

AMC Health Systems and Cancer Research Division

Managing Blood Count and Skin-Related Side Effects in Cancer Treatment

***Understanding Hematologic Complications, Dermatologic Reactions,
and Viral Risks in Chemotherapy and Radiotherapy***

Abstract

Cancer treatment, particularly chemotherapy and radiotherapy, often affects the body beyond the tumor site. This report explores the most common blood-related and skin-related complications faced by patients, such as neutropenia, anemia, thrombocytopenia, radiation dermatitis, photosensitivity, and alopecia. It also covers conditions such as jaundice and shingles, as well as the relevance of vaccines in immunocompromised individuals. Drawing on guidance from WHO, NCI, ACS, and oncology nursing guidelines, the report highlights best practices for prevention, monitoring, and management of these side effects. A glossary is included to support comprehension of key clinical terms.

2. Table of Contents

1. Abstract
2. Table of Contents
3. Introduction
4. Main Content
 - a) Background and Literature Review
 - b) Methods / Approach
 - c) Findings / Analysis
 - d) Discussion
5. Conclusion
6. Recommendations
7. Glossary of Medical Terms
8. References / Bibliography

3. Introduction

The effectiveness of cancer therapy must be balanced with the management of adverse effects. Blood cell counts, skin integrity, and immune defense mechanisms are often compromised during treatment. This report focuses on hematologic and dermatologic side effects commonly associated with chemotherapy and radiation therapy. It aims to provide a patient-focused yet evidence-based overview of complications such as low blood counts, skin reactions, and viral reactivations, with practical guidance for their prevention and treatment.

4. Main Content

a) Background and Literature Review

Chemotherapy targets rapidly dividing cells. While effective against cancer, it also affects bone marrow cells responsible for producing white cells, red cells, and platelets. Radiotherapy may similarly suppress bone marrow when targeted near large bone structures. Additionally, systemic therapies may cause skin changes, hair loss, and reactivation of latent viruses like varicella-zoster (shingles). According to WHO and NCI, managing these complications is essential to ensure continuity and effectiveness of cancer treatment.

b) Methods / Approach

This report integrates data from clinical guidelines, patient education materials such as *100 Questions & Answers About Cancer Symptoms and Treatment Side Effects*, and recommendations from WHO, NCCN, and ACS. A thematic analysis of hematologic and dermatologic side effects is presented, supported by patient management strategies.

c) Findings / Analysis

Hematologic Complications

1. Neutropenia (Low White Blood Cells)

- Increases risk of infection.
- Managed with granulocyte colony-stimulating factors (G-CSFs) like filgrastim.

- Patients should follow hygiene precautions and avoid contact with sick individuals.

2. Thrombocytopenia (Low Platelets)

- Raises bleeding risk.
- Managed by dose modification or platelet transfusion.
- Patients advised to avoid NSAIDs, use electric razors, and report signs of bleeding.

3. Anemia (Low Red Blood Cells)

- Leads to fatigue, shortness of breath, and reduced quality of life.
- Treated with erythropoiesis-stimulating agents (e.g., epoetin alfa) and iron supplements.
- Blood transfusion may be necessary in severe cases.

Skin and Hair Effects

1. Radiation Dermatitis

- Redness, dryness, and peeling at treatment sites.
- Managed with gentle skin care: mild soap, fragrance-free moisturizers, and avoiding sun exposure.

2. Chemotherapy-Induced Alopecia

- Hair thinning or loss across body.
- Temporary; hair usually regrows after treatment.
- Patients encouraged to use scarves, hats, or wigs, and explore image-support programs like “Look Good, Feel Better.”

3. Photosensitivity and Hyperpigmentation

- Increased sunburn risk or darkened skin patches due to chemotherapy.
- Prevented with SPF 30+ sunscreen, protective clothing, and avoiding peak sun hours.

4. Extravasation Injuries

- Some IV chemotherapy drugs cause tissue damage if they leak from veins.
- Patients should report burning or stinging during infusions immediately.

Other Systemic Reactions

1. Jaundice

- Yellowing of skin and eyes from high bilirubin levels, often linked to liver dysfunction or biliary obstruction.

- Managed by treating the underlying cause, inserting stents, and alleviating associated itching.

2. Shingles (Herpes Zoster)

- Reactivation of varicella-zoster virus.
- Symptoms include pain, burning, and a blistering rash.
- Treated with antivirals (e.g., acyclovir); preventable with Zostavax or Shingrix in eligible patients.

d) Discussion

The physical burden of cancer therapy extends to vital systems that maintain immunity and appearance. Psychological stress, treatment delays, and hospitalization can result from uncontrolled blood and skin side effects. Holistic management includes proactive monitoring (CBCs), patient education on hygiene and sun care, vaccination planning, and access to dermatologic and hematologic consultations.

Multidisciplinary approaches—combining oncology, dermatology, infectious disease, and supportive care teams—can improve symptom control and patient adherence. Equity in access to supportive medications (e.g., G-CSFs, ESAs) and diagnostic tools (e.g., bilirubin testing, dermatologic evaluation) remains a global health challenge.

5. Conclusion

Managing blood count and skin-related side effects is integral to high-quality cancer care. Early recognition, timely interventions, and ongoing patient support can prevent complications and ensure safe, uninterrupted treatment. By recognizing these effects not as secondary but central challenges, cancer teams can significantly enhance patient resilience, comfort, and outcomes.

6. Recommendations

1. Routinely monitor CBCs and liver function during treatment.
2. Educate patients on infection prevention and bleeding precautions.
3. Provide access to G-CSFs, ESAs, transfusions, and dermatologic care.
4. Establish protocols for managing extravasation and radiation dermatitis.
5. Incorporate skin care guidance and appearance support into survivorship plans.
6. Screen for and vaccinate eligible patients against shingles.
7. Include psychosocial counseling to address distress related to visible side effects.

8. Glossary of Medical Terms

- **Anemia:** A condition where red blood cell levels are low, causing fatigue and weakness.
- **CBC (Complete Blood Count):** A blood test that evaluates red cells, white cells, and platelets.
- **Extravasation:** Leakage of chemotherapy drugs from a vein into surrounding tissue.
- **G-CSF:** A medication that stimulates bone marrow to produce white blood cells.
- **Jaundice:** Yellowing of the skin/eyes from elevated bilirubin due to liver dysfunction.
- **Neutropenia:** A reduction in neutrophils, increasing infection risk.
- **Photosensitivity:** Heightened skin sensitivity to sunlight due to treatment.
- **Radiation Dermatitis:** Skin inflammation caused by radiation therapy.
- **Shingles:** A painful rash caused by reactivation of the chickenpox virus.
- **Thrombocytopenia:** Low platelet count leading to increased bleeding risk.

7. References

American Cancer Society (2024) *Managing Side Effects*. Atlanta: ACS. Available at: <https://cancer.org> (Accessed: 10 April 2025).

National Cancer Institute (2023) *Common Cancer Treatment Side Effects*. Bethesda: NCI. Available at: <https://www.cancer.gov> (Accessed: 10 April 2025).

World Health Organization (2021) *Supportive Cancer Care Guidelines*. Geneva: WHO. Available at: <https://www.who.int/publications> (Accessed: 10 April 2025).

Rusch, V. et al. (2006) *100 Questions & Answers About Cancer Symptoms and Treatment Side Effects*, 2nd edn. Sudbury: Jones and Bartlett Publishers.

Look Good Feel Better (2025) *Appearance Support Programs*. Available at: <https://www.lookgoodfeelbetter.org> (Accessed: 10 April 2025).