

IMPACT OF CHEMOTHERAPY-INDUCED MYELOSUPPRESSION ON DAILY LIVING: RESULTS OF A U.S. ONLINE SURVEY OF PATIENTS WITH CANCER

ROBERT S. EPSTEIN¹; JOANN KRENITSKY¹; MEGAN L. LEONE-PERKINS²; TEHSEEN SALIMI³

¹EPSTEIN HEALTH, LLC, WOODCLIFF LAKE, NJ, USA; ²HEALTHIVIBE, LLC, ARLINGTON, VA, USA; ³G1 THERAPEUTICS, INC., RESEARCH TRIANGLE PARK, NC, USA

BACKGROUND

- Chemotherapy remains a cornerstone of treatment for most cancers, but can be associated with significant side effects, including myelosuppression
- Chemotherapy-induced myelosuppression (CIM) is characterized by a decrease in blood cell production, resulting in neutropenia, anemia, lymphopenia, and/or thrombocytopenia
- CIM is associated with a range of debilitating symptoms that can significantly impact patients' quality of life, and are one of the most common reasons for chemotherapy dose modifications, dose delays, or discontinuation of therapy, potentially limiting therapeutic benefit^{1,2}
- To date, management of CIM with supportive care interventions remains suboptimal¹
 - Current supportive therapies used to treat CIM include granulocyte-colony stimulating factors (G-CSF), granulocyte macrophage-colony stimulating factors (GM-CSF), erythropoiesis-stimulating agents (ESA), and blood cell transfusions; however, these are administered reactively when signs or symptoms appear, are cell-line specific, and impart their own set of risks for side effects and adverse reactions¹⁻³
- Research into the real-world impact of CIM on patients' lives is limited
- The purpose of this survey was to capture the perceptions, experiences, and challenges that oncology patients encounter when diagnosed with myelosuppression as part of their chemotherapy treatment

STUDY OBJECTIVES

- The objectives of this study were to:
 - Determine which aspects of life are affected by CIM
 - Determine whether CIM impacts dose/frequency of chemotherapy from a patient perspective
 - Identify side effects of chemotherapy perceived to be most burdensome by patients
 - Understand which treatments are administered for CIM, and the challenges encountered by patients
 - Gain insights into which members of the care team are most attentive to symptoms associated with CIM
 - Gain patients' perspectives on their experiences with CIM

METHODS

- Following confirmation of Institutional Review Board exemption status, a survey of participants identified from an online U.S. patient panel was conducted in November/December 2019
- Participants were eligible if they were ≥18 years of age, self-identified as having lung cancer, breast cancer, or colorectal cancer (CRC), had been treated with chemotherapy in the past year, and had experienced at least one episode of CIM during that time
 - CIM episodes were defined as requiring intervention with a blood transfusion (red blood cell or platelet), administration of G-CSF, GM-CSF or ESA, a serious infection such as pneumonia or sepsis following chemotherapy treatment, or CIM that required no intervention
- Within the survey, a variety of questions were utilized to screen participants, capture information on demographics, identify symptoms and treatments received, and assess the impact of CIM on daily living
- Survey questions were presented sequentially in several formats:
 - Choice of one response from a defined list of possible statements
 - Questions that asked the participant to choose multiple responses
 - Dichotomous questions (Yes/No)
 - Statements where the participant was asked to indicate their agreement (with scale rating 1–5)
- Participants were also asked to provide verbatim responses to a single open-ended question:
 - In your own words, please describe how side effects from myelosuppression have impacted your life*
- Lay definitions of key terms (myelosuppression, platelets, lymphocytes, anemia, neutropenia, lymphopenia, and thrombocytopenia) were included to aid response selection
- Descriptive statistics were used to summarize key findings

RESULTS

PARTICIPANT DEMOGRAPHICS

- Between November 11 and December 8, 2019, 301 participants with breast cancer (n=153; 51%), lung cancer (n=100; 33%), or CRC (n=48, 16%) participated in the online survey
- Most participants were aged <60 years, over half were female, over half were currently employed, and three-quarters had been diagnosed with cancer within the last 3 years (Table 1)
- Anemia and neutropenia were the most commonly reported manifestations of CIM (Table 1)

TABLE 1. BASELINE DEMOGRAPHICS AND MYELOSUPPRESSION CHARACTERISTICS OF SURVEY PARTICIPANTS

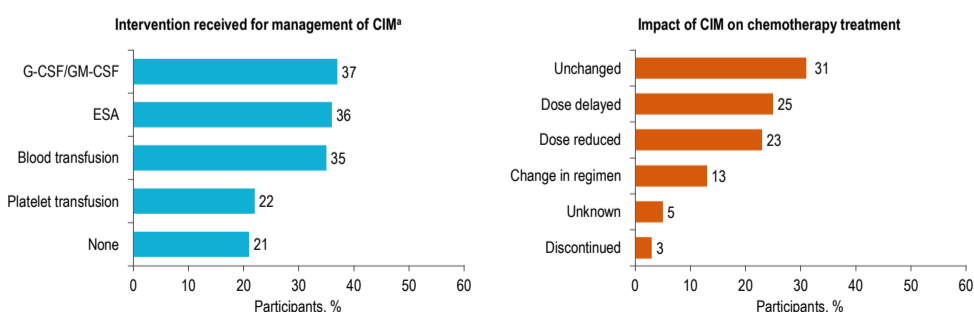
Characteristic	Breast cancer	Lung cancer	CRC	Total
Patients, n	153	100	48	301
Gender, n (%)				
Male	21 (14)	67 (67)	32 (67)	120 (40)
Female	132 (86)	33 (33)	15 (31)	180 (60)
Other	0	0	1 (2)	1 (<1)
Age group, years, n (%)				
18–59	134 (88)	75 (75)	32 (67)	241 (80)
≥60	19 (12)	25 (25)	16 (33)	60 (20)
Currently working (full- or part-time), n (%)	92 (60)	65 (65)	24 (50)	181 (60)
Years since cancer diagnosis, n (%)				
<1	37 (24)	19 (19)	11 (23)	67 (22)
1–3	75 (49)	53 (53)	29 (60)	157 (52)
≥4	40 (26)	28 (28)	8 (17)	76 (25)
Not answered	1 (1)	0 (0)	0 (0)	1 (<1)
Myelosuppression, n (%)^a				
Anemia	103 (67)	51 (51)	30 (63)	184 (61)
Neutropenia	80 (52)	61 (61)	37 (61)	178 (59)
Lymphopenia	56 (37)	32 (32)	24 (32)	112 (37)
Thrombocytopenia	47 (31)	36 (36)	18 (38)	101 (34)

^aParticipants could select more than one option.

MANAGEMENT OF CHEMOTHERAPY SIDE EFFECTS

- 79% of participants received supportive care interventions for CIM, and 64% recalled chemotherapy dose modifications (Figure 1)

FIGURE 1. INTERVENTIONS FOR THE MANAGEMENT OF CIM AND IMPACT ON CHEMOTHERAPY TREATMENT

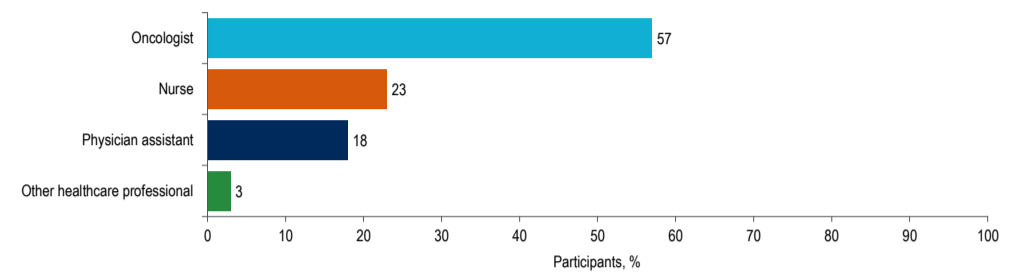


^aParticipants could select more than one option.

CIM, chemotherapy-induced myelosuppression; ESA, erythropoiesis-stimulating agent; G-CSF, granulocyte-colony stimulating factor; GM-CSF, granulocyte macrophage-colony stimulating factor.

- Most participants reported that oncologists paid the most attention to the side effects they experienced during myelosuppression (Figure 2)
- 43% (9/21) and 38% (8/21) of male breast cancer participants, however, reported that their physician assistant or nurse paid the most attention, respectively, and 21% (28/134) of breast cancer participants aged 20–59 years reported it was their physician assistant who paid the most attention

FIGURE 2. HEALTHCARE PROFESSIONALS WHO PAID THE MOST ATTENTION TO SIDE EFFECTS, AS REPORTED BY PARTICIPANTS



- Most participants felt that their oncologist managed the side effects of chemotherapy effectively (Table 2); however, up to one-third of participants felt that their oncologist had not understood how uncomfortable they were from the side effects of myelosuppression, and 29% of participants did not believe their side effects had been treated

TABLE 2. SIDE-EFFECT MANAGEMENT BY ONCOLOGISTS, AS REPORTED BY PARTICIPANTS

Statement ^a	Breast cancer (n=153)	Lung cancer (n=100)	CRC (n=48)	Total (N=301)
Oncologist warned me to expect side effects from chemotherapy, %	75	76	77	76
Oncologist did not treat my side effects from myelosuppression, %	29	29	29	29
Oncologist treated my side effects quickly, %	73	74	69	73
Oncologist did not understand how uncomfortable I was from the side effects I experienced, %	33	28	25	30

^aParticipants selected 4 (Agree) or 5 (Strongly agree) on a 1–5 scale.

IMPACT OF MYELOSUPPRESSION ON DAILY LIVING

- On a 1–5 scale rating overall impact, 24–43% of participants felt that the side effects of CIM had a significant impact on daily living (Figure 3)
- 36% of participants felt myelosuppression had significantly impacted their ability to complete daily tasks (eg, cleaning, cooking, chores)

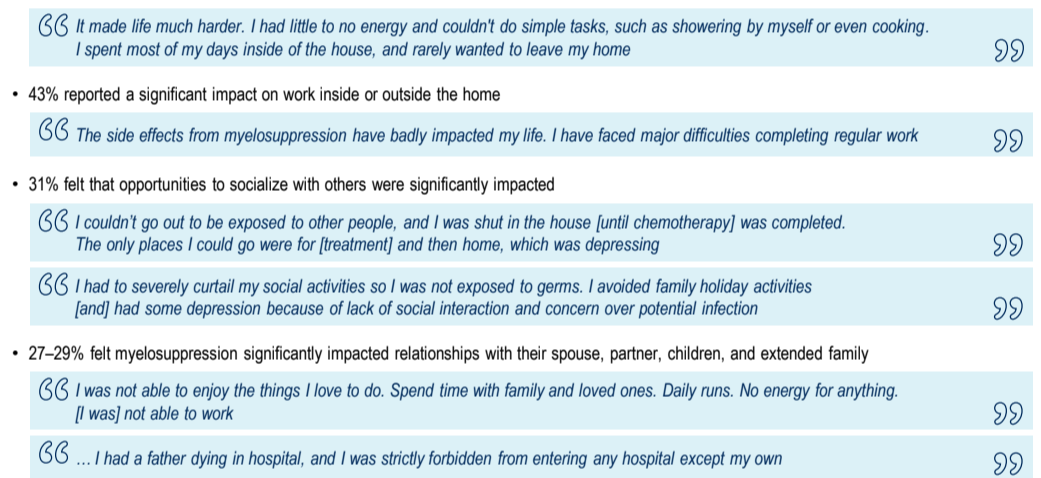
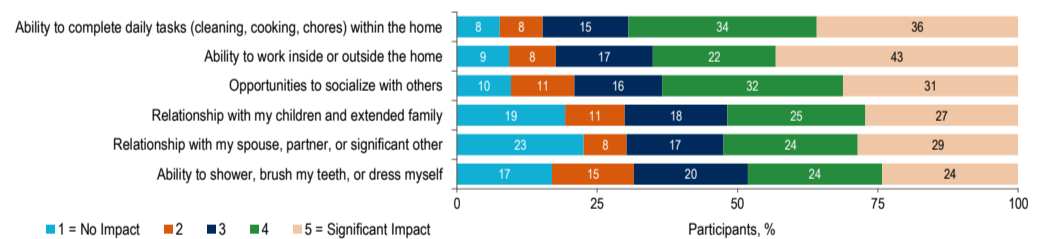
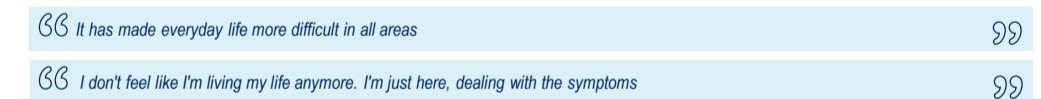


FIGURE 3. PARTICIPANT-REPORTED IMPACT OF THE SIDE EFFECTS OF MYELOSUPPRESSION ON DAILY LIVING



OVERALL IMPACT OF MYELOSUPPRESSION

- Overall, most participants (88%) considered CIM to have had a moderate or major impact on their lives (major life impact, 39.5%; moderate life impact, 48.5%; minor life impact, 12%)



CONCLUSIONS

- Despite the various approaches used to address CIM, participants in this survey described a significant real-world burden that often isolates them from family and friends, and renders them unable to work or perform self-care activities and/or tasks around the home
- The collection of additional insights is warranted to further describe the impact of CIM on patients with cancer

REFERENCES

- Bisi JE, et al. *Mol Cancer Ther*. 2016;15:783–93.
- He S, et al. *Sci Transl Med*. 2017;9:eaal3986.
- Weiss JM, et al. *Ann Oncol*. 2019;30:1613–21.

ACKNOWLEDGMENTS

- We thank the following for constructive comments and helpful discussions during the analysis of these data: Matti S. Aapro, Upal K. Basu Roy, Cynthia Girman, Courtney Schlusser, and Jeffrey Crawford
- We give special thanks to the patients who participated in the survey
- This study was sponsored by G1 Therapeutics, Inc.
- Medical writing assistance was provided by Alligent Europe (Envision Pharma Group), funded by G1 Therapeutics, Inc.

DISCLOSURES

- RSE is a consultant for G1 Therapeutics, Inc. and serves on the board for Proteus Digital, Fate Therapeutics, Illumina, Veracety, and Decipher Biosciences. JK is a consultant for G1 Therapeutics, Inc. MLL-P is a paid consultant for HealthVibe LLC. TS was a paid employee of G1 Therapeutics, Inc., at the time of study completion and poster development. This study was funded by G1 Therapeutics, Inc.

