did not receive trilaciclib



n=1,235[a]
62.1% had grade ≥3 HAEs in ≥1 lineage
33.9% had grade ≥3 HAEs in ≥2 lineages

[a] Percentages were calculated using the number of patients with laboratory value(s) for the corresponding endpoint(s) as the denominator.

HAE, hematological adverse event; LOT, line of therapy; n, number of patients; RWD, real world data.

Supportive care utilization during chemotherapy cycles when trilaciclib was used

60% of patients used G-CSF after trilaciclib initiation, 24% used IV hydration, 18.0% were eligible for RBC transfusion, and 2.0% were eligible for platelet transfusion

	(n=50)	Previous RWD study among patients who did not receive trilaciclib (n=1,239)
Supportive care utilization after trilaciclib initiation		
G-CSF	60.0%	89.7%
Mean (SD) [median] G-CSF administrations among all patients	1.8 (2.2) [1]	5.7 (6.8) [4]
IV hydration	24.0%	52.1%
RBC transfusion eligible[a,b]	18.0%	32.6%
Platelet transfusion eligible[b,c]	2.0%	3.7%

Current study ⟷ Previous study

[a] hemoglobin <8 g/dL. [b] Transfusion administration was not available in the structured EMR data. [c] platelets <10,000/μL.

ES-SCLC, extensive-stage small cell lung cancer; G-CSF, granulocyte colony stimulating factor; IV, intravenous; LOT, line of therapy; n, number of patients; RBC, red blood cell; RWD, real world data.

Use of trilaciclib has the potential to reduce burden of myelosuppression among patients with ES-SCLC

Approximately **two-thirds of ES-SCLC patients started trilaciclib with first line chemotherapy** and the other third started trilaciclib with second line or later chemotherapy

Early real-world data in this study suggest that the use of trilaciclib in patients with ES-SCLC treated in the community oncology setting may:

Reduce the prevalence of myelosuppression

Reduce the proportion of patients requiring supportive care utilization

Findings from real-world study were consistent with what were observed in trilaciclib clinical trials

Chemotherapy induced myelosuppression and associated consequences can be reduced when **trilaciclib is prophylactically used as recommended in NCCN SCLC and Hematopoietic Growth Factors guidelines®**

ES-SCLC, extensive-stage small cell lung cancer.

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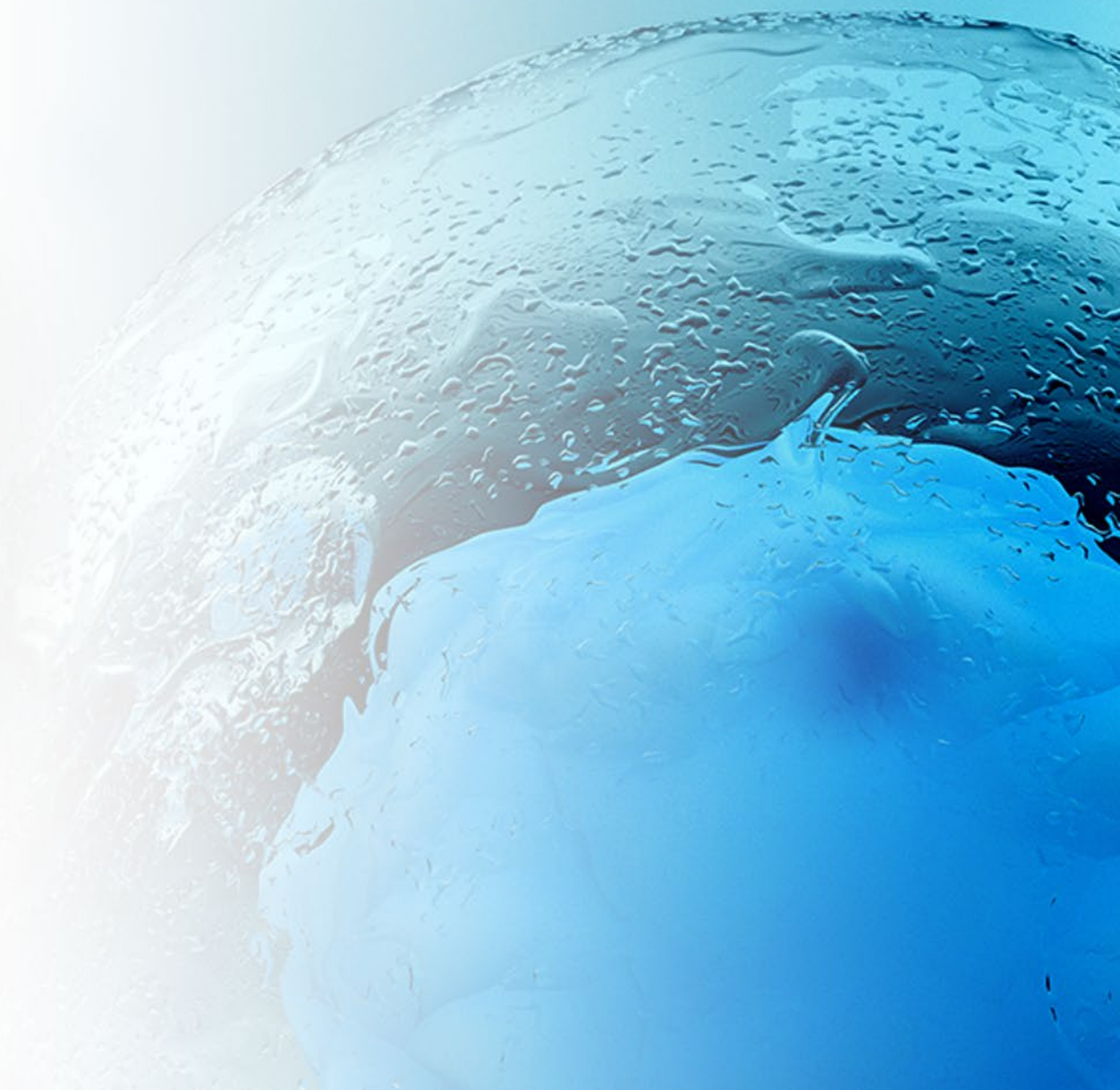
Appendix



Definitions of neutropenia, anemia, and thrombocytopenia[1]

Grade	Neutropenia	Anemia	Thrombocytopenia
Grade 1	ANC 1500 to 2500 cells/μL	Hb 10.0 to < 13.0 g/dL	Platelets 75,000 to 150,000/μL
Grade 2	ANC 1000 to < 1500 cells/μL	Hb 8.0 to < 10.0 g/dL	Platelets 50,000 to < 75,000/μL
Grade 3	ANC 500 to < 1000 cells/μL	Hb < 8.0 g/dL	Platelets 25,000 to < 50,000/μL
Grade 4	ANC < 500 cells/μL	–	Platelets < 25,000/μL

ANC, absolute neutrophil count; Hb, hemoglobin; ICD-9-CM, International Classification of Diseases, 9th Revision, Clinical Modification; ICD-10, International Classification of Diseases, 10th Revision.

1. National Cancer Institute (US). Common terminology criteria for adverse events (CTCAE). 2010. https://ctep.cancer.gov/protocoldevelopment/electronic_applications/docs/CTCAE_4.03.xlsx. Accessed February 24, 2022.

Demographics and clinical characteristics

Previous RWD study among patients who did not receive trilaciclib

	Trilaciclib (n=50)	Chemo-treated[1] (n=1,239)
Age, years, mean	67.8	66.9
< 65	18 (36.0)	462 (37.3)
≥ 65	32 (64.0)	777 (62.7)
Male sex, n (%)	22 (44.0)	616 (49.7)
ECOG PS, [a] n (%)		
0	10 (20.0)	299 (24.1)
1	28 (56.0)	500 (40.4)
2	8 (16.0)	170 (13.7)
≥ 3	0 (0.0)	65 (5.2)
Not documented	4 (8.0)	205 (16.5)
Index LOT, n (%)		
LOT 1	33 (66.0)	1165 (94.0)
LOT 2	7 (14.0)	71 (5.7)
LOT 3 or later	10 (20.0)	3 (0.2)
Myelosuppression prior to index, [b] n (%)		
Grade 3 anemia	7 (15.2)	8 (1.6)
Grade 3 neutropenia	7 (15.2)	10 (2.0)
Grade 4 neutropenia	10 (21.7)	7 (1.4%)
Grade 3 thrombocytopenia	4 (8.7)	5 (1.0%)
Grade 4 thrombocytopenia	6 (13.0)	1 (0.2%)

Current study ← → **Previous study**

ECOG PS, Eastern Cooperative Oncology Group performance status; LOT, line of therapy; RWD, real world data.

[a] 60 days before or 14 days after the index date, [b] denominator was the number of patients with available lab value of interest

1. Hart L, et al. Burden of CIM among patients with ES-SCLC: a retrospective study of data from community oncology practices [poster]. AMCP Annual Meeting, Dec 11-14, 2021.