

## Annual Report 2023-24

### Department of Clinical Hematology and Medical Oncology

<b>Professor and Head</b>	Pankaj Malhotra	MD, FRCP
<b>Professors</b>	Alka Rani Khadwal	MD
	Gaurav Prakash	MD, DM (Medical Oncology)
<b>Associate Professor</b>	Deepesh Lad	MD, DM (Clinical Hematology) Resigned on October 8, 2023
	Chandan Das	MD, DM (Medical Oncology) Resigned on June 15, 2023
	Arihant Jain	MD, DM (Clinical Hematology)

The Department of Clinical Hematology and Medical Oncology was created from the Internal Medicine Unit-1 on September 27, 2021. It provides outpatient and inpatient services to hemat-oncology patients. Patients are admitted to General Medical wards (29 beds), Private wards, Hematology High Dependency Unit (10-beds), BMT ward (10-beds). In addition, it also sees the emergency and outpatient medical services alternate Thursday with the Internal-Medicine Unit 1 services. The Department has special clinics – Bone-marrow Transplant/ Long-term follow-up clinic, CML Clinic, Lymphoma/myeloma clinic, GI/GU cancer clinic, and Breast cancer clinic. A total of 54 hematopoietic cell transplants, including 21 autologous and 33 allogeneic transplants, were carried out between April 1, 2023, and March 31, 2024. The latter included 17 matched sibling donors (MSD), 1 matched unrelated (MUD), and 15 haploidentical transplants.

**Dr. Pankaj Malhotra** presented the following papers: papers titled “Factors associated with thrombo-hemorrhagic deaths in patients with Acute Promyelocytic Leukemia treated with Arsenic Trioxide and All-Trans Retinoic Acid” in the 31st Congress of the International Society on Thrombosis and Haemostasis, Montreal, Quebec, Canada, June 24 – 28, 2023 and got travel award; “Fertility and Parenthood in Patients with Acute Promyelocytic Leukemia Treated with Arsenic Trioxide and All-Trans Retinoic Acid” in 65<sup>th</sup> Annual Conference of American Society of Hematology, San Diego, USA, December 9-12, 2023.

He was invited to the following Conferences as Chairperson: Chairperson of the session on “Making Budgetary Sense in Hemophilia Management: HEOR Analytics” in the conference on Bleeding Disorder Consensus Meeting (BDCM) 2023, organized by Hemophilia Advocacy Society Punjab, Chandigarh, May 2-3, 2023; Chairperson in the conference Oncology Summit organised by Cancer Research and Statistics Foundation, Chandigarh, July 15, 2023; Guest faculty at the 3<sup>rd</sup> Indian Cancer Congress to chair a session, Mumbai, November 3, 2023; Participated as Expert on the topic “Thromboembolic disorders in pregnancy-unique challenges” in the Workshop & Annual Conference of Obstetrics & Gynaecological Society of Northern India, PGIMER Chandigarh, March 9-10, 2024; Chairperson on the session on Oncological

Emergencies in AEMECON conference, PGIMER Chandigarh, March 16, 2024; Expert opinion on patient related session “The role of primary care physicians in identifying & diagnosing patients at risk for multiple myeloma: Need of the hour” in an online webinar, March 27, 2024.

He delivered invited lectures on: “Debate - Autologous HSCT Vs. Check point inhibitors” in the 4<sup>th</sup> annual conference of Indian Society of Blood and Marrow Transplantation, Bengaluru, May 4-6, 2023; "Challenges in the management of hematological malignancies in resource constrained setting on June 23, 2023 in the Hans Messner Allogeneic Bone Marrow Transplantation Academic Activity Rounds; “Thrombophilic states-Clinical approach and management” in the Hematology CME 2023 organised by Dept of General Medicine Govt Medical College Kozhikode and Indian College of Hematology, Kozhikode, Kerala, July 23, 2023; “Multiple Myeloma Update” in the 5th Annual conference of Hematology foundation of Bihar, Patna, August 5-6, 2023; conducted panel discussion on “CART cell therapy in Hematological malignancies : Clinical applications and development in Indian context” in the meeting on Precision medicine and molecular oncology the way forward organized by Max Hospital and Holistic Healing Trust, Chandigarh, August 12, 2023; Conducted panel discussion on “Juggling the therapies in relapsed Multiple myeloma in India” in Hope Asia 2023, highlights of Past European Hematology Association meeting, AIIMS, New Delhi, August 20, 2023; online webinar on “Relapsed adult ALL: How you treat” in the ALL Practice Update 2023 organised by Department of Hemato-Oncology and BMT, Rajiv Gandhi Cancer Institute & Research Centre, Delhi, India August 25, 2023; moderated the panel discussion on "Nutrition and Mental Health" in the conference organized by Dept of Dietetics, PGIMER, Chandigarh, September 2, 2023; "Immune thrombocytopenia" in a webinar organized by the NGO for patients with thrombocytopenia, September 9, 2023; participate as Meet the Professor on the topic "managing renal failure in multiple myeloma" in the 20th Conference of International Myeloma Society, Athens, Greece, September 27 - 30, 2023; Invited by Indian Society of Bone marrow transplantation (ISBMT) to moderate webinar on Basics of designing conditioning regimens in HSCT along with Dr. Nicolaus Kroger of Germany on October 4, 2023; “Thrombocytopenia-various case scenarios” in the quarterly conference organised by Department of Obstetrics and Gynecology GMCH Chandigarh and Chandigarh Regional Menopausal Society, Chandigarh, October 8, 2023; deliver Key Note Address on "Paradigm shift from Transfusion Medicine to Patient Blood Management", AFMC Pune, October 22-23, 2023; “The present and future of Amyloidosis treatment in India” in a webinar on the occasion of World Amyloidosis Day, October 26, 2023; “TFR in the Low-and-middle-income (LMIC) setting – different guidelines?” in the 3<sup>rd</sup> Indian Cancer Congress, Mumbai, November 3, 2023; “Approach to Thrombophilia” in the 13<sup>th</sup> annual conference of Maharashtra association of physicians, Nagpur, November 4, 2023. “Adult ALL: Current therapy and updates" in the annual conference of Indian Society of Hematology and Blood Transfusion, Bhubaneshwar, November 5, 2023; Invited by AIIMS New Delhi to do discussion in their monthly CPC, New Delhi, November 28, 2023; “Multiple Myeloma Practice in India: Challenges and Opportunities” in the 6th Indian Myeloma Academic Group-e (IMAGE) meeting, Pune, January 12 - 14, 2024; “CML and Pregnancy”, “How do I treat

smoldering multiple myeloma in 2024” and participated in panel discussions on Amyloidosis and Aplastic anemia in 47<sup>th</sup> annual conference of Mumbai hematology group and essence of ASH, Mumbai, January 26 - 28, 2024; Invited faculty as a panelist in the 3<sup>rd</sup> SACT “Series of Advancements in Cell Therapy” 2024, Mumbai, February 1 - 3, 2024; Expert comments in the event on “Public Lecture on Rice Fortification” organized by Dept of Hematology, UN World Food Programme and Food Civil Supplies and Consumer Affairs Department, Govt of Haryana, Chandigarh, February 20, 2024; “Challenges and opportunities for research on multiple myeloma” for the Patient awareness session in online webinar, March 22, 2024; “Management of Waldenstrom Macroglobulinemia” in the conference on updates in the treatment of Waldenstrom Macroglobulinemia, Jodhpur, March 29, 2024.

He was invited to visit Princess Margaret Cancer Center, Toronto, Canada in the Hans Messner Allogeneic Bone Marrow Transplantation Academic Activity Rounds, June 21 - 23, 2023.

He was the Organizing chairperson of the CMEs/conferences: "Advances in breast and ovarian cancer with the theme Hereditary breast and ovarian cancers". The conference was organized with the association of Chandigarh breast cancer trust, Chandigarh, May, 27, May 2023; "PGI Hem Onc Fest", Chandigarh, September 22 - 24, 2023; "9th CML patient group meeting", Chandigarh, September 22 - 24, 2023; "International Women's cancer conference", Chandigarh, December, 1 - 3, 2023.

He organized 6<sup>th</sup> Indian Myeloma Academic Groupe (IMAGE) meeting as the president of the group, Pune, January 12 - 14, 2024

**Dr. Alka Rani Khadwal** presented following papers: papers titled "Post Splenectomy Outcomes of Transfusion Dependent Thalassemia (Tdt) : Experience From Adult Thalassemia Clinic of A Tertiary Care Teaching Hospital Of North India” in 16<sup>th</sup> International Conference on Thalassaemia & Haemoglobinopathies & 18<sup>th</sup> TIF International Conference for Patients and Parents, Kuala Lumpur, Malaysia, November 3 - 5, 2023; “A Phase 2 Randomized Controlled Trial of Single-Agent Hydroxyurea Versus Thalidomide Among Adult Transfusion Dependent  $\beta$  Thalassemia Patients” in Annual Research Day, PGIMER, Chandigarh, February 3, 2024.

She was invited to the following National Conferences as Chairperson: CML patient group meeting , PGIMER, Chandigarh, September 22, 2023; Open house patient meeting with advocacy groups -PGI-ASCO-International Women’s Cancer Conference, PGIMER, Chandigarh, December 1 - 3, 2023; Session on ” Very important in ED”-Association of emergency Medicine Educators Conference 2024, PGIMER, Chandigarh, March 16 - 17, 2024.

She delivered invited lectures on: "HSCT in PID -PGIMER experience" in the World Immunology Day CME in Primary Immunodeficiency Diseases and Patient Education Program, APC, PGIMER, Chandigarh, June 23-24, 2023; “Bone marrow Transplant” on Cancer survivor’s day & International Childhood Cancer Day celebrations, Home Science College, Chandigarh, February 10, 2024.

She was invited as member of Health Product Screening Committee of ICMR network for phase I clinical trial, December 13 - 14, 2023

She served as member of organizing committee in PGI-HEM ONC FEST 2023, Chandigarh, September 22 - 24, 2023.

**Dr. Gaurav Prakash** presented a research paper on “Quantification of cell-free DNA (cfDNA) in DLBCL patients with Fluorimetry (Qubit) and Bioanalyzer for estimation of minimal residual disease” in the European Society of Human Genetics Conference, Glasgow, June 10 - 13, 2023.

He delivered invited lectures on: “Newer Anti-cancer Therapies for Management of Ovarian Carcinoma” in the Obstetrical and Gynaecological Society of India conference, April 9, 2023; Role of PARP-inhibitors in Management of Ovarian and Breast Cancer in the CME on advances in breast and ovarian cancer, Chandigarh, May, 27, May 2023; moderated a panel discussion on “Relapsed HL in India- what can we do in LMIC?” in the International Meeting - HOPE Asia, New Delhi, August 18 - 20, 2023; "Plasma cell dyscrasia-Management of Multiple myeloma" GMCH, Chandigarh, August 23, 2023; "Current Concepts in Management of MALToma (MZL)" in the annual conference of Mumbai Hematology Group, Mumbai, September 29 - October 1, 2023; "Understanding cancer! its cause, prevention and treatment" Panjab University, Chandigarh, October 13, 2023; "Understanding Breast cancer- Demystifying Myths" on the occasion of Breast Cancer Awareness Month, Chandigarh, October 24, 2023; "Treating PVRL as CNS Lymphoma" in the International Uvetis Study Group - Advanced Course on Uvetis, Chandigarh, January, 25 - 28, 2024; “Principles of Cancer Screening and Methods for Early Detection” in the annual conference of APICON, New Delhi, February 22 - 25, 2024.

He organized International Women’s Cancer Conference-2023 in collaboration with the American Society of Clinical Oncology as convener and organising secretary of the conference, Chandigarh, December 1 - 3, 2023; CME on advances in breast and ovarian cancer: Theme Hereditary Breast and Ovarian cancer, served as organizing secretary of the CME, Chandigarh, May, 27, May 2023; "PGI Hem Onc Fest" served as member of organizing committee, Chandigarh, September 22 - 24, 2023.

He organized visiting professor program of Dr. Rajvir Dahiya, M.S., Ph.D., D.Sc. Professor Emeritus and Director, Urology Research Center, Department of Urology, UCSF who delivered a lecture to the students of our institute on his work based on biomarkers of early detection of prostate cancer, November 7, 2023.

**Dr. Deepesh Lad** was an invited faculty member at the Inborn Errors Working Party's first educational Spring School on Cellular Therapy for Inborn Errors of Immunity and Hematopoiesis, Fraunencchiemsee, Germany, April 2-5, 2023. He gave an oral presentation on "Randomized Controlled Trial to study the efficacy of Fructo-OligoSaccharides (FOS) Peri-transplant to Restore gut microbiome and improve Outcomes in Allogeneic Hematopoietic Cell Transplantation (FOS-PRO-ACT study)" in the ISBMT annual meeting, Bengaluru, April 3-5, 2023. He gave an oral presentation on ‘Randomized Controlled Trial of Isha Kriya versus Observation to Improve Quality of Life in Hematopoietic Cell Transplantation Recipients’ at the EBMT annual meeting, Paris, April 23-26, 2023. He was an invited faculty member at the 8th International Transplant and Cellular Therapy Course, Barcelona, Spain, 8-10 September 2023.

**Dr. Arihant Jain** delivered invited lectures on: "Atypical Site Thrombosis" in the Hematology Master Class, Ahmedabad, August 13, 2023; "Mutation Based approach for Acute Myeloid Leukemia" in the Precision Medicine and Molecular Oncology :The way forward, Mohali, August 13, 2023; “Surgery in patients with Hemophilia” in the PGI-HEMONC FEST, Chandigarh, September 24, 2023; “Bleeding in trauma versus Medicine” in the AEMECON, Chandigarh, March 16, 2024.

He was invited as a panelist for sessions on “The way forward and consensus in Von Willi Brand disease and other rare bleeding disorders” and “The way forward and Consensus in Hemophilia" in the Disorders Consensus Meeting, Chandigarh, May 3, 2023.

He organized PGI-HEM ONC FEST 2023 as organizing secretary of the conference, Chandigarh, September 22 - 24, 2023; "HemoQuest Quiz" served as Treasurer, Chandigarh, May 11, 2024.

## I. Service

### Inpatients

Wards	2023-24			2022-23			2021-22 September 27, 2021 to March 31, 2022	
	New	Transfer from	Transfer to	New	Transfer from	Transfer to	New	Transfer from
Bone Marrow Transplant Ward	232	32	26	175	19	17	44	16
Hematology HDU	299	155	127	314	157	103	114	25
Female Medical Ward	156	213	45	155	187	50	59	37
Male Medical Ward	286	268	97	275	284	112	76	40
Female Surgical Ward	410	91	65	323	51	48	35	45
Private Ward	240	114	46	154	126	69		
Emergency OPD	765	85	532	699	29	490		
<b>Total</b>	<b>2388</b>	<b>958</b>	<b>938</b>	<b>2095</b>	<b>853</b>	<b>889</b>	<b>328</b>	<b>163</b>

### Outpatients

OPD	2023-24		2022-23		2021-22 September 27, 2021 to March 31, 2022	
	New	Old	New	Old	New	Old
BMTC	73	1282	54	933	23	235
Hematology Clinical	1612	27313	1761	25705	508	8950
Hematology Referral	6909	13133	7078	12288	2662	2962
Medical Oncology	478	5716	586	6913	1419	1595
MOC Referral	993	2083	1942	3443		
<b>Total</b>	<b>59592</b>		<b>60703</b>		<b>18354</b>	

### Training

The Department is responsible for the primary training and supervision of the D.M. Clinical Hematology, Medical Oncology, and M.D. Internal Medicine residents. There are currently seven senior residents

undergoing training in D.M. Clinical Hematology. In the last year, two senior residents completed the D.M. Clinical Hematology course. In addition, the Department also has three students undergoing Ph.D. The Department also provides short-term training in Clinical Hematology to MD/DM residents from Hematopathology, Transfusion medicine, and Pediatric Hemato-Oncology and pharmacology. Short-term trainees and students from academic centers across India also come for training in the Department.

### **Research Completed during the year**

#### **Intas Pharma**

##### **1. Safety and efficacy study of Azadine® (Azacitidine) in treatment of Myelodysplastic Syndrome in Indian patients**

The study recruited 22 patients with myelodysplastic syndrome. The patients who received Azacitidine did well and it was found to be safe and effective.

#### **Immuneel**

##### **3. A phase 2 study to determine the safety and efficacy of IMN-003A cell therapy in patients with relapsed and refractory CD19 positive B cell malignancies**

Three patients (two patients with acute lymphoblastic leukemia and one patient with non- Hodgkin lymphoma) were recruited and given CAR T cell therapy. All three patients responded at D+30.

#### **American Society of Hematology**

##### **4. Utilizing the National Digital Health Mission to improve adherence to individualized survivorship care plans for hematopoietic cell transplantation survivors in India.**

The eGVHD App is an excellent learning tool for hematology/BMT fellows and helps manage GVHD in high-volume BMT centers. All outcomes, including GRFS, are comparable between haplo-HCT and MRD-HCT cohorts. This should encourage patients without an MRD to undergo haplo-HCT. Socioeconomic factors, like pre-HCT job status and income, were significantly associated with post-HCT RTW.

#### **ICMR**

##### **5. Impact of peri-transplant antibiotics on gut microbiome and hematopoietic cell transplant outcomes.**

Low pre-HCT fecal butyrate levels tend to persist post-HCT and are associated with mucositis, dietary fiber, and antibiotic exposures. There may be a role for gut microbiome and its modulation in auto-HCT settings. FQ prophylaxis did not affect the incidence of GNB bacteremia, parenteral antibiotic use, hospitalization duration, acute GVHD, and OS post-allo-HCT.

#### **Departmental**

##### **6. Impact of mindfulness meditation on HR-QoL in patients undergoing HCT**

Isha kriya did not improve the FACT-BMT total or PROMIS-global health scores. However, there was a transient improvement in the FACT-BMT subscale scores at day+30.

## **7. Prevalence of BRCA1 and BRCA 2 Mutation among Indian Breast Cancer Patient: A Multicenter Cross-Sectional BRCA Study**

The prevalence of P/LP BRCA mutation in HER2+ 19 I Save and TNBC patients was 2.50% (95% CI: 0.30-8.74) and 14.71% (95% CI: 8.47-23.09), respectively. An association was observed between the P/LP BRCA1/2 mutation and HER2 breast cancer subtype ( $p= 0.020$ ) ed by Gma as well as TBNC status ( $p=0.011$ ). In contrast, no association was seen between P/LP BRCA1/2 mutations and ER, PR, HR and ER/PR+HER2-. Among 305 patients, 34 (11.14%) patients had a family history of breast bvarian, pancreatic, or prostate cancer, while 271(88.5%) patients had no previous family history of cancer Furthermore, 30(9.83%) patients had a family history of only breast cancer, and 23(7.54%) patients had a first degree relative with breast cancer. The prevalence of P/LP BRCA1/2 mutations among the patients with family history of Breast, Ovarian, Pancreatic or Prostate cancer was 23.53% (8/34 patients). An association was seen between P/LP BRCA1/2 mutations and family history Breast, Ovarian, Pancreatic or arval@ted Prostate cancer ( $p=0.001$ ).

## **Lambda**

## **8. A phase II/III clinical trial evaluating efficacy and safety of Hydroxychloroquine in combination with Gemcitabine and cisplatin in muscle invasive bladder cancer**

## **Research in progress**

1. A Phase 4 Study to Evaluate Safety and Effectiveness of Luspatercept (ACE-536) for the Treatment of Anemia due to IPSS-R Very Low, Low, or Intermediate Risk Myelodysplastic SyndromeS (MDS) with Ring Sideroblasts Who Require Red Blood Cell Transfusions in Subjects Who Have Had Unsatisfactory Response to or Are Ineligible to Erythropoietin Based Therapy and in Subjects With Transfusion Dependent Anemia Due to Beta-Thalassemia
2. An open label, multicenter, Phase-IV clinical trial to evaluate disease response of Carfilzomib Injection with patients relapsed or refractory multiple myeloma who have received one to three lines of therapy.
3. A phase III, randomized, double-blind study of ianalumab (VAY736) versus placebo in addition to eltrombopag in patients with primary immune thrombocytopenia (ITP) who had an insufficient response or relapsed after first line steroid treatment
4. A Phase 1/2, Open Label, Multicenter Study to Evaluate the Efficacy and Safety of DRL-1801 inPatients with Relapsed and Refractory Multiple Myeloma (SWASTH)
5. A prospective non-interventionalobservational study to determine the long-term safety and efficacy of immuneeffector cell (IEC) therapy (sentinel study)
6. A Prospective, Nonrandomized, Open Label, Single Arm, Multicenter, Phase3 Clinical Study to Evaluate the Efficacy and Safety of Human NormalImmunoglobulin for Intravenous Administration in Adult Patients withChronic Primary Immune Thrombocytopenia
7. “Indian Myeloma Academic Groupe (IMAGe) – Multiple myeloma registry”.
8. Establishing a national registry for aplastic anemia in India

## **PGIMER**

Circulating cell free DNA (ccfDNA), tumor mutation profile and their clinic-biological correlation in Diffuse Large B-cell Lymphoma

## **TATA chemicals Nutritional Division**

A Randomized Controlled Trial to study the efficacy of Fructo-OligoSaccharides (FOS) Peri-transplant to Restore gut microbiome and improve Outcomes in Allogeneic Hematopoietic Cell Transplantation (FOS-PRO-ACT study). PI. Drug support from

## **Collaborative centre for mind body intervention through yoga**

A randomized controlled trial to assess the impact of yoga on health-related quality of life in hematopoietic cell transplant recipients "Central Council for Research in Yoga & Naturopathy, Ministry of Ayush , New Delhi.

## **ICMR**

Rare disease registry data base (NRROID) and ICMR-National Hospital-based Registry on Venous Thromboembolic Disorders (i-RegVED)

Somatic mutation analysis in chronic myeloid leukemia patients at diagnosis and correlation with response to tyrosine kinase inhibitor therapy and disease progression

Profiling of germline variants as a causative genetic component in acute myeloid leukemia cases and their influence on the somatic mutational pattern in the disease pathogenesis

Multi-OMICS analysis of the human gut microbial ecosystem in Autoimmune hemolytic anemia and Immune Thrombocytopenia conditions in the Indian Population.

## **Bharat Serum**

National registry for aplastic anemia in India” . He has started a study entitled “Comparison of health care access and quality of life among patients of multiple myeloma in India and United Kingdom.

## **Eli Lilly & Company**

A Multicenter, Randomized, Open-Label, Phase 3 Trial Comparing Selpercatinib to Physicians Choice of Cabozantinib or Vandetanib in Patients with Progressive Advanced Kinase Inhibitor Naïve, RET-Mutant Medullary Thyroid Cancer (LIBRETTO-531).

## **Alkem laboratories Pvt. Ltd.**

A Prospective, Randomized, Multicenter, Comparative, Double-Blind Parallel Study to Evaluate Safety, Pharmacokinetics and Immunogenicity of Biosimilar Pertuzumab (ENZENE) with reference Pertuzumab (Perjeta, Genentech Inc.) in Previously Treated Patients with HER2 Positive Metastatic Breast Cancer

## Indexed Publications (Corresponding/ First author from Department)

1. Aravind N, Krishnappa N, Shafiq N, Malhotra P. Possible case of bortezomib-induced ileus paralytic. *BMJ Case Rep.* 2024 Feb 21;17(2):e257592. doi: 10.1136/bcr-2023-257592. PMID: 38383130; PMCID: PMC10882399.
2. Bansal A, Suri V, Sikka P, Attri SV, Varma N, Saini SS, Goyal A, Malhotra P. B12 Deficiency is the Commonest Cause of Anaemia During Pregnancy in Northern India: Study from a Tertiary Care Institute. *Indian J Hematol Blood Transfus.* 2024 Jan;40(1):78-82. doi: 10.1007/s12288-023-01682-x. Epub 2023 Aug 5. PMID: 38312179; PMCID: PMC10830963.
3. Bhattacharjee U, Jandial A, Singh C, Lekshmon KS, Mishra K, Sandal R, Nampoothiri R, Naseem S, Suri V, Jain A, Lad DP, Prakash G, Khadwal A, Malhotra P. Pregnancy and long-term outcomes of female patients with chronic myeloid leukemia on tyrosine kinase inhibitors who experienced unplanned pregnancies. *Leuk Res.* 2023 Oct;133:107367. doi: 10.1016/j.leukres.2023.107367. Epub 2023 Aug 2. PMID: 37566974.
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5. Chandrakala S, Toshniwal M, Halvawala M, Padwal N, Sidharthan N, Malhotra P, Prashantha B, Ballikar R, Shah S, Apte S, Viswanathan TK, Ramanan V, Sharma A, Pawar D, Pawar R, Shahavi V. Efficacy and Safety of Biosimilar Romiplostim Versus Innovator Romiplostim in Patients with Chronic Immune Thrombocytopenia. *Indian J Hematol Blood Transfus.* 2023 Jul;39(3):435-441. doi: 10.1007/s12288-022-01602-5. Epub 2022 Nov 15. PMID: 37304488; PMCID: PMC10247600.
6. Chhabra P, Kasudhan KS, Khaire N, Kaundal S, Chopra M, Singh C, Jandial A, Jain A, Prakash G, Khadwal A, Malhotra P, Lad DP. Utility of eGVHD App for bedside GVHD assessment in a high-volume BMT center. *Blood Cell Ther.* 2023 Feb 25;6(1):18-22. doi: 10.31547/bct-2022-017. PMID: 37324565; PMCID: PMC10266919.
7. Chopra M, Naik RR, Naik R, Sahni J, Bala K, Ahlawat J, Anand A, Singh C, Jandial A, Jain A, Prakash G, Khadwal A, Malhotra P, Lad DP. Randomized Controlled Trial of Isha Kriya versus Observation to Improve Quality of Life in Hematopoietic Cell Transplantation Recipients. *Transplant Cell Ther.* 2023 Aug;29(8):530.e1-530.e5. doi: 10.1016/j.jtct.2023.05.010. Epub 2023 May 14. PMID: 37192731.
8. Jain A, Jandial A, Mani T, Kishore K, Singh C, Lad D, Prakash G, Khadwal A, Das R, Varma N, Varma S, Malhotra P. Comparable outcomes with low-dose and standard-dose horse anti-thymocyte globulin in the treatment of severe aplastic anemia. *Blood Res.* 2024 Feb 26;59(1):6. doi: 10.1007/s44313-024-00003-z. PMID: 38485832; PMCID: PMC10903521.
9. Jandial A, Lad D, Jain A, Khadwal A, Singh C, Prakash G, Suri V, Sreedharanunni S, Sachdeva MUS, Ray P, Varma N, Varma S, Malhotra P. Characteristics and outcome of infectious complications after autologous hematopoietic cell transplantation in multiple myeloma patients. *Transpl Infect Dis.* 2023 Oct;25(5):e14123. doi: 10.1111/tid.14123. Epub 2023 Aug 12. PMID: 37573150.
10. Jandial A, Naseem S, Khadwal A, Varma N, Ray P, Singh C, Jain A, Lad D, Malhotra P, Prakash G. No role of common NOD2 gene variants in predicting sepsis related outcomes in Indian patients undergoing hematopoietic stem cell transplant. *Med J Armed Forces India.* 2023 Nov-Dec;79(6):689-693. doi: 10.1016/j.mjafi.2023.08.018. Epub 2023 Sep 12. PMID: 37981940; PMCID: PMC10654352.
11. Jindal N, Jandial A, Jain A, Lad D, Prakash G, Khadwal A, Nada R, Sethi J, Ahluwalia J, Malhotra P. Carfilzomib-induced Thrombotic Microangiopathy: A Case Based Review. *Hematol Oncol Stem Cell Ther.* 2023 May 23;16(4):426-431. doi: 10.1016/j.hemonc.2020.07.001. PMID: 32735793.

12. Karunakaran P, Jain N, Lad DP. How Do We Manage Chronic Lymphocytic Leukemia in India. *Current Hematologic Malignancy Reports*. 2024;19(2):56-64.
13. Kaundal S, Patil A, Lekshmon KS, Sharma V, Arora A, Singh C, Lad D. A role for diet and gut microbiota metabolites in autologous hematopoietic cell transplant recipients. *Blood Cell Therapy*. 2024.
14. Khadwal A, Gupta K, Mallik N, Sharma M, Malhotra P. Invasive Aspergillosis and Candidiasis in a Patient with Plasma Cell Myeloma. *Turk J Haematol*. 2023 May 29;40(2):125-127. doi: 10.4274/tjh.galenos.2023.2023.0050. Epub 2023 Mar 9. PMID: 36890724; PMCID: PMC10240163.
15. Khaire N, Bhattacharjee U, Dinesan A, Sinha A, Bhadada S, Pardeep A, Lad D. Randomized controlled trial of pre-transplant zoledronate versus observation for prevention of bone loss in allogeneic hematopoietic cell transplantation. *Blood Cell Therapy*. 2024.
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### Chapters in books

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2. Jandial A, Tandon R, Malhotra P. Clotting catastrophe in the Intensive care unit. In ISCCM Textbook of Critical Care Medicine. First Edition 2023 Eds Dhruva Chaudhry, Subhal Bhalchandra Dixit, Deepak Govil. Publisher : Jaypee Brothers Medical Publishers (P) Ltd 2023. PP 780-786
3. Mallik M, Singh C, Malhotra P. Chronic myeloid leukemia. In ICH ICP E monogram on Hematological Malignancies. Eds Pati HP. Jena RK. Jaypee Publishers New Delhi January 2024 pp 88-99
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7. Jain A, Pattanaik S. Anticoagulant, fibrinolytic, and antiplatelet drugs. In: Krishnan K, Dalal B, Dasgupta A, Malhotra P, Varma N, Varma S. PGI Textbook of Laboratory and Clinical Hematology. 1st edition. Chandigarh: Bhalani Medical Publishers. 2024.2.p.1536-62.

### Books

Krishnan K, Dalal B, Dasgupta A, Malhotra P, Varma N, Varma S. PGI Textbook of Laboratory and Clinical Hematology. 1st edition. Chandigarh: Bhalani Medical Publishers. 2024

### Visiting Professors

Dr. Nitin Jain, MD Anderson Cancer Center, Texas Houston, USA visited the Department of Clinical Hematology & Medical Oncology, PGIMER on June 21, 2023

Dr. Guillermo, MD Anderson Cancer Center, Texas Houston, USA visited the Department of Clinical Hematology & Medical Oncology, PGIMER on August 2, 2023

### Awards and Honors

Dr Pankaj Malhotra was nominated as Board of Directors of International Myeloma Society. He was elected as President of the Chandigarh chapter of Indian Association for Parenteral and Enteral Nutrition 2023-25. He was awarded travel grant in 31st Congress of International Society on Thrombosis and Haemostasis held in Montreal, Quebec, Canada from June 24 – 28, 2023.

He was a nominated member of expert committee of DST funded project “CRISPR mediated genetic correction of Sickle Cell Disease (SCD) towards clinical trials in a small patient cohort”. He was nominated as technical expert member of the committee constituted by Ministry of Health and Family Welfare (Child Health Section) to advise the Government on use of Inj FCM in pregnancy as a part of the Anemia Mukta Bharat programme. He was a technical expert member of the expert committee constituted by Indian Council of Medical Research (ICMR) for strengthening anemia muktabharat program. He was an expert member of committee constituted by National Health Authority (NHA) to make Ayushman Bharat packages for autologous stem cell transplantation for multiple myeloma and lymphoma and aplastic anemia. He was a member of the Standing Academic Committee (SAC) regional medical research centre of Indian Council of Medical Research Dibrugarh. He was nominated as Temporary Adviser to the International Agency for Research on Cancer (IARC), World Health Organization (WHO) for the WHO Classification of Tumours, 5th edition - Haematolymphoid Tumours (multiple myeloma). He was an Expert committee member formed by Ministry of Tribal Affairs (Tribal Health-Livelihood Division) for diagnosis and implementation strategies for sickle cell disease in India.