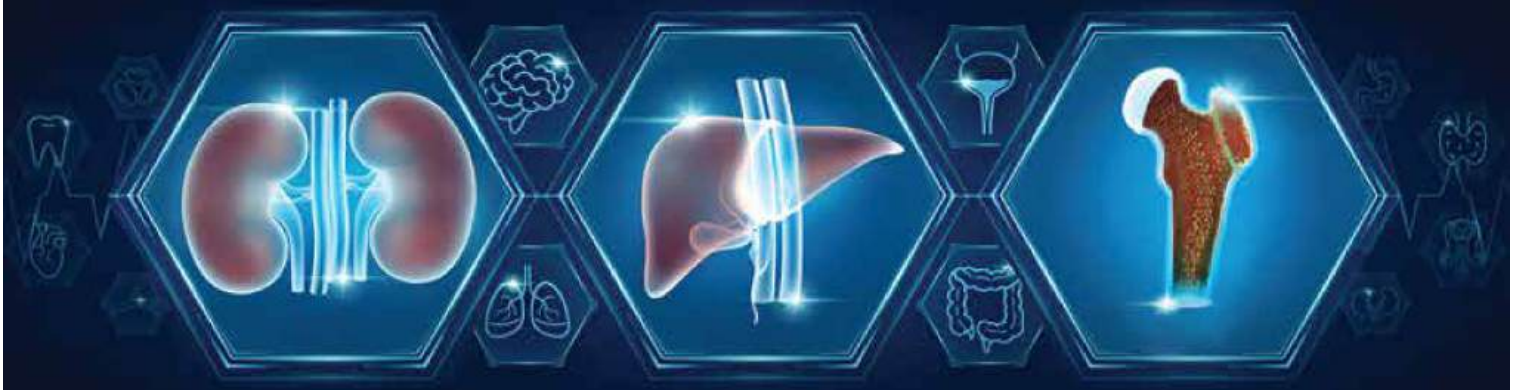

CONFERENCE HANDBOOK

FIRST INTERNATIONAL
CONFERENCE ON TRANSPLANTATION

KARACHI - PAKISTAN

April 09-13, 2025

“Organ donation
is the ultimate
act of humanity
—where
one life’s farewell
becomes another’s
new beginning,
and generosity
transcends time!”

FIRST INTERNATIONAL
CONFERENCE ON TRANSPLANTATION
KARACHI - PAKISTAN
APRIL 09-13, 2025

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WELCOME MESSAGE FROM DR. AZRA FAZAL PECHUHO

Minister of Health and Population Welfare Government of Sindh, Pakistan

Dear Esteemed Delegates, and Honored Guests,

It gives me immense pleasure to extend a warm welcome to you all at the First International Conference on Transplantation (FICT 2025), organized by Dow University of Health Sciences (DUHS), Karachi, Pakistan, from April 9–13, 2025. This significant gathering of renowned clinicians, researchers, and policymakers reflects our shared commitment to advancing the science and practice of organ and bone marrow transplantation for the benefit of patients worldwide.

Transplantation has transformed modern medicine, offering hope to those suffering from end-stage organ failure and hematologic disorders. However, as this field progresses, we must also address the critical challenges of organ availability, donor ethics, post-transplant care, and long-term immunosuppression management. This conference presents a unique opportunity to engage in meaningful discussions, share groundbreaking research, and develop strategies that will help shape the future of transplantation, not only in Pakistan but across the globe.

I am particularly honored to welcome distinguished international and national experts, whose contributions have significantly advanced transplantation science. Their insights will undoubtedly provide inspiration and knowledge that will guide our future efforts in this field. This conference's agenda, featuring keynote lectures, expert panel discussions, live surgical demonstrations, and interactive workshops, is designed to provide a holistic and enriching experience for all participants. I encourage each of you to take full advantage of these sessions to exchange ideas, build collaborations, and contribute to the global dialogue on transplantation medicine.

On behalf of the Government of Sindh and the Ministry of Health and Population Welfare, I commend Dow University of Health Sciences, the organizing committee, and all contributors for their dedication in making this prestigious event a reality. Their efforts in bringing together the best minds in transplantation will have a lasting impact on healthcare policy and practice in Pakistan and beyond.

As you engage in this academic and professional exchange, I also invite you to experience the vibrant culture, hospitality, and resilience of Karachi. Wishing you all a highly productive and insightful conference. May FICT 2025 serve as a platform for innovation, collaboration, and transformative progress in transplantation medicine.

MESSAGE FROM PROF. MOHAMMED SAEED QURAISHY T.I

Vice Chancellor, Dow University of Health Sciences

Dear Esteemed Delegates, Honored Guests, and Distinguished Speakers,

It is my great privilege and honor to welcome you to the First International Conference on Transplantation (FICT 2025), organized by Dow University of Health Sciences (DUHS), Karachi, Pakistan, from April 9–13, 2025. This landmark event brings together leading experts, researchers, and clinicians from across the globe to exchange knowledge, discuss advancements, and address challenges in the rapidly evolving field of organ and bone marrow transplantation.

The significance of transplantation in modern medicine cannot be overstated. It represents not only a remarkable scientific and technological achievement but also a beacon of hope for patients suffering from end-stage organ failure and hematologic disorders. As the need for transplantation grows worldwide, so do the complexities associated with it, including ethical concerns, donor shortages, post-transplant care, and immunosuppression management. This conference provides an opportunity for meaningful dialogue and collaboration, ensuring that we remain at the forefront of innovation and clinical excellence in transplantation medicine.

At DUHS, we have always been at the cutting edge of medical education, research, and patient care. As one of the premier healthcare institutions in Pakistan, we are committed to advancing medical sciences and addressing the healthcare needs of our communities. This conference serves as a testament to our dedication to fostering global collaborations and interdisciplinary partnerships that drive progress in transplantation.

We are incredibly honored to host renowned international and national experts, including Dr. John Fung, Dr. Paulo Grossi, and several other pioneers who have made groundbreaking contributions to transplantation science. Their insights, experiences, and cutting-edge research will undoubtedly provide valuable perspectives on the latest developments in the field.

I extend my deepest gratitude to the conference organizing committee, faculty, sponsors, and institutional partners whose tireless efforts have made this conference a reality. Their dedication and hard work have been instrumental in bringing together some of the brightest minds in the field. I also commend the researchers, students, and practitioners who have contributed their scientific work, ensuring a dynamic and thought-provoking academic exchange.

Beyond the academic and clinical discussions, I encourage you to take advantage of the opportunity to network with peers, forge new collaborations, and explore potential research and training partnerships. I also hope you will experience the rich cultural heritage and hospitality of Karachi, a city that embodies the vibrancy and resilience of Pakistan.

Once again, on behalf of Dow University of Health Sciences, I welcome you all to FICT 2025. May this conference serve as a catalyst for new ideas, impactful collaborations, and transformative advancements in transplantation medicine.

I look forward to an inspiring and productive event and wish you all a memorable and enriching experience at FICT 2025.

MESSAGE FROM PROF. NAZLI HOSSAIN

Pro-Vice Chancellor, Dow University of Health Sciences

It's a great honor for me to welcome all the international and national guests on the behalf of the organizing committee of the First International Conference on Transplantation (FICT) at Dow University of Health Sciences.

At Dow University of Health Sciences, we provide facilities for bone marrow, renal and liver transplantation, under one roof, thus making it a unique center of excellence in the country. The center has been instrumental in providing a new lease of life to the population. The success rate of transplantation drives people from not only all the provinces of the country, but also from our neighboring countries, lacking these facilities.

The FICT, will help the health care professionals in strengthening their services. Presence of international leaders in the field of transplantation for the conference is a testament that Dow University of Health Sciences has been able to make its presence felt in the international scenario. Leading national experts will be sharing their thoughts and practices in the field to improve upon the existing practices. This will also provide an opportunity to the young health care professionals to learn from the experiences of their peers.

A very robust program has been designed to cover all the aspects from immunological to post transplant complications. I am hopeful that participants will be able to learn new developments in the field of transplantation during this four-day activity.

The organizing committee, faculty members and the administrative teams need to be praised for their efforts in putting things together for this event.

I am hopeful that the participants will carry with them great learning experience after attending the event. I also invite all the international and national participants to enjoy the cool breeze of the Arabian sea, Mohatta Palace and the rich culture of the Sindh Province.

MESSAGE FROM PROF. JAHAN ARA HASAN

Pro-Vice Chancellor, Dow University of Health Sciences

It is with great pleasure that I welcome you to the First International Conference on Transplantation, organized by Dow University of Health Sciences (DUHS), Karachi, Pakistan, from April 9–13, 2025. This pioneering event serves as a significant milestone in our commitment to advancing medical research, improving healthcare outcomes, and fostering international collaboration in the field of transplantation.

The need for improved transplantation techniques, better patient care, and more efficient organ donation systems has been most required. This conference provides a platform for the exchange of knowledge, ideas, and best practices among experts and practitioners working in the field of organ transplantation from across the globe. Together, we will explore innovative advancements, share research findings, and engage in interactive discussions aimed at improving transplant outcomes and the overall healthcare landscape.

At Dow University of Health Sciences, we believe that collaboration between academia, healthcare professionals, religious scholars and policymakers is vital to solving the challenges faced by the transplantation community. This conference reflects our commitment to fostering such collaborations and contributing to the global dialogue on transplantation science.

I would like to extend my heartfelt thanks to all our esteemed speakers, participants, and organizers who have contributed to making this event a reality. I am confident that the insights gained during these sessions will inspire further research and enhance patient care in Pakistan and worldwide.

I look forward to an inspiring and fruitful conference and hope that it will mark the beginning of many more such impactful endeavors.

MESSAGE FROM PROF. SOHAIL RAO

Senior Scientific Advisor to the Vice Chancellor, Dow University of Health Sciences

Respected Colleagues,

It is with great pride and excitement that I welcome you to the First International Conference on Transplantation (FICT 2025), hosted by Dow University of Health Sciences (DUHS), Karachi, Pakistan, from April 9–13, 2025. This historic event is the result of months of tireless effort, meticulous planning, and dedicated teamwork by the Organizing Committee, which has worked relentlessly to curate an outstanding program that brings together leading experts, pioneering researchers, and dedicated clinicians in the field of transplantation.

From the very beginning, our vision has been to create a platform that fosters meaningful exchange, collaboration, and innovation. Transplantation medicine is advancing at an unprecedented pace, with groundbreaking developments in surgical techniques, immunosuppression, donor-recipient matching, and regenerative medicine transforming patient care. The Organizing Committee has carefully designed a scientific program that not only reflects these advancements but also addresses the pressing challenges in clinical practice and healthcare policy.

One of the primary objectives of this conference has been to develop a world-class scientific program by engaging leading international and national experts. We are honored to host renowned figures in transplantation, whose invaluable contributions continue to shape the future of transplant medicine. Recognizing the significance of global collaboration, we have worked diligently to foster interactions between clinicians, researchers, policymakers, and industry leaders, encouraging cross-border partnerships that will drive future innovations.

The conference structure is designed to provide an enriching learning experience by integrating live surgical broadcasts, interactive case discussions, and specialized training workshops that offer both theoretical knowledge and practical application. Furthermore, we have ensured that ethical and policy challenges surrounding cadaveric organ donation, equitable access to transplantation, and public awareness initiatives are addressed through dedicated sessions that bridge the gap between scientific advancements and ethical imperatives.

The successful realization of this conference would not have been possible without the passion, dedication, and commitment of the Organizing Committee, the leadership of DUHS, our institutional partners, and our generous sponsors. Their unwavering support has played an instrumental role in bringing this vision to life. As we gather for

this significant event, I encourage you to actively participate in the discussions, engage in meaningful networking opportunities, and contribute to the exchange of knowledge that will define the future of transplantation medicine. FICT 2025 is more than just a conference—it is a catalyst for new ideas, research collaborations, and clinical innovations that will have a lasting impact on global healthcare.

On behalf of the Organizing Committee, I extend my deepest gratitude to all attendees, faculty members, and contributors who have played a role in making this conference a success. We look forward to an inspiring and impactful exchange of knowledge, ideas, and experiences. Welcome to FICT 2025!

MESSAGE FROM DR. RASHID BIN HAMID

**Associate Professor, Dow International Medical College,
Head, Renal Transplant Unit, Dow University Hospital**

Dear Colleagues,

It is with immense pleasure and great honor that I welcome you to the First International Conference on Transplantation, a landmark event dedicated to the advancement of transplant medicine. This conference is more than just a gathering of professionals—it is a celebration of human resilience, scientific innovation, and the unwavering commitment of healthcare professionals to improving lives through transplantation.

Transplantation is not just a medical procedure; it is a lifeline, a second chance, and a testament to the incredible progress of modern medicine. Each successful transplant represents not only a technical achievement but also a deeply personal journey—one of hope, perseverance, and the invaluable gift of life. Whether from the perspective of a patient, a donor, a caregiver, or a medical professional, transplantation is a story of compassion, dedication, and unwavering belief in the power of medicine to transform lives.

As we come together for this significant event, we stand at the forefront of a rapidly evolving field. This conference provides a unique opportunity for clinicians, researchers, policymakers, and industry leaders from across the globe to share their expertise, engage in meaningful discussions, and collectively push the boundaries of what is possible in transplant medicine.

Among the many fields in transplantation, renal transplantation remains a critical area of focus, offering both remarkable progress and formidable challenges. From advancements in immunosuppression therapies to strategies for increasing donor availability and improving long-term graft survival, the field continues to evolve, demanding innovation, research, and interdisciplinary collaboration. It is through knowledge-sharing and partnerships that we can further refine transplant techniques, enhance patient care, and address pressing ethical and logistical concerns.

This conference serves as a vital platform for exploring cutting-edge research, debating new ideas, and shaping the future of transplantation medicine. Here, expertise meets innovation, discussions lead to actionable solutions, and the needs of patients guide our collective efforts. We are privileged to hear from some of the brightest minds in the field, whose contributions will undoubtedly inspire the next wave of advancements.

I encourage you all to engage actively, ask questions, build connections, and immerse

yourself in the wealth of knowledge that this event has to offer. Whether through keynote lectures, panel discussions, workshops, or informal networking, every conversation has the potential to spark new ideas, foster collaborations, and contribute to the greater good of our field.

We hope that this conference will not only deepen your understanding of transplantation but also inspire you to contribute to its future growth—whether through research, clinical practice, policy development, or advocacy. Our collective efforts today will shape the landscape of transplantation for generations to come.

On behalf of the Dow University of Health Sciences and the Renal Transplant Unit, I extend my heartfelt gratitude to all the speakers, organizers, and participants who have made this event possible. Your dedication and contributions are what drive progress in this vital field.

Once again, I warmly welcome you all and look forward to an engaging, enlightening, and inspiring conference.

MESSAGE FROM DR. MUHAMMAD TASSADUQ KHAN

Associate Professor (Nephrology), Dow International Medical College and Renal Transplant Physician, Dow University Hospital

Dear Colleagues,

It is my great pleasure to welcome you to the First International Conference on Transplantation, a milestone event dedicated to the advancement of renal transplantation and the broader field of transplant medicine. This conference serves as an invaluable forum for exchanging ideas, fostering collaborations, and exploring the latest breakthroughs that continue to shape the landscape of organ transplantation.

Renal transplantation is not merely a surgical achievement—it is a renewed opportunity for life, a second chance for patients suffering from end-stage renal disease, and a testament to the power of medical innovation. As a renal transplant physician, I have had the privilege of witnessing its profound impact, not only in restoring health but also in transforming families, communities, and futures. Yet, the success of transplantation extends far beyond the operating room. It is a continuous journey that demands excellence in long-term patient care, immunosuppressive therapy, rejection management, and post-transplant monitoring.

This conference comes at a time when transplantation medicine is evolving at an unprecedented pace. Advancements in organ preservation, minimally invasive surgical techniques, precision medicine, and AI-driven patient monitoring are paving the way for improved outcomes and extended graft survival. As we gather some of the brightest minds in nephrology, surgery, immunology, and transplant research, our discussions will not only address clinical challenges but also explore new frontiers in transplant ethics, donor optimization, and global access to transplantation.

I encourage every participant to fully engage in the sessions, ask thought-provoking questions, and seek out opportunities for collaboration. The knowledge we share today will shape the future of transplant medicine and contribute to better patient outcomes worldwide. This event is more than a meeting of experts; it is a collective effort to drive progress, refine treatment protocols, and push the boundaries of what is possible in renal transplantation.

On behalf of Dow University of Health Sciences, I extend my gratitude to all speakers, organizers, and attendees who have come together to make this event a success. Let us seize this opportunity to learn from one another, to inspire, and to innovate.

Welcome to a conference that promises to be a catalyst for transformation in transplant medicine!

MESSAGE FROM DR. JAHANZAIB HAIDER

Associate Professor, Dow International Medical College and Consultant, Liver Transplant and Hepatopancreatobiliary Surgery, Dow University Hospital

Dear Esteemed Participants,

It is with great honor and enthusiasm that I welcome you to the First International Conference on Transplantation, a pivotal gathering of global experts committed to advancing the field of organ transplantation. This conference is more than just an academic event—it is a collaborative effort to push the boundaries of surgical innovation, post-transplant care, and patient outcomes.

Liver transplantation stands as one of the most transformative achievements in modern medicine, offering hope and renewed life to patients suffering from end-stage liver disease and complex hepatobiliary conditions. It is a discipline that continuously evolves, driven by cutting-edge research, technological advancements, and the shared expertise of dedicated professionals.

As a liver transplant and hepatopancreatobiliary (HPB) surgeon, I have seen firsthand the intricate challenges that come with this life-saving procedure. From refining surgical techniques and optimizing organ preservation to tackling rejection, immunosuppression, and long-term patient management, the field demands continuous progress. It is only through collaboration, knowledge-sharing, and a multidisciplinary approach that we can enhance transplant success rates and improve the quality of life for our patients.

This conference provides an unparalleled platform to exchange insights, discuss emerging research, and explore novel solutions to the challenges we face in transplantation. Whether through advancements in minimally invasive liver surgery, AI-driven patient monitoring, donor optimization strategies, or post-operative immunological research, every conversation here has the potential to redefine the future of transplant medicine.

I encourage each of you to engage in meaningful discussions, challenge conventional approaches, and build new partnerships that will drive progress in our field. Together, we have the power to transform transplantation science, expand its accessibility, and refine its success to ensure better patient outcomes worldwide.

On behalf of Dow University of Health Sciences, I extend my deepest gratitude to all our distinguished speakers, researchers, clinicians, and attendees for contributing to this significant event. Your dedication and passion are what fuel the evolution of liver transplantation and transplant medicine as a whole.

Welcome to a conference that promises to inspire, educate, and shape the future of liver transplantation!

MESSAGE FROM DR. FARRUKH ALI KHAN

Head of Department, Clinical Hematology & Bone Marrow Transplant, DUHS

Dear Distinguished Guests,

It is with great enthusiasm and profound appreciation that I welcome you to the First International Conference on Transplantation. This landmark event brings together some of the brightest minds in the field of transplantation, uniting researchers, clinicians, and innovators from across the world in a shared mission—to advance the science, enhance patient outcomes, and shape the future of transplant medicine.

Bone marrow transplantation represents far more than a medical procedure—it is a beacon of hope, a lifeline for those battling life-threatening blood disorders. It is a field where cutting-edge science, surgical precision, and deep human compassion intersect to create life-saving possibilities. Each successful transplant not only extends a life but also restores hope for families, strengthens communities, and reaffirms our commitment to pushing the boundaries of medical science.

This conference is a remarkable opportunity to explore the latest advancements in transplantation, share invaluable experiences, and foster global collaborations that will drive the next wave of progress. From novel conditioning regimens and graft-versus-host disease management to breakthroughs in donor matching and cellular therapies, bone marrow transplantation continues to evolve, offering new possibilities and improved outcomes for patients in need. The landscape of hematopoietic stem cell transplantation is being redefined by research, technology, and multidisciplinary cooperation, and today, we stand at the forefront of this transformation.

As we convene experts from around the world, this gathering is more than just an exchange of knowledge—it is a catalyst for change, a platform where ideas take shape, and where collaboration transforms into action. Every discussion, every new perspective, and every scientific breakthrough presented here has the potential to impact lives, ensuring that transplantation continues to reach new heights of safety, efficacy, and accessibility.

I encourage each of you to engage deeply, challenge existing paradigms, and embrace new possibilities. Let us use this forum to strengthen our professional networks, mentor the next generation of transplant specialists, and collectively push the boundaries of what we can achieve in transplantation medicine. The work we do today will set the stage for future advancements, paving the way for more effective therapies, better survival rates, and improved quality of life for our patients.

On behalf of the Department of Clinical Hematology and Bone Marrow Transplantation at Dow University of Health Sciences, I extend my heartfelt gratitude to all the distinguished speakers, participants, and organizers who have made this event possible. Your dedication and passion for the field are what drive innovation and progress.

Once again, I warmly welcome you to this historic conference. Let us make the most of this opportunity to inspire, collaborate, and transform the future of transplant medicine together.

ORGANIZING COMMITTEE

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Vice Chancellor,
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Senior Scientific Advisor to the Vice Chancellor, Dow University of Health Sciences

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Principal,
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Dr. Rashid Bin Hamid
Associate Professor, DIMC, Head, Renal Transplant Unit, Dow University Hospital

Member

Dr. Muhammad Tassaduq Khan
Associate Professor (Nephrology), DIMC and Renal Transplant Physician, DUH

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Member

Ms. Yasmeen Khan
Lecturer, Coordinator, Patron Community
Service & Sustainability Society, IBHM DUHS

PRE-CONFERENCE PROGRAM

WEDNESDAY, APRIL 09, 2025

8:00 a.m. – 5:00 p.m.

Prof. John Fung with the Liver Transplant Team

Professor of Surgery, Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

Topic: Live Video Feed of Liver Transplant

Venue: 3rd floor, Seminar Hall, Dow University Hospital (Ojha Campus)

Prof. John LaMattina with the Renal Transplant Team

Professor of Surgery, Pritzker School of Medicine, University of Chicago

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9:00 a.m. – 11:00 a.m.

Aamir Ehsan, MD

Chief Executive Officer, COREPATH Laboratories
Former Chief of Pathology, VA Medical Center – San Antonio, Texas
Former Faculty, UT Health Science Center – San Antonio

Topic: Lymphomas Under the Lens: A Live Microscope Session on Lymph Node Pathology

Facilitators: Prof. Dr. Lubna Avesi, Dr. Farheen Danish, Dr. Saba Hassan Shamim

Venue: Training Science Lab, Serobiology Building, (Ojha Campus)

THURSDAY, APRIL 10, 2025

9:30 a.m. – 10:45 a.m.

Panel Discussion:

Topic: Advancing Organ and Bone Marrow Transplantation: The Road Ahead

Prof. John Fung
Professor of Surgery, Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

Prof. Muhammad Mansoor Mohiuddin
Professor of Surgery, School of Medicine, University of Maryland, Baltimore, MD, USA

Prof. John LaMattina
Professor of Surgery, Pritzker School of Medicine, University of Chicago

Prof. Dr. Salman Naseem Adil
Professor, Section of Hematology, Department of Pathology and Laboratory Medicine, Aga Khan University

Live Telecast on Social media and OJHA Campus

Moderator: **Professor Sohail Rao**
Chief Scientific Advisor to the Vice Chancellor, DUHS

Venue: Arag Auditorium, Dow Medical College

9:00 a.m. – 10:30 a.m.

Aamir Ehsan, MD
Chief Executive Officer, COREPATH Laboratories
Former Chief of Pathology, VA Medical Center – San Antonio, Texas
Former Faculty, UT Health Science Center – San Antonio

Topic: Pathology Without Borders: Implementing Digital Solutions at DUHS - A DOGANA 2025 Presidential Initiative

Moderator: **Dr. Anita George** (Assistant Professor Histopathology DUHS)

Venue: DIMC Lecture Hall-3 Ground Floor, DUHS Ojha Campus

11:00 a.m. – 1:00 p.m.

Topic: Hematologic Malignancies Unveiled: A Microscopic Exploration of Leukemia, MPN, and MDS

Aamir Ehsan, MD
Chief Executive Officer, COREPATH Laboratories
Former Chief of Pathology, VA Medical Center – San Antonio, Texas
Former Faculty, UT Health Science Center – San Antonio

Venue: Training Science Lab, Serobiology Building, Ojha Campus

FRIDAY, APRIL 11, 2025

8:00 a.m. – 1:00 p.m.

Prof. John Fung with the Kidney Transplant Team

Professor of Surgery, Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

Topic: Live Video Feed of Kidney Transplant

Venue: Seminar room, 3rd floor, Dow University Hospital

Prof. John LaMattina with the Liver Transplant Team

Professor of Surgery, Pritzker School of Medicine, University of Chicago

Venue: Dow University Hospital, Ojha Campus

2:30 p.m. – 6:30 p.m.

Venue: Ambassador III

Renal Transplant Medicine Workshop: Renal Transplant Complications

Topic: Medical complications post-renal transplantation

Prof. Adnan Sharif

Consultant Nephrologist and Transplant Physician, Queen Elizabeth Hospital, Birmingham, UK

Topic: Revolutionizing post-transplant rejection management

Dr. Fritz Kurt Herbet Diekman

Head of the Service of Nephrology and Kidney Transplantation at Hospital Clínic de Barcelona and Associate Professor of Nephrology at the Universitat de Barcelona.

Topic: Post-transplant infections, from diagnosis to defense

Prof. Paulo Grossi

Professor of Infectious Diseases | Director, Infectious and Tropical Diseases Unit, University of Insubria, Varese, Italy

Topic: Advancing kidney transplant outcomes: post-transplant immunosuppressive strategies and graft monitoring

Prof. Dr. med. Klemens Budde

MD, Head of Clinical transplant program Department of Nephrology Charite University, Berlin, Germany

Topic: Immunology in transplantation, the science behind long-term success

Prof. Adil Manzoor

Associate Professor of Nephrology Program Director Nephrology/Transplant nephrology at Pakistan Kidney and Liver Institute & Research Center (PKLI), Lahore, Pakistan.

Course Coordinator: **Prof. Muhammad Tassaduq Khan (DUHS)**

Associate Professor of Nephrology and Renal Transplant Physician, DUHS

CONFERENCE PROGRAM

SATURDAY, APRIL 12, 2025

8:00 a.m. – 9:30 a.m.
Breakfast and Poster Viewing (Venue: Marriott Marque)

9:30 a.m. – 9:45 a.m.
Opening Ceremony Venue: Marriott Marque

9:45 a.m. – 11:15 a.m.
Venue: Marriott Marque

Keynote Session I

9:45 a.m. – 10:30 a.m.
Topic: Transplantation and Infection: Unraveling Complexities in a Changing Landscape

Prof. Paulo Grossi
Professor of Infectious Diseases | Director, Infectious and Tropical Diseases Unit, University of Insubria, Varese, Italy

10:30 a.m. – 11:15 a.m.

Topic: Tacrolimus at 30: Evolution, Impact, and Future in Transplant Medicine

Prof. John Fung
Professor of Surgery, Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

11:15 a.m. – 11:45 a.m.
Tea Break, Networking & Poster Viewing

11:45 a.m. – 1:30 p.m.
(Please see page 28 for details)

Parallel Sessions I

Kidney Transplantation (Venue: Marriott Marque)
Liver Transplantation (Venue: Ambassador I)
Bone Marrow Transplantation (Venue: Ambassador III)

1:30 p.m. - 2:30 p.m.
Lunch & Prayer Break

2:30 p.m. – 3:15 p.m.
Venue: Marriott Marque

Keynote Session II

Topic: Decoding Posttransplant Lymphoproliferative Disorders: From Pathogenesis to Diagnosis

Aamir Ehsan, MD

Chief Executive Officer, COREPATH Laboratories
Former Chief of Pathology, VA Medical Center – San Antonio, Texas
Former Faculty, UT Health Science Center – San Antonio

3:15 p.m. – 5:30 p.m.
(Please see page 33 for details)

Parallel Sessions II

Kidney Transplantation (Venue: Marriott Marque)
Liver Transplantation (Venue: Ambassador I)
Bone Marrow Transplantation (Venue: Ambassador III)

SUNDAY, APRIL 13, 2025
VENUE: MARRIOTT MARQUE

8:00 a.m. – 9:00 a.m.
Breakfast and Poster Viewing

9:00 a.m. – 11:00 a.m.

Kidney Transplantation

Guest of Honour:

Prof. M.H. Osmani
Panel Consultant, National Medical Centre, Karachi, Pakistan

Panel of Experts:

Prof. Waqar H. Qazmi
Nephrologist, Karachi Medical & Dental College, Karachi, Pakistan

Prof. Nayyer Mehmood
Consultant Nephrologist and Chief of Medicine, Shifa International Hospital, Islamabad, Pakistan.

Prof. Kanwar Naveed Mukhtar
Head of Department, Department of Nephrology, Liaquat National Hospital and Medical College, Karachi, Pakistan

Prof. Sajid Bhatti
Consultant Nephrologist, Sindh Institute of Urology and Transplantation, Karachi, Pakistan.

Dr. Bilal Jamil
Medical Director & Consultant Nephrologist, Tabba Kideny Institute, Karachi, Pakistan.

Speakers:

Topic: Public awareness in organ donation and innovation to increase the number of transplant a Saudi experience

Dr. Iftikhar Khan
Transplant Surgeon, King Fahad Specialist Hospital, Dammam, Kingdom of Saudi Arabia

Topic: Mesenchymal Stem cell therapy in renal transplant

Dr. Fritz Kurt Herbet Diekman
Head of the Service of Nephrology and Kidney Transplantation at Hospital Clínic de Barcelona and Associate professor of Nephrology at the Universitat de Barcelona.

Topic: Capacity building and training of transplant in Pakistan

Maj. Dr. Gen. Haroon
Consultant Urological Surgeon, Armed Forces Institute of Urology, Rawalpindi, Pakistan

Topic: Transplant in Monoclonal gammopathy- Amyloidosis

Dr. Adil Manzoor
Nephrologist, Kidney Transplant Surgeon, Pakistan Kidney & Liver Institute, Lahore, Pakistan

Topic: Precision of medicine in transplantation

Prof. Sajid Rafiq Abbasi

Consultant Nephrologist, Pakistan Institute of Medical Sciences, Islamabad, Pakistan

Topic: Role of vaccination, updates and emerging guidelines in renal transplant patients

Dr. Ahad Qayoom

Nephrologist, Bahria International Hospital, Lahore, Pakistan

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11:00 a.m. – 11:30 a.m.

Tea Break, Networking & Poster Viewing

11:30 a.m – 12:30 p.m.

Keynote Session III

11:30 a.m – 12:00 p.m.

Topic: From Lab to Life: What Human Xenotransplantation Taught Us?

Prof. Muhammad Mansoor Mohiuddin

Professor of Surgery, School of Medicine, University of Maryland, Baltimore, MD, USA

12:00 p.m. – 12:30 p.m.

Topic: Precision in Liver Transplantation: Avoiding Technical Pitfalls in Deceased and Living Donor Procedures

Prof. John LaMattina with the Liver Transplant Team

Professor of Surgery, Pritzker School of Medicine, University of Chicago

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12:30 p.m. – 1:30 p.m.

Fireside Chat

Topic: Breaking Barriers in Transplant Medicine: Discussion with Panel of Experts

Prof. John Fung

Professor of Surgery, Pritzker School of Medicine, University of Chicago, Chicago, IL, USA

Prof. Muhammad Mansoor Mohiuddin

Professor of Surgery, School of Medicine, University of Maryland, Baltimore, MD, USA

Prof. John LaMattina

Professor of Surgery, Pritzker School of Medicine, University of Chicago

Dr. Fritz Kurt Herbet Diekman

Head of the Service of Nephrology and Kidney Transplantation at Hospital Clínic de Barcelona and Associate professor of Nephrology at the Universitat de Barcelona.

1:30 p.m. - 2:00 p.m.

Closing Ceremony

2:00 p.m. - 3:00 p.m.

Networking Lunch & Prayer

PARALLEL SESSIONS I

SATURDAY, APRIL 12, 2025

11:45 A.M. TO 1:30 P.M.

RENAL TRANSPLANT SESSION I

Guest of Honors:

Prof. Sami J. Khan
Ex. HOD Pakistan Institute of Medical Sciences, Islamabad, Pakistan, Patron in Chief, Pakistan Society Of Nephrology.

Panel of Experts:

Prof. Zahid Nabi
President, Pakistan Society of Nephrology, Kahuta Research Laboratories Hospital, Islamabad, Pakistan

Prof. Ejaz Ahmed
Sindh Institute for Urology and Transplantation, Karachi, Pakistan

Professor Syed Munib
Chairman and Head of the Department of Nephrology & Diagnostics at the Institute of Kidney Diseases, Hayatabad, Peshawar, Pakistan

Major General (Retired) Dr. Arshad Mehmood
Head of the Urology Department, Bahria International Hospital Safari, Rawalpindi, Pakistan.

Dr. Fazal Muhammad
Head of the Nephrology Department, Balochistan Institute of Nephro-Urology Quetta, Quetta, Pakistan

Speakers:

Topic: Introduction of Renal Transplant Program in DUHS

Dr. Rashid Bin Hamid
Associate Professor, Dow International Medical College, Head, Renal Transplant Unit, Dow University Hospital, Karachi, Pakistan

Topic: Ethical and legal challenges in transplantation in a 3rd world country.

Prof. Asim Ahmed
Interim Dean & Chief Nephrologist, The Kidney Centre, Karachi, Pakistan

Topic: Improving donor safety- hand assisted laparoscopic donor nephrectomy

Dr. Mohammad Ayaz Khan
Consultant Urologist, Shifa International Hospital, Islamabad, Pakistan

Topic: Marginal donor, expanding the Boundaries of hope in transplantation

Dr. Muhammad Tassaduq Khan
Associate Professor (Nephrology), Dow International Medical College, Renal Transplant Physician, Dow University Hospital, Karachi, Pakistan

Topic: Post-transplant Malignancy

Prof. Adnan Sharif
Consultant Nephrologist and Transplant Physician, Queen Elizabeth Hospital, Birmingham, UK

Topic: Twin to paired exchange, expanding the donor pool

Dr. Asad Bashir
Chairman of Kidney Transplant and Consultant in Kidney Transplant and General Surgery, Pakistan Kidney & Liver Institute and Research Center, Lahore, Pakistan.

Topic: Post-Transplant recurrences of diseases

Dr. Tariq Ali
Renal Transplant Physician, King Faisal Specialist Hospital and Research Center, Riyadh, Kingdom of Saudi Arabia.

LIVER TRANSPLANT SESSION I

Surgical Aspects and Challenges in Living Donor Liver Transplantation

Chair:

Prof. Tariq Ali Bangash

Associate Professor of Surgery, Head of Liver Transplant and Hepatopancreatobiliary (HPB) Surgery Unit, Shaikh Zayed, Lahore, Pakistan.

Co-chairs:

Brigadier Dr. Nasir Mehmood Wattu

Associate Professor of Surgery, Consultant Liver Transplant and Hepatopancreatobiliary (HPB) Surgery, Pak Emirates Military Hospital, Rawalpindi, Pakistan

Dr. Ihsan ul Haq

Chairman and Program Director, Liver transplant and Hepatopancreatobiliary (HPB) Surgery, Pakistan Liver and Kidney Institute & Research Center, Lahore, Pakistan

Dr. Muhammad Atiq

Senior Consultant, Head of Hepatopancreatobiliary (HPB) and Liver Transplant Services, Mukhtar A Sheikh Hospital, Multan, Pakistan

Moderator:

Dr. Kiran Amir

Assistant Professor, Dow International Medical College and Consultant Surgeon, Liver Transplant and Hepatopancreatobiliary Surgery Unit, Dow University Hospital, Karachi, Pakistan

Speakers:

Topic: Evolution of Living Donor Liver Transplantation in Pakistan

Dr. Haseeb Haider Zia

Consultant Liver Transplant and Hepatopancreatobiliary (HPB) Surgeon, Shifa International Hospitals Ltd., Islamabad, Pakistan

Topic: Optimizing Donor Safety: Strategies to Minimize Morbidity in LDLT

Dr. Abu Baker Hafeez Bhatti

Program Director, Consultant Liver Transplant and Hepatopancreatobiliary (HPB) Surgeon, Shifa International Hospitals Ltd., Islamabad, Pakistan

Topic: Extended Criteria Donors in LDLT: Expanding the Living Donor Pool

Dr. Faisal Hanif

Director Hepatobiliary and Liver Transplantation, Consultant Liver, Kidney and Hepatopancreatobiliary (HPB) Surgeon, Bahria International Hospital, Raiwand Road, Bahria Orchard Central District, Bahria Orchard, Lahore, Pakistan

Topic: Outcomes of LDLT in DUHS: Role of TTS-ILTS Collaboration

Dr. Jahanzaib Haider

Associate Professor and Head of Liver Transplant and HPB Surgery Unit, Dow University of Health Sciences.

Case-based Interactive Discussions

Case -1

Dr. Muhammad Khawar Shahzad

Associate Professor of Surgery. Shaikh Zayed Hospital, Lahore, Pakistan.

Case -2

Dr. Ali Naqi

Shifa International Hospital, Ltd. Islamabad, Pakistan

Case -3

Dr. Hafiz Aamir Bashir

Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Khairpur, Pakistan.

Case -4

Dr. Aamar Qudeer

Pakistan Kidney & Liver Institute and Research Center, Lahore, Pakistan.

BONE MARROW TRANSPLANT SESSION I

Bone Marrow Transplant Techniques

Chair:

Prof. Dr. Mohammad Khurshid
President's award for Pride of Performance, Distinguished University Professor Consultant Haematologist , former Dean Aga Khan University, Karachi, Pakistan

Co-chairs:

Aamir Ehsan, MD
Chief Executive Officer, COREPATH Laboratories, Former Chief of Pathology, VA Medical Center, San Antonio, Texas, Former Faculty, UT Health Science Center, San Antonio, Texas

Prof. Dr. Zehra Fadoo
Consultant Haemato-oncologist & BMT Physician Chairperson of Oncology & BMT, Aga Khan University Karachi, Pakistan.

Dr. Bushra Ahsan
Consultant Haematologist & BMT Physician Shaukat Khanum Memorial Cancer Hospital Lahore, Pakistan

Moderator:

Dr. Urooj Haider Hashmi
Consultant Haematologist & BMT Physician Dow University of Health Sciences Karachi, Pakistan.

Speakers:

Topic: The Journey of Bone Marrow Transplant Program at DUHS.

Dr. Farrukh Ali Khan
Head of Clinical Haematology & Bone Marrow Transplantation Consultant Haematologist & BMT Physician Dow University of Health Sciences Karachi, Pakistan.

Topic: HLA Matching & Post-transplant Monitoring - Current Standards & Innovations.

Dr. Zeeshan Ansar
Head of Molecular Pathology Aga Khan University Karachi, Pakistan.

Topic: Overview of Autologous & Allogeneic Bone Marrow Transplant.

Dr. Azhar Shafi
Consultant Haemato-oncologist & BMT Physician Shifa International Hospital, Islamabad, Pakistan.

Topic: Role of Haploidentical Transplantation in Expanding Donor Availability.

Prof. Dr. Natasha Ali
Consultant Haematologist & BMT Physician Associate Dean, Aga Khan University President, Pakistan Blood & Marrow Transplant Group, Karachi, Pakistan

PARALLEL SESSIONS II

SATURDAY, APRIL 12, 2025

03:15 P.M. TO 05:00 P.M.

RENAL TRANSPLANT SESSION II

Guest of Honors:

Prof. Aizaz Mand

Consultant Nephrologist, National Hospital and Medical Center, Karachi, Pakistan.

Panel of Experts:

Prof. Nisar Anwar

Consultant Nephrologist and Head, Department of Nephrology, Rehman Medical Institute (RMI) in Peshawar, Pakistan.

Prof. Salman Imtiaz

Professor of Medicine and Nephrology, the Indus Hospital and Health Network, Consultant Nephrologist and Head, Depart of Nephrology, Karachi, Pakistan.

Prof. Rehan Mohsin

Professor of Urology, Consultant Urologist, and Coordinator, Robotics Program, Sindh Institute of Urology and Transplantation, Karachi, Pakistan.

Prof. Kiran Nasir

Consultant Nephrologist at The Kidney Centre Post Graduate Training Institute, Karachi, Pakistan.

Dr. Sonia Yaqoob

Associate Professor, Head of the Nephrology Section, and Director of the Nephrology Residency Program, Aga Khan University, Karachi, Pakistan.

Speakers:

Topic: Redo Transplantation: Complex Surgical considerations addressing adhesions, fibrosis and vascular issues

Prof. Rhana Hassan Zakri

Consultant Transplant and Urological Surgeon, Guy's and St Thomas' NHS Foundation Trust in London, UK. She is also affiliated with the Centre for Nephrology, Urology, and Transplantation, King's College London, UK

Topic: Advances in Desensitization strategies for kidney transplant

Dr. Adeel Chaudhry

Associate Consultant Nephrologist, Shifa International Hospital, Islamabad, Pakistan

Topic: ABO and HLA incompatible transplant a Pakistani experience

Dr. Naveed Sarwar

Consultant Nephrologist, Bahria International Hospital, Rawalpindi, Pakistan

Topic: Normothermic Machine Perfusion for Kidney Grafts, Its role in improving graft survival and managing lymphoceles

Dr. Muhammad Arslan Khurram

Consultant Transplant and Vascular Access Surgeon, the Royal London Hospital, Barts Health NHS Trust, London, UK

Topic: Chronic ABMR and transplant glomerulopathy

Dr. Waqar Uddin Kashif

Consultant Nephrologist, South City Hospital, Karachi, Pakistan

Topic: Chronic active T-cell rejections: A Persistent Battle Against Allograft Survival

Dr. Sumbal Nasir

Consultant Nephrologist, Ziauddin University Hospital, Karachi, Pakistan

LIVER TRANSPLANT SESSION II

Multidisciplinary Team Approach in Liver Transplantation

Chair:

Dr. Saad Khalid Niaz

Consultant Gastroenterologist and Hepatologist, Director- Sindh Institute of Advanced Gastroenterology (SIAG) Unit, Civil Hospital Karachi, Pakistan

Co-chairs:

Dr. Nauman Al Qamari

Consultant Interventional Radiologist, Vascular Intervention Department (VIR), Ziauddin University Hospital, Karachi, Pakistan

Dr. Muhammad Atif Majeed

Assistant Professor, Consultant Gastroenterologist and Hepatologist, Agha Khan University Hospital, Karachi, Pakistan

Dr. Shams Zehri

Associate Professor Surgery and Organ Transplant Surgeon, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Pakistan

Dr. Muhammad Yasir Khan

Consultant Liver Transplant Surgery and Minimal Access Hepatopancreatobiliary (HPB) Surgery, Pakistan Liver and Kidney Institute & Research Center, Lahore, Pakistan

Moderator:

Dr. Ajit Kumar

Consultant Gastroenterologist and Transplant Hepatologist and Senior Registrar, National Institute of Liver & Gastrointestinal Diseases, Dow University of Health Sciences, Karachi, Pakistan

Speakers:

Topic: Current Training Program of Pakistan in Liver Transplantation

Dr. Abdul Wahab Dogar

Program Director – Liver Transplant Unit, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Pakistan

Long-Term Management of LDLT Recipients: Addressing Recurrent Liver Disease

Dr. Kailash Raj Makhejani

Consultant Transplant Hepatologist, Cleveland Clinic Abu Dhabi, United Arab Emirates (UAE)

Topic: The Role of Interventional Radiologist in Liver Transplantation

Dr. Amjad Sattar

Professor Of Radiology, Consultant Interventional Radiologist, Dow University of Health Sciences, Karachi, Pakistan

Topic: Endoscopic management of Post - LDLT Biliary Strictures: Current Strategies and Challenges

Dr. Muhammad Affan Qaiser

Assistant Professor, Head of gastroenterology and Hepatology Services, Director Transplant Hepatology, Shahida Islam Teaching Complex, Lodhran, Multan, Pakistan

Personalized Immunosuppression: Tailoring Therapy for Optimal Outcomes

Dr. Mohammad Salih

Consultant Gastroenterologist and Hepatologist, Shifa International Hospitals ltd., Islamabad, Pakistan

Case-based Interactive Discussions

Case -1

Dr. Hajira Ghairat

Consultant Gastroenterologist, Shifa International Hospitals, Islamabad, Pakistan

Case -2

Dr Asmat ullah

Consultant Gastroenterologist, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Khairpur, Pakistan.

Discussion

Q & A Session

BONE MARROW TRANSPLANT SESSION II

Bone Marrow Transplant Complications

Chair:

Prof. Dr. Salman Naseem Adil
Consultant Haematologist & BMT Physician, Aga Khan University Ex-President, Pakistan Society of Haematology Karachi, Pakistan.

Co-chairs:

Dr. Shahzad Nasir
Consultant Haematologist BMT Physician Quaid-e-Azam International Hospital Islamabad, Pakistan.

Prof. Dr. Muhammad Usman Shaikh
Consultant Haematologist & BMT Physician Head of Clinical Haematology Aga Khan University Karachi, Pakistan.

Dr. Munira Shabbir Moosajee
Associate Professor Head of Oncology Consultant Haemato-oncologist & BMT Physician Aga Khan University Karachi, Pakistan

Moderator:

Dr. Aisha Jamal
Consultant Haematologist & BMT Physician National Institute of Blood and Bone Marrow Diseases Karachi, Pakistan.

Speakers:

Topic: Early Non-Infectious Complications of Bone Marrow Transplant

Dr. Shahzad Sarwar
Consultant Haematologist & BMT Physician Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Pakistan.

Topic: Managing Graft vs Host Disease - Prevention & Treatment Strategies

Col. Dr. Raheel Iftikhar
Consultant Haematologist & BMT Physician Armed Forces Bone Marrow Transplant Centre Secretary & President-elect, Pakistan Blood & Marrow Transplant Group Rawalpindi, Pakistan

Topic: Infectious Complications in Bone Marrow Transplant Recipients

Dr. Tehreem Ansari
Assistant Professor Infectious Disease Dow University of Health Sciences Karachi, Pakistan.

KEYNOTE SPEAKERS

JOHN FUNG, MD, PHD

Professor of Surgery, Pritzker School of Medicine,
University of Chicago, Chicago, IL, USA

Dr. John Fung is a renowned transplant surgeon, researcher, and educator specializing in liver, kidney, pancreas, and intestinal transplantation. As Professor of Surgery at the University of Chicago, he advances transplant science, patient care, and surgical education while mentoring future transplant surgeons.

With decades of experience, Dr. Fung has led groundbreaking advancements in organ transplantation, immunosuppression, and transplant tolerance research. His work has refined surgical techniques, improved post-transplant outcomes, and influenced transplant protocols worldwide.

Before joining the University of Chicago, Dr. Fung held leadership roles at Cleveland Clinic and the University of Pittsburgh Medical Center, where he helped establish world-class transplant programs. A prolific researcher, he has published hundreds of studies on transplant immunology and tolerance induction, shaping clinical practices globally.

As a dedicated mentor and educator, he has trained numerous medical students, residents, and fellows—many of whom are now leading transplant surgeons.

Dr. Fung continues to drive innovation in transplant surgery, research, and multidisciplinary patient care, expanding access to life-saving transplants and improving post-transplant quality of life. His commitment to advancing the field ensures that he remains a leading figure in modern transplantation medicine.

JOHN LAMATTINA, MD

Professor of Surgery, Pritzker School of Medicine,
University of Chicago

Dr. LaMattina is a distinguished transplant surgeon, researcher, and educator currently serving as a Professor of Surgery at the Pritzker School of Medicine, University of Chicago, Chicago, IL, USA. With extensive expertise in liver, kidney, and pancreas transplantation, he is dedicated to advancing surgical innovation and improving patient care in the field of solid organ transplantation.

Dr. LaMattina specializes in complex liver and kidney transplants, including living donor transplantation and hepatobiliary surgery. His clinical focus is on optimizing transplant outcomes, reducing organ rejection, and improving long-term graft survival. Through his expertise, he has played a crucial role in refining transplantation techniques, ensuring safer procedures, and improving patient prognoses.

A graduate of Harvard Medical School, Dr. LaMattina completed his internship and residency at Massachusetts General Hospital. He then pursued advanced fellowships at the University of Wisconsin Hospital and Clinics, as well as Memorial Bahçelievler Hospital in Istanbul, Türkiye. As an educator, he is deeply committed to training and mentoring medical students, residents, and fellows, shaping the future of transplant surgery. His dedication to academic excellence has helped cultivate the next generation of skilled transplant surgeons.

His research focuses on transplant immunology, ischemia-reperfusion injury, and donor organ optimization, with the goal of expanding the donor pool and enhancing transplant success rates. His contributions to clinical trials, translational research, and surgical advancements have significantly improved outcomes for transplant patients worldwide. By continuously exploring new frontiers in transplant medicine, he has contributed to groundbreaking innovations in the field.

AAMIR EHSAN, MD

Chief Executive Officer, COREPATH Laboratories
Former Chief of Pathology, VA Medical Center
San Antonio, Texas
Former Faculty, UT Health Science Center – San Antonio

Dr. Aamir Ehsan is a renowned pathologist, researcher, and healthcare leader with over 30 years of experience in clinical pathology, laboratory medicine, and diagnostic innovation. He is Board Certified in Anatomic and Clinical Pathology, Hematopathology, Molecular Genetics, and Transfusion Medicine and currently serves as Founder and CEO of COREPATH Laboratories, a CAP and CLIA-accredited diagnostic pathology center specializing in precision medicine, molecular diagnostics, and advanced laboratory solutions.

Previously, Dr. Ehsan was Chief of Pathology at the VA Medical Center in San Antonio, where he played a crucial role in enhancing diagnostic services, implementing quality assurance measures, and advancing laboratory technologies to improve healthcare for veterans. He also served as Director of Flow Cytometry and Molecular Genetics Laboratories, pioneering innovative diagnostic techniques to improve disease detection and patient outcomes.

As a former faculty member at UT Health Science Center, Dr. Ehsan contributed to clinical research, pathology education, and the development of advanced diagnostic methodologies. His expertise in molecular diagnostics, personalized medicine, and laboratory innovation has helped shape modern pathology practices and precision healthcare.

At COREPATH, Dr. Ehsan leads efforts in cutting-edge research, regulatory compliance, and diagnostic excellence, ensuring the highest standards in pathology and patient care. His commitment to advancing laboratory medicine and precision diagnostics continues to drive innovation in translational research and healthcare transformation.

DR. PAOLO GROSSI, MD, PHD

Professor of Infectious Diseases | Director, Infectious and Tropical Diseases Unit, University of Insubria, Varese, Italy
Chair, ESOT Transplant Infectious Diseases Committee

Dr. Paolo Grossi is a renowned expert in infectious diseases and transplant medicine, with over 30 years of experience in clinical research, patient care, and medical education. As Professor of Infectious Diseases and Director of the Infectious and Tropical Diseases Unit at the University of Insubria, Varese, Italy, he leads research and clinical programs focused on infection management in immunocompromised and transplant patients.

Dr. Grossi specializes in transplant infectious diseases, developing strategies for infection prevention, diagnosis, and treatment in solid organ and hematopoietic stem cell transplant recipients. His work has improved post-transplant care and patient survival, particularly in opportunistic infections, antimicrobial resistance, and emerging viral and fungal diseases.

He has played a key role in establishing global clinical guidelines, advancing infection control, antimicrobial stewardship, and vaccine strategies for transplant recipients. His research has significantly influenced patient care protocols worldwide.

Dr. Grossi holds leadership positions in major international organizations, currently serving as Chair of the Transplant Infectious Diseases Committee at ESOT. He has contributed to multicenter clinical trials, advisory boards, and global research collaborations, helping shape translational research and evidence-based clinical practices.

A prolific researcher, he has authored numerous peer-reviewed publications and book chapters, with a focus on infection control, novel antiviral and antifungal therapies, and immunization strategies for transplant patients. His work has led to personalized antimicrobial treatments, improved vaccine protocols, and optimized post-transplant infection management.

Dr. Grossi continues to advance research, refine clinical guidelines, and mentor the next generation of infectious disease specialists. His dedication to innovation, education, and global health policy ensures that transplant patients worldwide receive the most advanced and effective infectious disease care available.

MUHAMMAD MANSOOR MOHIUDDIN, MD

Professor of Surgery, School of Medicine
University of Maryland, Baltimore, MD, USA

Dr. Muhammad Mansoor Mohiuddin is a globally recognized physician-scientist and a pioneering figure in xenotransplantation, a field that aims to revolutionize organ transplantation by utilizing genetically modified animal organs for human recipients. With over two decades of experience, he has made groundbreaking advancements in transplant immunology, regenerative medicine, and clinical research.

As the Director of the Cardiac Xenotransplantation Program at the University of Maryland, Dr. Mohiuddin led the historic 2022 transplant of a genetically modified pig heart into a human patient, marking a major scientific milestone and offering hope for thousands of patients suffering from end-stage organ failure. This unprecedented achievement demonstrated the potential of xenotransplantation in addressing the global organ shortage crisis and reducing reliance on human donor organs.

Expertise & Research Focus

Dr. Mohiuddin's extensive expertise spans:

- Xenotransplantation: Developing genetically engineered pig organs for transplantation.
- Transplant Immunology: Advancing immunosuppressive therapies to enhance graft survival and reduce rejection risks.
- Regenerative Medicine: Exploring innovative approaches to restore organ function and improve patient outcomes.
- Clinical Trials & Translational Research: Bridging the gap between experimental therapies and real-world applications to transform patient care.

Shaping the Future of Transplant Medicine

Dr. Mohiuddin's pioneering work is paving the way for a new era in organ transplantation, where cutting-edge biotechnology and precision medicine will significantly improve survival rates, reduce transplant wait times, and provide a sustainable solution for patients in need. His research continues to inspire medical professionals worldwide, driving advancements in life-saving treatments.

Join us at the First International Conference on Transplantation in Karachi, Pakistan, to gain valuable insights from Dr. Mohiuddin and other leading experts as they discuss the latest breakthroughs shaping the future of organ transplantation.

ADDITIONAL INTERNATIONAL SPEAKERS

PROF. ADNAN SHARIF
Consultant Nephrologist and Transplant Physician, Queen Elizabeth Hospital, Birmingham, UK

DR. FRITZ KURT HERBET DIEKMANN
Head of the Service of Nephrology and Kidney Transplantation at Hospital Clínic de Barcelona and Associate professor of Nephrology at the Universitat de Barcelona.

PROF. KLEMENS BUDDE
MD, Head of Clinical transplant program Department of Nephrology Charite University, Berlin, Germany

DR. TARIQ ALI
Renal Transplant Physician, King Faisal Specialist Hospital and Research Center, Riyadh, Kingdom of Saudi Arabia.

DR. IFTIKHAR KHAN
Consultant Transplant Surgeon
King Fahad Specialist Hospital, Dammam, Saudi Arabia

DR. ARSALAN KHURRAM (U.K)
Transplant and Vascular Access Surgeon
The Royal London hospital, Bart's Health, London

DR. RHANA HASSAN ZAKRI
Consultant Transplant and Urological Surgeon, Guy's and St Thomas' NHS Foundation Trust, London

DOW UNIVERSITY OF HEALTH SCIENCES: PIONEERING PROGRESS THROUGH PURPOSE

DOW UNIVERSITY OF HEALTH SCIENCES: PIONEERING PROGRESS THROUGH PURPOSE

RAO, S (D'83)[1]

Dow University of Health Sciences (DUHS) is one of Pakistan's premier healthcare institutions, known for its excellence in medical education, research, and patient care. Established in 2004, it has grown significantly, offering tertiary healthcare services and pioneering research in health sciences. Rooted in the legacy of Dow Medical College, founded in 1945, DUHS integrates a world-class academic curriculum with cutting-edge medical research and superior healthcare services. It continues to set benchmarks in clinical excellence, medical education, and community service, shaping the future of healthcare in Pakistan and beyond. The University prides itself on nurturing medical professionals who uphold the highest standards of ethics, research, and clinical practice while addressing the evolving challenges of modern healthcare.

Strategic Vision: "A Bridge to Excellence"

In 2018, DUHS launched its strategic roadmap, "A Bridge to Excellence," to enhance education, research, and healthcare delivery. The successful completion of Phase I (2018-2023) resulted in the expansion of academic programs aligned with workforce needs, strengthened research collaborations worldwide, enhanced tertiary care services, a leading role in pandemic response efforts during COVID-19, and the establishment of the Emerging Leadership Academy in 2023 to train future healthcare leaders.

Now, DUHS moves into Phase II (2024-2030) under the theme "Pioneering Excellence Inspiring Innovation," focusing on technological integration and global partnerships. This phase aims to introduce state-of-the-art medical facilities, expand digital health services, and enhance faculty training programs, ensuring continuous professional development and a globally competitive academic environment.

[1]Sohail Rao, MD, MA, DPhil. Senior Scientific Advisor to the Vice Chancellor, DUHS

In alignment with the University Master Strategic Plan, every academic and academic unit has developed its own strategic plan to complement the broader vision. Additionally, DUHS has established the Office of Strategic Development and Implementation, dedicated to overseeing and guiding the university's growth initiatives, ensuring alignment with institutional priorities, and fostering innovation across all academic and operational areas.

Pioneering Clinical Care

DUHS is the largest and most comprehensive tertiary healthcare provider in Pakistan, distinguished for its high-quality medical care, advanced research, and commitment to public health and medical education. At the heart of DUHS is the Dow University Hospital (DUH), a premier institution that serves as the hub for specialized medical treatment, education, and innovation. DUHS operates an extensive network of hospitals, diagnostic centers, research facilities, and specialized institutes, ensuring that it provides multidisciplinary, patient-centered healthcare services across a wide spectrum of medical disciplines.

DUHS is home to some of Pakistan's most advanced medical and research facilities, including the Sindh Infectious Diseases Hospital & Research Centre, the Dow Institute of Radiology, the Dow Diagnostic Research & Reference Laboratory, Dow Institute for Bone Marrow and Solid Organ Transplantation, and the Ojha Institute of Chest Diseases. These institutions focus on specialized areas of medicine, enabling cutting-edge diagnostics, treatment, and disease prevention. In addition, DUHS has established centers of excellence in fields such as diabetes, endocrinology, liver diseases, behavioral sciences, blood disorders, rehabilitation, and

oncology. These centers cater to a growing number of patients suffering from chronic illnesses, rare diseases, and conditions requiring long-term, specialized care.

DUHS serves as a national and regional referral center, where patients with complex and life-threatening medical conditions receive specialized care. With expert multidisciplinary teams, advanced surgical techniques, and state-of-the-art medical equipment, DUHS is capable of treating a wide range of complex diseases, including rare infections, genetic disorders, cardiovascular conditions, and various types of cancer. The integration of innovative treatments and evidence-based medical practices ensures that patients receive world-class healthcare.

Advancing Research, Innovation, and Technology

DUHS is committed to cutting-edge research and technological advancements, leading initiatives in precision medicine, genomics research, artificial intelligence, digital learning, medical device and biotechnology innovation, and global research collaborations with renowned institutions. These efforts contribute to a more efficient, accurate, and patient-centered healthcare system.

Through investment in research infrastructure, DUHS has established multiple Centers of Excellence dedicated to translational medicine, bioinformatics, regenerative therapies, and infectious disease control. The university prioritizes innovation by encouraging faculty and students to engage in interdisciplinary research projects that address regional and global health challenges.

To further support groundbreaking research, DUHS has introduced the Vice Chancellor's Seed Funding Initiative, designed to empower faculty and students by providing financial support for innovative ideas and early-stage research projects. This initiative aims to accelerate discovery, enhance translational research, and promote entrepreneurship within the university, ensuring that novel healthcare solutions can move from concept to real-world application.

By integrating strategic planning, research excellence, and technological innovation, DUHS continues to be a leader in transforming healthcare education, research, and practice on a global scale.

Academic Excellence at DUHS

DUHS offers a comprehensive range of undergraduate programs across various disciplines, ensuring a strong foundation in medical and biomedical sciences. Medical and dental programs include MBBS and BDS degrees, while allied health and biomedical sciences feature degrees such as Doctor of Pharmacy (Pharm-D), Bachelor of Science in Biotechnology, Bachelor of Science in Medical Technology, and Bachelor of Science in Nursing (BScN). The curriculum integrates problem-based learning, early clinical exposure, and simulation-based training, aligning with international medical education standards. The university maintains partnerships with hospitals and medical research institutes worldwide, enabling students to gain global exposure and hands-on experience in advanced clinical settings.

For postgraduate and doctoral education, DUHS provides Master's, MPhil, PhD, and clinical fellowship programs. Recognized for its specialized postgraduate medical training accredited by the College of Physicians and Surgeons Pakistan (CPSP), the university also fosters PhD research and offers opportunities for international collaboration, including exchange programs, clinical trials, and advanced research funding. The School of Postgraduate Studies is a hub for medical excellence, training future leaders in medicine, surgery, and public health while driving innovations in AI-driven healthcare. The postgraduate curriculum emphasizes evidence-based medicine, leadership skills, and ethical decision-making, equipping graduates to excel in their respective fields.

Innovation in Learning and Leadership Development

DUHS incorporates emerging technologies into medical education, leveraging artificial intelligence in training simulations, digital learning platforms, medical simulation centers, and telemedicine programs. In 2023, the university introduced the Emerging Leadership Academy (ELA) to develop leadership skills among healthcare professionals. The academy focuses on healthcare management training, ethical patient interactions, and fostering innovation in medical research and entrepreneurship. Additionally, DUHS strengthens its global presence through student exchange programs, collaborative research initiatives, and joint degree offerings with top international medical institutions. Leadership training programs extend beyond academics, incorporating mentorship programs, interdisciplinary collaboration, and industry partnerships to equip students with skills needed for executive roles in healthcare management.

Global Recognition and Strategic Growth

DUHS has earned international recognition, ranking as Pakistan's top health sciences university in the THE World University Rankings 2024 for Clinical & Health Sciences and receiving acknowledgment in the QS World University Rankings for its excellence in medical education and research. The university continues to expand its healthcare services, improving accessibility to high-quality medical care, particularly in underserved areas. It is also forging new collaborations with renowned international universities, medical research organizations, and technology firms to stay at the forefront of

healthcare innovation. DUHS remains a leader in knowledge dissemination, hosting international conferences, research symposiums, and continuing medical education programs to foster academic and professional growth.

Future Vision: 2024-2030 – "Pioneering Excellence ✦ Inspiring Innovation"

Moving forward, DUHS aims to expand its healthcare network, enhance AI-driven diagnostics, establish Centers of Excellence in oncology, cardiology, transplant medicine, and regenerative therapies, and strengthen public health initiatives in preventive care and epidemiology. The university also seeks to deepen international collaborations with top-tier medical institutions worldwide. Additionally, it aims to leverage big data and digital health solutions to advance medical research, enhance patient monitoring, and develop predictive healthcare models. The future roadmap includes sustainability initiatives, green hospital concepts, and improved patient safety protocols, reinforcing DUHS's commitment to responsible healthcare leadership.

A Transformative Force in Healthcare

More than an institution, DUHS is a transformative force in healthcare education, research, and patient care. Guided by its motto,

"TO HEAL | TO EDUCATE | TO DISCOVER,"

it remains steadfast in its mission to advance medical science and improve lives across Pakistan and beyond. With a commitment to global excellence, the university continues to inspire innovation, cultivate new generations of healthcare professionals, and serve as a beacon of medical advancement in the region. The future of DUHS is one of continued growth, expanded influence, and a deep-rooted mission to shape the future of medicine and healthcare through cutting-edge research, unparalleled education, and compassionate patient care.

OVERVIEW OF TRANSPLANT PROGRAMS AT DUHS

RENAL TRANSPLANT PROGRAM AT DUHS:

A BEACON OF HOPE AND EXCELLENCE IN PAKISTAN

Since its establishment in March 2017, the Dow Renal Transplant Unit has emerged as a leading center for renal transplantation in Pakistan. With an unwavering commitment to excellence, innovation, and patient-centered care, the unit has transformed the lives of countless individuals suffering from end-stage renal disease (ESRD). Over the past eight years, the unit has performed more than 700 renal transplants (Figure 1), including some of the most complex cases, setting new benchmarks in transplant medicine. Under the leadership of Vice Chancellor Prof. Saeed Quraishy, the Dow Renal Transplant Unit has grown into the second-largest transplant center in Sindh, offering advanced treatment and hope to patients across the country.

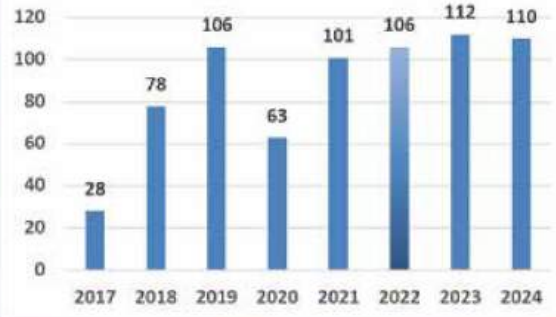
KEY ACHIEVEMENTS & IMPACT

- **Total Transplants Performed: 700+**
- **Paired Kidney Exchange Transplants: 6 successful cases**
- **Largest Referral Center for Renal Transplants in Sindh**
- **Accredited Training Program in Transplant Nephrology (CPSP)**
- **Active Research in Transplant Immunology & Post-Transplant Care**
- **Upcoming Deceased Donor Transplant & ABO-Incompatible Programs**

A Journey of Excellence and Innovation

The Dow Renal Transplant Unit was established to address the rising burden of chronic kidney disease (CKD) and ESRD in Pakistan. With limited access to renal replacement therapies and a critical shortage of donor organs, the need for a dedicated, highly specialized transplant center was imperative. From its inception, the unit embraced a multidisciplinary approach, bringing together a team of renowned nephrologists, transplant surgeons, anesthetists, immunologists, and nursing staff to provide comprehensive, pre- and post-transplant care.

Figure 1: Number of Living Related Kidney Transplants

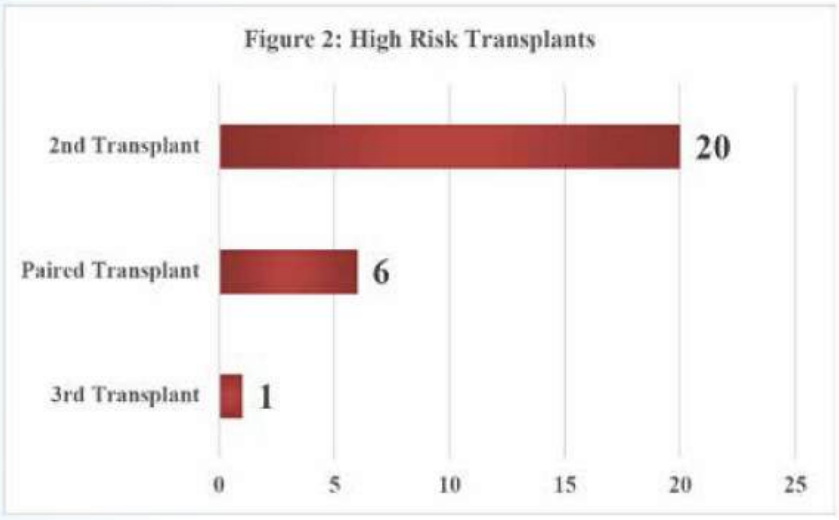


One of the unit's most significant achievements has been its success in performing transplants in highly sensitized patients, particularly those who are donor-specific antibody (DSA) positive. Through advanced desensitization therapy, the unit has overcome immunological barriers that were once considered impossible to surmount. This innovation has expanded the recipient pool, enabling more patients to receive life-saving kidney

transplants. The successful outcomes of these high-risk cases have solidified the Dow Renal Transplant Unit's reputation as a center of excellence in transplant medicine.

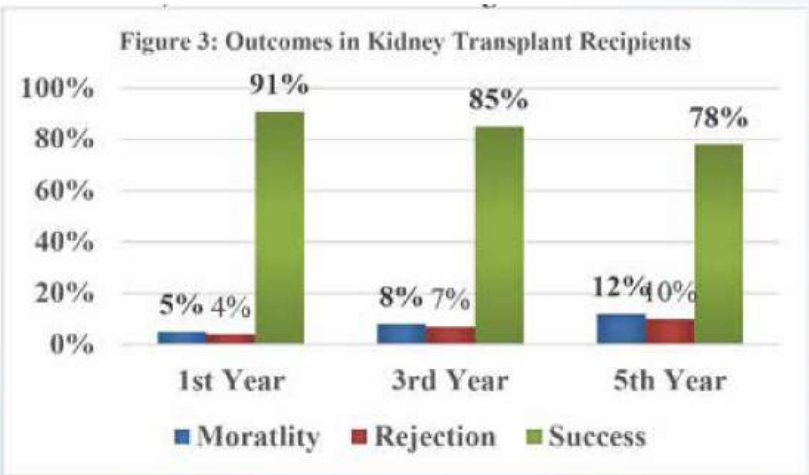
Pioneering the Paired Kidney Exchange Program

Beyond desensitization therapy, the Dow Renal Transplant Unit has been a trailblazer in launching the Paired Kidney Exchange (PKE) Program, a groundbreaking initiative in Pakistan. Many patients face incompatibility issues with their willing donors, making transplantation difficult. The PKE Program addresses this challenge by enabling donor-recipient pairs to exchange kidneys with other incompatible pairs, thereby facilitating successful transplants. Since its inception, the PKE Program has successfully completed six paired exchange transplants, offering a lifeline to patients who would otherwise have limited options (Figure 2). This initiative demonstrates the unit's commitment to innovation and its relentless pursuit of life-saving solutions.



Analyzing Success Rates: Trends and Insights

The success rate demonstrated in the graph indicates a consistent and high level of performance over the measured periods. The largest portion of the bars, represented in green, bar suggests a strong foundation of successful outcomes, while the blue and orange bars reflect minimal but present challenges or variations (Figure 3). The steady growth implies improve-



ments, possibly due to advancements in techniques, better patient management, or refined protocols. Overall, the data suggests a positive trend in success rates, reinforcing the effectiveness and reliability of the system being analyzed.

Expanding Frontiers: Deceased Donor Transplants & ABO-Incompatible Transplants

Looking ahead, the Dow Renal Transplant Unit is preparing to launch two groundbreaking initiatives that will further expand access to renal transplantation in Pakistan. The first is the Deceased Donor Transplant Program, set to begin in 2025. This program aims to address the severe shortage of donor organs by promoting awareness and encouraging organ donation from deceased individuals. A robust deceased donor transplant program has the potential to increase the number of transplants performed annually, significantly reducing the burden on living donors and their families.

The second major initiative is the introduction of ABO-incompatible transplants, which will allow kidney transplants between donors and recipients with different blood types. Until recently, blood group incompatibility was a major obstacle in kidney transplantation. However, with advances in immunosuppressive therapies and desensitization techniques, the Dow Renal Transplant Unit is set to make this life-saving procedure accessible to more patients. These initiatives reflect the unit's commitment to pushing the boundaries of transplant medicine, ensuring that more patients have access to the gift of life.

Education, Training, and Research: Building the Future of Transplant Medicine

Education, training, and research form the foundation of the Dow Renal Transplant Unit's mission. Recognizing the urgent need for highly trained transplant specialists, the unit has been designated as an official Center for Training in Transplant Nephrology by the College of Physicians and Surgeons Pakistan (CPSP). This accreditation enables the unit to train nephrology fellows, equipping them with the skills, knowledge, and hands-on experience needed to excel in the highly specialized field of renal transplantation.

In addition to training the next generation of transplant specialists, the Dow Renal Transplant Unit actively engages in clinical research to advance transplant medicine. The unit collaborates with leading national and international institutions to conduct studies on transplant immunology, post-transplant complications, and long-term patient outcomes. By presenting its findings at scientific conferences and publishing in peer-reviewed journals, the unit contributes to the global body of knowledge in transplantation. Research efforts are particularly focused on improving graft survival rates, optimizing immunosuppressive protocols, and addressing challenges unique to

transplant patients in Pakistan.

A key area of research involves the impact of desensitization therapies on highly sensitized patients and the long-term outcomes of paired kidney exchanges. These studies help refine treatment protocols, ensuring better survival rates and improved quality of life for transplant recipients. The unit also actively participates in registry-based studies, collecting and analyzing data to track transplant trends, identify risk factors, and enhance patient care strategies. Through this evidence-based approach, the unit continues to refine and improve its transplant protocols, ensuring that patients benefit from the most advanced and effective treatment strategies available.

A Culture of Teamwork and Excellence

The remarkable success of the Dow Renal Transplant Unit is the result of unparalleled teamwork, dedication, and expertise. Every nephrologist, transplant surgeon, anesthetist, immunologist, nurse, and support staff member play a crucial role in delivering world-class patient care. This culture of collaboration and excellence has been instrumental in achieving some of the most complex transplant cases in Pakistan.

At the forefront of this extraordinary effort is Prof. Saeed Quraishy, whose visionary leadership has guided the unit's growth and impact. His unwavering commitment to medical excellence, patient-centered care, and innovative solutions has positioned the Dow Renal Transplant Unit as a leading transplant center in the country.

Conclusion: A Legacy of Innovation and Hope

The Dow Renal Transplant Unit has revolutionized the landscape of renal transplantation in Pakistan. With over 700 successful transplants, groundbreaking achievements in desensitization therapy and paired kidney exchanges, and upcoming

initiatives in deceased donor and ABO-incompatible transplantation, the unit continues to push the boundaries of transplant medicine.

Through its commitment to research, education, and patient care, the Dow Renal Transplant Unit stands as a pillar of medical excellence and a beacon of hope for those suffering from end-stage renal disease. For these patients, the unit represents more than just a hospital—it is a place where new beginnings are made possible.

As the unit continues to evolve, its unwavering dedication to innovation, education, and clinical excellence ensures that it will remain at the forefront of transplant medicine for years to come.

For more information about DUHS visit: **www.duhs.edu.pk/**

For more information about Renal Transplant Program, visit:
www.duhs.edu.pk/dow-university-hospital/surgery-unit-ii-renal-transplant/

LIVER TRANSPLANTATION AT DUHS

A LEGACY OF CARE AND INNOVATION

Introduction

Since its establishment in 2014, the Liver Transplant Unit at Dow University of Health Sciences (DUHS) has evolved into the first public-private sector transplant unit in Pakistan's largest metropolitan city. Over the past decade, the unit has successfully performed 185 living donor liver transplantations for patients suffering from end-stage liver disease (Figure 1). With continuous visionary support from Vice Chancellor, Professor Saeed Quraishy, the unit has achieved excellence in patient care, becoming a beacon of hope for liver disease patients across the country.

KEY MILESTONES

- **Established in 2014 and Re-established in 2020**
- **First Successful Liver Tx. Performed in 2016**
- **Performed >200 Living Donor Liver Tx**
- **In 2023, Established Collaboration with University of Chicago – TTS/ILTS Paired Transplant Program**

Journey to Excellence

The Liver Transplant Unit at DUHS was established to address the increasing burden of end-stage liver disease in Pakistan by offering state-of-the-art liver transplantation services. Additionally, the unit specializes in managing both benign and malignant hepatopancreatobiliary diseases.

In the early years, a multidisciplinary team of surgeons, physicians, and anesthetists visited leading transplant centers worldwide to gain firsthand knowledge and experience in liver transplantation. In the early years, a multidisciplinary team of surgeons, physicians, and anesthetists visited leading transplant centers worldwide to gain firsthand knowledge and experience in liver transplantation.

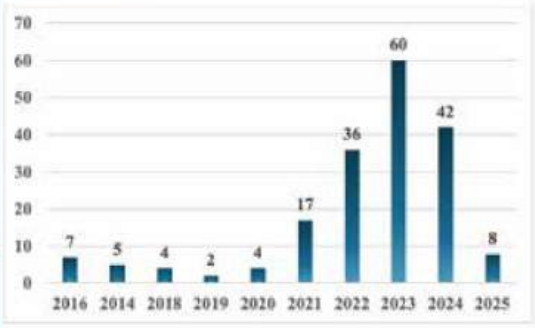


Figure 1: Number of Living Donor Liver Transplantation (2016 – 2025)

Following a few transplants conducted in partnership with international experts, the Vice Chancellor identified the need for capacity building to strengthen human resources and infrastructure. Consequently, faculty members underwent hands-on training at Shifa International Hospitals, Pakistan. With these developments, DUHS re-established its liver transplant program in 2020 with a fully independent and indigenous team.

Challenges and Resilience During Covid-19

By early 2020, DUHS was fully prepared to provide comprehensive transplant services. However, the COVID-19 pandemic disrupted healthcare services globally, including the liver transplant program at DUHS. Healthcare resources were redirected to combat the deadly virus, leading to frequent lockdowns and a sharp decline in transplant surgeries worldwide due to the heightened risk of infection in immunosuppressed patients, donors, and healthcare workers.

Like other emerging transplant centers, DUHS faced waiting-list mortality among end-stage liver disease patients during this period. With the introduction of COVID-19 vaccines, the center implemented rigorous screening protocols to detect COVID positivity in both transplant patients and donors before surgery. As a result, liver transplantations resumed in September 2020, and since then, the number of transplants and expertise of the indigenous transplant team have steadily increased.

DUHS's liver transplant program is now operating at full capacity, performing regular living donor liver transplant surgeries with a highly skilled team that includes surgeons, anesthetists, hepatologists, intensivists, infectious disease consultants, nursing staff, and technicians. To date, the DUHS Liver Transplant Unit has conducted 185 living donor liver transplantations with successful patient outcomes (Figure 2).

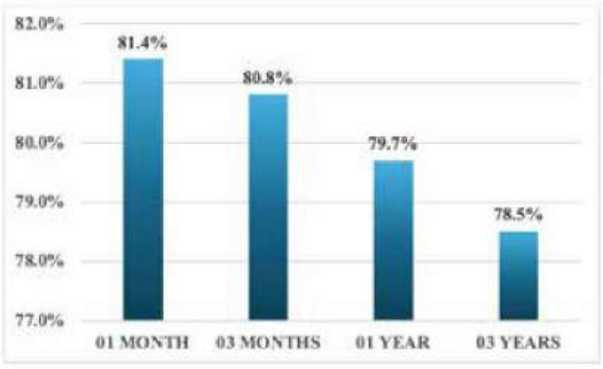


Figure 2: Three-year Survival Rate in Patients Receiving Living Donor Liver Tx.

Collaboration With the University of Chicago: Tts-ilts Paired Transplant Program

In 2023, the Liver Transplant Unit at DUHS entered into a significant collaboration with the University of Chicago under the umbrella of The Transplantation Society (TTS) and The International Liver Transplantation Society (ILTS) Paired Transplant Program. This partnership has brought valuable insights into perioperative management strategies for liver transplant patients.

Key developments from this collaboration include:

- A refined patient selection strategy, prioritizing candidates with robust functional status and minimal liver dysfunction to enhance short-term outcomes.
- Implementation of advanced critical care and infectious disease management protocols, based on recommendations from the University of Chicago, leading to significant improvements in post-transplant survival rates and overall patient care.

This initiative has not only strengthened perioperative management strategies at DUHS but has also laid a strong foundation for further advancements in liver transplantation outcomes. By consistently incorporating evidence-based practices and internationally accepted protocols, the unit remains committed to improving patient survival rates and quality of life.

Future Perspectives

- The Liver Transplant Unit at DUHS is dedicated to expanding its services by:
- Increasing the number of transplants to meet the growing demand.
- Launching a deceased donor transplant program to enhance organ availability.
- Advancing critical care and perioperative management to optimize patient outcomes.
- Strengthening research initiatives in liver transplantation, aligning with global best practices.
- Implementing specialized training programs for surgeons, physicians, and transplant coordinators to further develop expertise.
- Fostering international collaborations with leading transplant centers worldwide.
- Utilizing cutting-edge technologies, including AI-driven decision-making and minimally invasive surgical techniques, to improve precision and efficiency.
- Conducting public awareness campaigns to educate the community about liver disease prevention, transplant eligibility, and post-operative care.
- Developing financial assistance programs to ensure accessibility and affordability for underprivileged patients.

Through these concerted efforts, DUHS aims to establish itself as a leading regional center for liver transplantation, setting new benchmarks for patient care, surgical excellence, and research in transplantation medicine.

The Liver Transplant Unit at DUHS continues to uphold its mission of saving lives, advancing medical knowledge, and providing world-class healthcare services. With a commitment to innovation, collaboration, and patient-centered care, DUHS is poised to shape the future of liver transplantation in Pakistan and beyond.

For more information about DUHS visit: *www.duhs.edu.pk*

For more information about Liver Transplant Program visit:
www.duhs.edu.pk/dow-university-hospital/surgery-unit-ii-general-surgery-hepato-biliary-surgery-liver-transplant-unit-hbs-ltu/

BONE MARROW TRANSPLANT PROGRAM

AT DOW UNIVERSITY OF HEALTH SCIENCES

The Bone Marrow Transplant (BMT) Program at Dow University of Health Sciences (DUHS) stands as a pioneering initiative, addressing the critical need for accessible, high-quality hematology and transplant services in Pakistan's public sector. Recognizing that most patients cannot afford the high costs of blood disorder treatments, particularly bone marrow transplants, DUHS—under the visionary leadership of Vice Chancellor Prof. Dr. Saeed Quraishy—established a state-of-the-art, cost-effective BMT and Hematology Program in 2019 at Ojha Campus, performing its first successful transplant in March of the same year. As Sindh's first public sector BMT center, the program integrates diagnostics, treatment, prevention, and research while also training future physicians, nurses, and pharmacists through internship, residency, and fellowship programs.

MAJOR MILESTONES

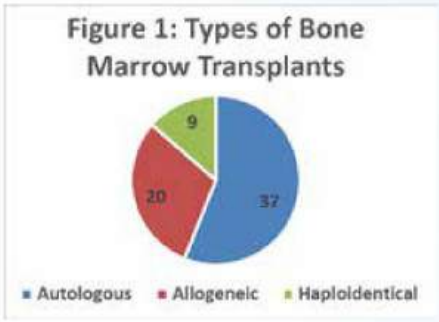
- **Established in 2019 as the First Bone Marrow Transplant (BMT) and Hematology Program in Public-Sector University in the Province**
- **Performed 66 BMT with <20% Mortality Rate**
- **One Corridor Service – All Key Facilities of a Successful BMT located in one Hospital**
- **Established the First Public-Sector Stem Cell Cryopreservation Facility**
- **Accredited by Human Organ Transplant Regulatory Authority, Pakistan Blood and Marrow Transplant Group, Eastern Mediterranean Blood, and Marrow Transplant Group**
- **In 2022, Initiated Clinical Hematology Fellowship, accredited by the College of Physicians and Surgeons Pakistan (CPSP) – First in a Public-Sector University in the Province**

A key feature of the program is its "One Corridor Service", ensuring that clinics, lab collections, pharmacy, daycare units, in-patient wards, and BMT units are all conveniently located on the same hospital floor. The BMT unit is meticulously designed for highly immunocompromised patients, incorporating HEPA filters, unidirectional airflow, and positive pressure rooms to prevent infections. Furthermore, DUHS operates a standard sterile and chemotherapy pharmacy, where trained pharmacists prepare parenteral medications, chemotherapy, and immunotherapy in HEPA-filtered, pressure-controlled environments. Clinical pharmacists play a key role in patient rounds, assisting with medication optimization and dosage adjustments.

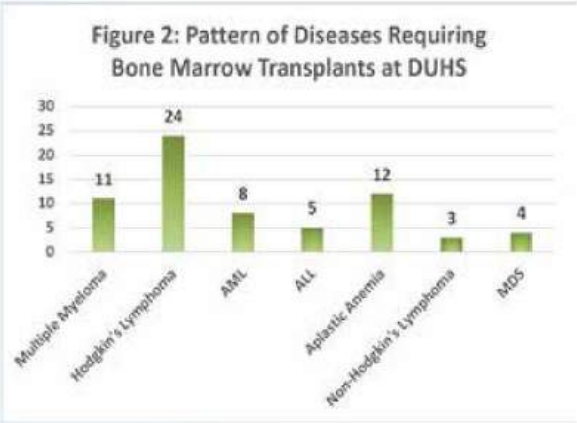
The BMT program has also pioneered Sindh's first public sector Stem Cell Cryopreservation Facility, enabling long-term stem cell storage under the supervision of internationally trained scientists. Additionally, DUHS offers advanced blood transfusion services, being the first in Sindh's public sector to conduct Nucleic Acid Testing (NAT) for HIV & Hepatitis prevention, and to provide irradiated blood to prevent transfusion-as-

sociated graft-versus-host disease (GVHD). The program also excels in stem cell collection, significantly reducing collection time from 10–13 days to just 4–5 days, enhancing patient convenience.

At DUHS, all internationally recognized types of BMT procedures are successfully performed, including Autologous & Allogeneic (Full-Matched) Transplants, Haploidentical (Half-Matched) & ABO-Incompatible Transplants, Myeloablative, Non-Myeloablative & Reduced-Intensity Transplants, and Peripheral Blood Stem Cell & Bone Marrow Harvesting Transplants (Figure 1) . These procedures serve a wide spectrum of hematological conditions, such as Acute Myeloid Leukemia (AML), Acute Lymphoblastic Leukemia (ALL), Myelodysplastic Syndromes (MDS), Aplastic Anemia, Hodgkin's & Non-Hodgkin's Lymphomas, and Multiple Myeloma (Figure 2).



Since its inception, the DUHS BMT Program has performed 66 successful transplants, maintaining a mortality rate below 20%, a remarkable achievement for a new public-sector transplant unit in a developing country. The program is accredited by the Human Organ Transplant Regulatory Authority (HOTA), Pakistan Blood and Marrow Transplant (PBMT) Group, and Eastern Mediterranean Blood and Marrow Transplant (EMBMT) Group. In 2022, it also became Pakistan's first public-sector institution to offer a Clinical Hematology Fellowship, accredited by the College of Physicians and Surgeons Pakistan (CPSP).



Looking ahead, DUHS plans to introduce Total Body Irradiation (TBI) for BMT conditioning, leveraging Pakistan's first MR LINAC, already installed at Ojha Campus. Additionally, DUHS is working towards developing on-site, cost-effective manufacturing of Chimeric Antigen Receptor (CAR)-T cells, a groundbreaking therapy for blood cancers that remains unavailable in Pakistan due to its high costs and technical complexities. With continuous advancements and a steadfast commitment to innovation, DUHS aims to become Pakistan's National Center of Excellence in Bone Marrow Transplantation & Hematology, providing cutting-edge treatments and hope to patients battling life-threatening blood disorders.

For more information about DUHS visit: *www.duhs.edu.pk*

For more information about BM Transplant Program visit: *www.duhs.edu.pk/dow-university-hospital/clinical-haematology-bone-marrow-transplantation/*

TTS-ILTS PAIRED TRANSPLANT CENTERS PROGRAM AND ITS TRANSFORMATIVE IMPACT ON PAKISTAN

A Pioneering Partnership Between Liver Transplant Program at the Dow University of Health Sciences and the University of Chicago

Siraj Haider, Jahanzaib Haider, Muhammad Iqbal, Kiran Amir, Muhammad Arslan, Ajit Kumar, Hahmood Mehmood, Sadaf Siddique, Sohail Rao

The Transplantation Society and the International Liver Transplantation Society

Paired Transplant Centers Program

The Transplantation Society (TTS) and International Liver Transplantation Society (ILTS) Paired Transplant Centers Program is a global initiative that connects emerging transplant centers in developing countries with established, high-performing institutions to enhance surgical expertise, patient care, and program development. This structured collaboration fosters capacity building, clinical training, and the adoption of best practices to ensure that transplant programs in developing nations can achieve international standards of excellence.

Through this prestigious program, Dow University of Health Sciences (DUHS), Karachi, Pakistan, has been paired with the University of Chicago, a globally renowned transplant center. This strategic alliance marks a significant milestone for Pakistan's transplant community, as it provides direct access to advanced surgical knowledge, perioperative care strategies, and internationally recognized transplant-specific protocols. The partnership serves as a catalyst for clinical improvement, education, and policy development within Pakistan's liver transplant sector, ensuring better patient care and more sustainable transplant services.

THE UNIVERSITY OF CHICAGO MEDICINE

Impact of the Partnership on Pakistan's Liver Transplant Program:

The DUHS-University of Chicago collaboration has been instrumental in strengthening Pakistan's liver transplant infrastructure, particularly in terms of surgical training, post-operative care, infection control, and patient management pathways. One of the most significant contributions of this partnership has been the on-site engagement of Dr. John LaMattina, Associate Professor of Surgery, Transplant Institute, University of Chicago, who worked closely with the DUHS liver transplant team.

During his five-day visit to DUHS, Dr. LaMattina actively participated in three living donor liver transplant surgeries, assessed hospital infrastructure, and engaged with government health officials, transplant professionals, and senior hospital leadership to discuss the challenges and opportunities for transplant medicine in Pakistan. His expertise has helped DUHS identify key areas for improvement, particularly in perioperative intensive care, patient care pathways, and infection control.

Dr. John LaMattina's Visit to Liver Transplant Program at Dow University Hospital September 25, 2023

Following Dr. LaMattina's assessment, a detailed roadmap for improvement was developed, focusing on:

- Strengthening perioperative intensive care to improve post-transplant survival rates.
- Enhancing infection control measures to reduce complications and improve outcomes.
- Developing a sustainable training and mentorship program for transplant surgeons, anesthetists, intensivists, and nursing staff.

- Establishing structured transplant care pathways to optimize patient management before, during, and after surgery.

Capacity Building and Professional Development

A core pillar of the TTS-ILTS paired program is the long-term commitment to capacity building and professional development. Through this partnership, DUHS has gained access to structured training programs, knowledge exchange platforms, and multidisciplinary case discussions with experts from the University of Chicago.

Some of the major initiatives include:

- On-site and virtual training for DUHS transplant professionals, including transplant surgeons, hepatologists, anesthetists, and critical care specialists.
- A structured mentorship program where University of Chicago experts guide and review DUHS transplant procedures, mortality cases, and clinical decision-making processes.
- Regular morbidity and mortality (M&M) meetings, allowing Pakistani transplant specialists to engage in real-time case discussions with international experts.
- A visiting fellowship program, where DUHS transplant specialists will undergo hands-on training at the University of Chicago to enhance their expertise.

These initiatives will not only elevate the technical skills of Pakistani transplant professionals but also foster a culture of continuous learning, research, and innovation, ensuring that Pakistan's liver transplant programs evolve to meet global standards.

Advancing Cadaveric Organ Donation in Pakistan

One of the most critical challenges in Pakistan's transplant landscape is the lack of an effective cadaveric organ donation system. While Pakistan's legal framework supports cadaveric organ donation, deep-seated cultural, religious, and ethical concerns have hindered its implementation.

Recognizing this gap, the DUHS-University of Chicago partnership aims to facilitate the introduction and acceptance of cadaveric organ transplantation in Pakistan through a multi-pronged approach:

- Engaging religious scholars and community leaders to clarify the Islamic perspective on organ donation and dispel common misconceptions.
- Educating the public through awareness campaigns emphasizing the life-saving impact of cadaveric organ donation.

- Developing a national liver transplant registry to ensure transparency and streamline the donor-recipient matching process.
- Establishing a Liver Transplant Society of Pakistan, which will act as an advocacy group for both professionals and patients to promote ethical transplant practices and policy reforms.

By focusing on these initiatives, the DUHS-University of Chicago collaboration aims to overcome socio-religious barriers, enhance public trust, and lay the foundation for a sustainable cadaveric organ donation program in Pakistan.

A Transformational Step for Transplant Medicine in Pakistan

The significance of the TTS-ILTS paired transplant program for Pakistan cannot be overstated. This initiative is bringing world-class expertise, structured training, and long-term sustainability to Pakistan's liver transplant sector. It is improving patient survival rates, enhancing perioperative care, and strengthening Pakistan's ability to provide life-saving liver transplants.

Through this partnership, Pakistan's transplant professionals are gaining the skills, knowledge, and confidence needed to develop a self-sustaining transplant ecosystem that is less reliant on foreign expertise and more capable of addressing the growing burden of liver disease in the country.

As the collaboration evolves, it is expected to not only improve surgical outcomes but also influence national transplant policies, expand cadaveric organ donation efforts, and integrate Pakistan into the global transplant community. **The DUHS-University of Chicago partnership stands as a model for international collaboration in transplantation, showcasing how strategic partnerships can revolutionize healthcare and save countless lives.**

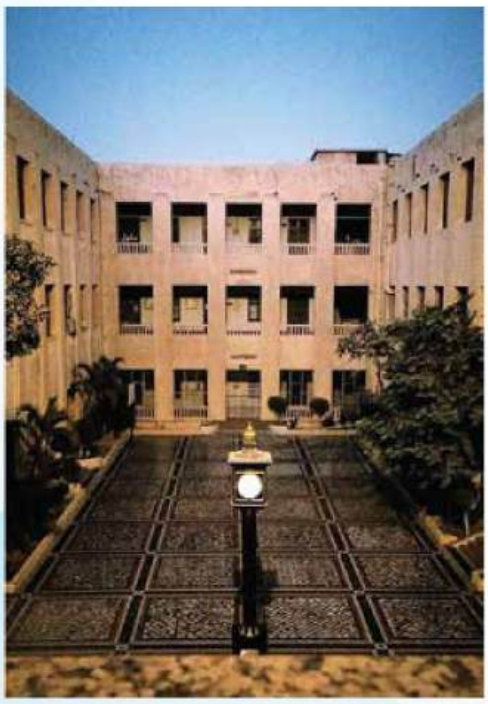
ACKNOWLEDGEMENT: We extend our heartfelt gratitude to Prof. Mohammad Saeed Quraishy, Vice Chancellor, Dow University of Health Sciences, for his unwavering support and commitment to the advancement of the liver transplant program. We are also deeply grateful to Dr. John Fung and Dr. John LaMattina for their invaluable guidance, mentorship, and contributions toward enhancing our clinical expertise. Finally, we sincerely appreciate The Transplantation Society (TTS) and the International Liver Transplantation Society (ILTS) for their generous funding and support, which have been instrumental in making this program a success.

KARACHI
THE HEARTBEAT OF PAKISTAN

Karachi, the largest city of Pakistan and its economic powerhouse, is a metropolis that never sleeps. Known as the "City of Lights," it is the country's financial, commercial, and industrial hub, contributing a significant share to Pakistan's GDP. With a population exceeding 20 million, Karachi is not only the most populous city in Pakistan but also one of the largest cities in the world. Its diverse population, comprising multiple ethnicities, languages, and cultures, makes it a melting pot of traditions, ideas, and aspirations.

As Pakistan's gateway to global trade, Karachi hosts two of the nation's largest seaports—the Karachi Port and Port Qasim—facilitating international commerce and maritime trade. The Jinnah International Airport, one of South Asia's busiest airports, connects Karachi to major global destinations, reinforcing its role as a pivotal link between Pakistan and the world. The city's strategic location along the Arabian Sea makes it a crucial player in regional and international trade, further solidifying its status as the economic nerve center of Pakistan.

A City of Education, Healthcare, and Innovation



Dow Medical College, DUHS

Karachi is home to some of Pakistan's top educational institutions, including Dow University of Health Sciences (DUHS), Aga Khan University, Karachi University, NED University of Engineering & Technology, and Institute of Business Administration (IBA). These institutions have produced leaders, researchers, and professionals who continue to shape the country's medical, technological, and business landscapes. The city is also a center for scientific research, with universities and research institutes playing a crucial role in technological advancements and medical breakthroughs.

The city's healthcare infrastructure is among the most advanced in Pakistan. With institutions such as Dow University Hospital, Aga Khan University Hospital, Jinnah Postgraduate Medical Centre (JPMC), and Sindh Institute of Urology and Transplantation (SIUT), Karachi has become a hub for medical research, organ transplantation, and advanced healthcare services. It has played a crucial role in introducing innovative medical proce-

dures, including liver, kidney, and bone marrow transplants, making healthcare accessible to thousands of patients across Pakistan and beyond. The presence of leading private and public hospitals ensures that Karachi remains at the forefront of medical excellence, drawing patients, medical students, and researchers from across the country and the region.

A Thriving Cultural and Culinary Scene

Beyond its economic and educational significance, Karachi is a city that pulsates with life. It is a cultural and artistic hub, home to theaters, art galleries, music festivals, and literary gatherings that celebrate both traditional and contemporary expressions. The city hosts annual literary events such as the Karachi Literature Festival, where scholars, authors, and artists from across the world gather to engage in intellectual discourse and creative exchange. The National Academy of Performing Arts (NAPA) and Pakistan Arts Council regularly host dramas, concerts, and art exhibitions, adding to Karachi's rich artistic heritage.


Port Grand: A lively waterfront complex with restaurants, shops, and entertainment, celebrating Karachi's maritime history.

Karachi is equally famous for its culinary landscape, offering a blend of local and international cuisines. From the aromatic Biryani of Burns Road to the fine-dining experiences in Clifton and DHA, the city caters to all tastes and preferences. Street food lovers can indulge in chaat, bun kababs, and nihari, while seafood enthusiasts can savor freshly caught delicacies along the coastal belt. The city's food culture is deeply rooted in generations of diverse communities, bringing together flavors from Mughal, Persian, Turkish, and South Asian traditions.

The city's shopping experience is just as diverse, ranging from the high-end boutiques of Dolmen Mall and Ocean Mall to the traditional bazaars of Saddar and Tariq Road, where visitors can find everything from handcrafted textiles, jewelry, leather goods, and antiques to modern fashion and electronics. Karachi's vibrant nightlife, marked by

cafés, live music venues, and cultural events, makes it a dynamic and lively metropolis that offers something for everyone.

The Beautiful Coastline & Natural Wonders

One of Karachi's greatest attractions is its stunning coastline. The city's coastline along the Arabian Sea offers breathtaking views, with serene beaches such as Clifton Beach, French Beach, Hawksbay, and Turtle Beach providing perfect spots for relaxation and recreation. Water sports, yachting, and deep-sea fishing are becoming increasingly popular, attracting adventure enthusiasts from all over Pakistan. The city's seafront areas, such as Port Grand and Do Darya, offer visitors an opportunity to enjoy fine dining with panoramic ocean views.

Do Darya: a popular seaside area known for its restaurants that offer dining with scenic ocean views.

A short drive away, the Mangroves of Karachi—one of the world's largest coastal mangrove forests—serve as a natural sanctuary for biodiversity, playing a crucial role in protecting the coastline from erosion and supporting marine life. Wildlife enthusiasts can also visit Haleji Lake, Kirthar National Park, and Churna Island, which offer unique opportunities for bird watching, scuba diving, and eco-tourism.

Clifton Beach

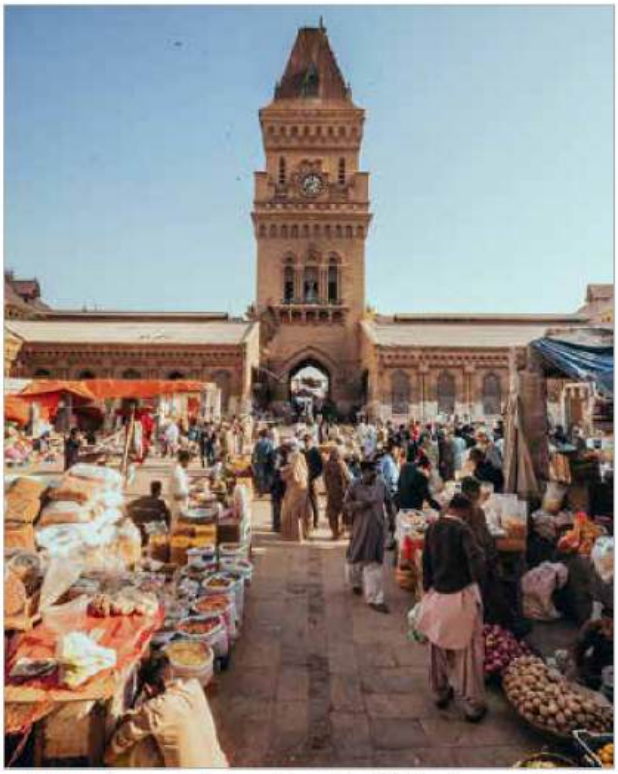
Churna Island

Karachi is also home to historical landmarks such as Mohatta Palace, Frere Hall, Quaid-e-Azam's Mausoleum, and the ancient ruins of Banbhore, each offering a glimpse into the city's rich past and architectural heritage. These sites reflect Karachi's deep historical roots, colonial influences, and cultural diversity, making it a treasured city for historians and travelers alike.

The mausoleum of Quaid-e-Azam Muhammad Ali Jinnah, built in 1970. A symbol of Karachi.

A 1927 home turned museum. Known for its stunning architecture and cultural exhibitions.

Built in 1865, a British-era building now a library and art gallery amid peaceful gardens.



A historic marketplace from the 1880s, famous for its colonial architecture and vibrant bazaar atmosphere.

Jinnah's residence, now museum showcasing his personal belongings. A glimpse into the life of M.A. Jinnah

An Invitation to Experience Karachi

As you participate in FICT 2025, we invite you to explore the vibrant city of Karachi. Whether you are here for professional collaboration, academic exchange, or personal exploration, we hope you take time to experience the warmth, hospitality, and cultural diversity that make Karachi truly exceptional. The city is a symbol of resilience, innovation, and progress, where history and modernity seamlessly coexist.

From its thriving business districts and prestigious universities to its historical sites, bustling markets, and breathtaking coastline, Karachi offers an unparalleled experience. This is a city where opportunities are limitless, traditions are celebrated, and diversity is embraced.

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RESEARCH ABSTRACTS

Safety and Outcomes of Deceased Donor Kidney Transplantation using Hepatitis C Antibody Positive Kidney Donors: A Single-Centre UK Experience

Dr. Ahsen Razzaq[1], Dr. Fatima Malik[1], Miss Rhana Hassan Zakri[1]
[1]*Guy's and St Thomas' University Hospital*

Background:

Transplantation is the standard of care for patients with end stage kidney disease. There remains a disparity between organ supply and demand and therefore, strategies to increase the donor pool are crucial. Hepatitis C Virus (HCV) infected donors have historically been discarded but advancements in antiviral therapy have transformed the care of HCV and thus there is a pressing need to determine the safety of transplanting organs from HCV infected donors.

Objective:

Assess safety and outcomes of HCV antibody positive (HCV Ab+/NAT -) kidney donors into uninfected recipients.

Method:

We conducted a retrospective analysis of 13 transplants performed between January 2019-December 2024 using organs from HCV Ab+/NAT - donors.

Post-transplant recipient HCV RNA testing results, graft function and graft rejection episodes were obtained.

Results:

A total of 13 recipients (HCV Ab-) (mean age 56.3 years, 62% female, 38.5% white ethnicity) received a deceased donor kidney from 9 donors (mean age 47.6 years). Twelve recipients received a kidney only, and one received a simultaneous pancreas-kidney. All 9 donors were HCV Ab+ and confirmed to be non-viraemic with a negative nucleic acid test at donation (NAT-). Four donors were confirmed to have had previous anti-HCV therapy and of these, two had completed treatment at 13 and 9 months pre-donation. None of the recipients developed detectable HCV RNA post-transplantation at protocolised time-points. Graft function was satisfactory with a mean eGFR of 50 ml/min at 6- and 12-months post-transplant. No episodes of acute allograft rejection were noted.

Conclusion:

Our experience suggests that kidney transplantation from HCV antibody-positive (NAT-) non-viraemic donors is safe, with no evidence of seroconversion and acceptable outcomes. Further large-scale studies are needed to corroborate this data, and also to evaluate whether use of viraemic HCV RNA positive donors can be a realistic possibility to address organ shortages, particularly in regions where HCV is highly endemic.

Keywords:

HCV antibody-positive donors, kidney transplantation, non-viraemic donors, graft function, organ shortage

Safety and Outcomes of Deceased Donor Kidney Transplantation using Hepatitis C Antibody Positive Kidney Donors: A Single-Centre UK Experience

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Conclusion:

Preliminary experience suggests that kidney transplantation from HCV antibody-positive non-viraemic donors is safe, with no evidence of HCV transmission and acceptable outcomes. Further large-scale studies are needed to corroborate this data, and also to evaluate whether use of viraemic HCV RNA positive donors can be a realistic possibility to address organ shortages, particularly in regions where HCV is highly endemic.

Keywords:

HCV antibody-positive donors, kidney transplantation, organ shortage, graft function, HCV transmission

Pioneering in ABO-Incompatible Renal Transplantation in Pakistan: Breaking Barriers – A Case Series

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[4]Medical Officer, Safari Bahria International Hospital
[5]Consultant Nephrology, Safari Bahria International Hospital

Background:

Kidney transplantation is the treatment of choice for end-stage renal disease (ESRD). However, limited donor availability, especially live-related donors, hinders access to this life-saving procedure. ABO-incompatible kidney transplantation (ABOi KT) offers a promising solution to expand the donor pool. This case series presents the first successful ABOi KT cases in Pakistan.

Objectives:

To explore the outcomes of ABO-incompatible renal transplants analyzing graft survival, rejection episodes, and patient outcomes.

Methods:

A retrospective analysis was performed on 15 patients who underwent ABO-incompatible renal transplantation at Safari Bahria International Hospital, Rawalpindi. All patients received a desensitization protocol comprising rituximab, plasmapheresis, and triple immunosuppression. Post-transplant immunosuppression was optimized to prevent rejection while minimizing adverse effects. Patient demographics, graft survival, acute rejection episodes, and complications were recorded.

Case Presentation:

A total of 15 patients with ESRD underwent ABOi KT after no compatible donor was found. A standardized desensitization protocol involving rituximab, plasmapheresis, and triple immunosuppression was implemented.

Results:

Among the 15 cases analyzed post operatively, 3 patients developed lymphocele, 1 had BK virus infection and 1 had pneumonia. One patient had presumed antibody mediated rejection and three had acute cellular rejection which was managed by the nephrology team. There was 1 mortality due to post-op cardiac complications. The overall graft survival rate was 93.3%, with one mortality.

Conclusion:

This pioneering achievement demonstrates the potential for ABO-incompatible kidney transplantation in Pakistan, with promising short-term outcomes. It underscores the potential to significantly increase the number of kidney transplants and

improve patient outcomes. Larger studies are required to assess long-term survival and optimize management protocols for improved patient care.

Keywords:

ABO-incompatible, renal transplant, kidney transplantation, desensitization, immunosuppression

Expanded Criteria Donor Kidneys; A Viable Solution to Organ Shortages? A Single-Center Study of 440 Patients

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Background:

The ever-rising demand for renal transplantation has led to the broader use of Expanded Criteria Donor (ECD) kidneys. While ECD kidneys help in addressing the organ shortages, there remains worries regarding graft survival, delayed graft function (DGF) and long-term patient outcomes. An understanding of ECD kidneys is mandatory in optimizing their use while ensuring favorable patient outcomes.

Objective:

To evaluate the feasibility of Expanded Criteria Donor (ECD) kidneys as a solution to organ shortages by assessing their impact on graft survival, delayed graft function (DGF), and long-term patient outcomes in renal transplantation.

Method:

A retrospective cohort study was conducted on 440 patients who underwent kidney transplantation at Bahria International Hospital from Jan, 2019 - Feb, 2025. Data on recipient demographics, donor characteristics, perioperative parameters, and post transplant outcomes (acute rejection, infections, and delayed graft function) were analyzed.

Results:

Among the 440 donors, 3.4% (n=15) were > 60 years, including ABO-incompatible 0.2% (n=1). Furthermore, 0.2% (n=1) had diabetes and 0.9% (n=4) had hypertension. Structural abnormalities included 2.7% (n=12) of patients with renal stones, 0.5% (n=2) with a duplex system, and 9.8% (n=43) with complex anatomy. Additionally, 1.4% (n=6) had renal cysts < 1 cm. There were 2 deceased donors (0.5%), each donated two kidneys, among them 1 had a stroke. Hence, a total of 19.6% of donors fell under Expanded Criteria Donors (ECD). Generally favorable outcomes were noted despite the use of ECD kidneys. Post-op graft functions were stable in these patients, with no rejection episodes or complications. There were only 2 mortalities.

Conclusion:

Expanded Criteria Donor kidneys can serve as a promising solution to address ever-increasing organ demand, without significantly compromising patient outcomes. With proper donor selection and perioperative management, ECD kidneys can be a valuable resource for expanding the donor pool and improving access to renal transplantation.

Keywords:

Expanded criteria donors, kidney transplant, organ donation

Laparoscopic donor nephrectomy - initial experience and learning curve at Armed Forces Institute of Urology Rawalpindi

Haroon Sabir Khan[1], Qamar Zia[1], Muhammad Tanveer Sajid[1], Talha Akhtar[1].
[1] *Armed Forces Institute of Urology, Rawalpindi, Pakistan.*

Background:

Background: Kidney donation is the highest form of charity hence; donor safety is of utmost importance. Laparoscopic donor nephrectomy (LDN), currently the benchmark for living donors, has been adopted successfully worldwide for kidney transplantation as it decreases morbidity, enjoys higher donor satisfaction and proved successful in growing the donor pool.

Objective:

To determine the feasibility of LDN in terms of operative details, ischemia time, analgesia and hospital stay.

Method:

Prospective case series involving 48 patients who underwent LDN at AFIU from July 2023 till March 2025. Three consultant urologists performed surgeries under general anesthesia using Olympus ENDOEYE3D® laparoscopic system. Clinical research form was used to record demographic details, operative time, blood loss, incision length, warm and cold ischemia time (WIT, CIT), pain, analgesia requirement, hospital stay, and return to normal activity. Data obtained was analyzed through IBM SPSS 30.0.0

Results:

Analysis involved 48 patients, 26 being male and 22 were female having mean age 36.5139.52 & 28.2336.71 respectively. Operative time was 98.1138.5 minutes with mean blood loss 73.8333.87 ml, incision length 6.9330.63 cm, WIT 112.4435.72 seconds, CIT 23.432.06 minutes. VAS score was 4.531.24 on day1 which decreased to 2.730.65 on day 2; 13(27%) required combination paracetamol+ tramadol while the rest managed with paracetamol only (35, 73%). Length of stay was found 2.1130.86 days while majority returned to the routine within 5 days (3.931.1 days). One patient required conversion to open (2.1%) while 2(4%) had Clavien-Dindo grade 3 complications.

Conclusion:

LDN is a safe, feasible procedure having less blood loss, analgesia requirement, better cosmesis, earlier discharge as well as return to normal activity.

Keywords:

Laparoscopy, Kidney Transplantation, Living donor, warm ischemia, length of stay.

Pre And Post Renal Transplant Immunization Practices Across Pakistan: A Snapshot.

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Background:

Immunization against preventable diseases is a much-discussed subject in clinical practice for kidney transplant patients. Immunization history of renal transplant candidates is of utmost importance in transplant work-up as recommended by the American Society of Transplantation's Infectious Diseases Community of Practice. To implement this crucial aspect of renal transplant, a consistent immunization protocol needs to be in effect across the country. Currently no literature is present on uniformity in immunization practices across Pakistan with reference to Renal Transplantation. This study sheds light on the practices of renal transplant centers in Pakistan on immunization against preventable diseases in transplant patients.

Objective:

To evaluate the uniformity in immunization practices across Pakistan in reference to Renal Transplantation both pre and post.

Method:

A cross-sectional online survey-based study was conducted in which an online questionnaire was sent to the heads of 18 leading Kidney Transplant centers across Pakistan. Each survey form contained 10 question items. After data collection, descriptive data analysis was carried out. Frequencies and percentages were calculated for all item responses.

Results:

Current study provides a report on the uniformity of practices of immunization in Kidney transplant patients in Pakistan as shown in Table 1.1and Table 1.2.

Conclusion:

Current survey delineates that most practices related to immunization in kidney transplant patients are not consistent. It is suggested to formulate a consensus to follow unvaried protocols to optimize immunization status in kidney transplant patients.

Keywords:

Kidney Transplantation, Vaccination, Immunization programs, Renal Transplantation.

Item #	Item	Option 1		Option 2		Option 3		Total Response
		(n)	(%)	(n)	(%)	(n)	(%)	
1.	Do you take an immunization history prior to renal transplantation?	Yes		No		Sometimes		18
		15	83.33	1	5.56	2	11.11	
2.	Do you immunize against vaccine preventable diseases pre-transplant?	6	33.33	5	27.78	It depends		18
						7	38.89	
3.	Is timing the vaccination a concern as we want to proceed for the transplant at the earliest?	13	81.25	3	18.75	-	-	16
4.	Do you have a dedicated vaccination protocol pre-transplant that needs to be followed?	5	27.78	5	27.78	I individualize		18
						8	44.44	
5.	Would you delay a transplant on account of finishing the vaccination schedule?	3	16.67	15	83.33	-	-	18
6.	Do you have all the required vaccines available to you easily?	6	33.33	12	66.67	-	-	18
7.	Do you vaccinate against the flu post-transplant?	8	44.44	6	33.33	Sometimes		18
						4	22.22	
8.	Do you vaccinate against pneumonia post-transplant?	3	16.67	8	44.44	Sometimes		18
						7	38.89	
9.	How do you vaccinate against polio post-transplant (required for Umrah)?	Oral		Injection		Write a note that it is not needed		18
		4	22.22	2	11.11	12	66.67	

Table 1.1 Questionnaire survey response report of 9 items

Item #10	Item	Response	Frequency (n)	Percentage (%)
	On a scale of 1 to 10 with 10 being very confident and 1 being very uncomfortable, do you believe you are comfortable when prescribing vaccination to transplant patients?	1	1	5.56
		2	0	0
		3	0	0
		4	1	5.56
		5	2	11.11
		6	1	5.56
		7	3	16.67
		8	4	22.22
		9	2	11.11
		10	4	22.22
Total			18	100

Table 1.2 Questionnaire survey response report of 10th item

CDC WONDER Insights: Two-Decades Trends in Infectious Disease-Related Mortality Among Organ and Tissue Transplant Recipients

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Background:

Infectious diseases following organ and tissue transplantation contribute to significant mortality, yet trends and disparities in such deaths remain understudied. This analysis evaluates mortality patterns in the United States from 1999 to 2020.

Objective:

To assess the mortality trends and pattern in United states in Infectious Disease-Related Mortality Among Organ and Tissue Transplant Recipients

Method:

Mortality data (1999–2020) were extracted from CDC WONDER. Age-adjusted mortality rates (AAMR) with 95% confidence intervals (CI) were calculated. Crude mortality rates (CMR) and age-adjusted mortality rates (AAMR) per million were stratified by age, gender, race, and U.S. Census, demographics, geographic regions, and urbanization levels. Joinpoint regression analyzed annual percent change (APC) and average APC (AAPC).

Results:

We used U.S. mortality data to identify 8,397 deaths (aged ≥25 years) associated with post-transplant infections.A non-significant decrease in AAMR was seen overall, from 0.11 (1999) to 0.10 (2020) (AAPC: -0.57%; p=0.25). Medical establishments accounted for 95.6% of all fatalities. Male mortality was double that of female mortality (AAMR: 0.14 vs. 0.07). African Americans had the highest mortality rate (AAMR: 0.13), followed by Whites (0.10), while Asians and Pacific Islanders had the lowest (0.05). These racial discrepancies were evident. Significantly, Hispanic/Latino mortality increased (APC: +2.2%; p=0.01). The Midwest (0.142) and Kentucky (AAMR: 0.18) had the highest rates geographically. Mortality rates were higher in non-metropolitan areas (0.121 compared to 0.107 in metropolitan areas), although they drastically decreased after 2018 (APC: -21.70%; p=0.07).

Conclusion:

Mortality from post-transplant infection is still a serious problem, with persistent differences across gender, ethnicity, and region. Systemic disparities in healthcare

access and post-transplant care are highlighted by rising mortality among Hispanic/Latino communities and higher rates in non-metropolitan and Midwestern areas. To reduce inequities and enhance outcomes for transplant recipients, it is crucial to give priority to early detection, culturally competent treatment, and resource allocation to high-risk populations.

Keywords:

Post-transplant infections, infectious disease mortality, organ transplantation, racial disparities, healthcare access

Outcome of paediatric transplant in a tertiary care hospital of Pakistan: A retrospective study

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[1] *Shifa International Hospital, Islamabad.*
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Background:

Renal transplantation is a recommended intervention for paediatric patients with end-stage renal disease, as it is associated with better health-related quality of life, enhanced growth and developmental outcomes, and prolonged patient survival compared to any form of long-term dialysis.

Objective:

To determine the 1-year and 5-year outcomes of paediatric renal transplants performed at a tertiary care hospital in Pakistan between 2002-2024.

Method:

A retrospective cross-sectional study at Shifa International Hospital, Islamabad, evaluated graft survival in paediatric renal transplant cases (2002–2024). Of 96 patients, 86 completed a 5-year follow-up (2002–2017). The study included patients under 16, both haemodialysis-dependent and independent, excluding those older than 16 or with ABO-incompatible transplants. Transplants followed standard guidelines with live donors, and all patients received standardized post-transplant care. Outcomes were assessed based on graft rejection and survival at 1- and 5-year follow-ups.

Results:

Of the 96 paediatric renal transplant cases, 70 (72.9%) were male, and 26 (27.1%) were female, with most patients aged 9–16 years. Donors were aged 20–35 years in 32 (33.3%) cases, 35–50 years in 62 (64.6%), and >50 years in 2 (2.1%). Pre-emptive transplants accounted for 21 (21.9%) cases, while 70 (72.9%) were dialysis-dependent, with 58 (60.4%) on dialysis for less than a year. Post-transplant infections occurred in 12 (12.5%) cases, with urinary tract infections (5.2%) being the most common. At 1-year post-transplant, 60 (62.5%) patients had gained weight. Patient survival revealed 2 (2.1%) died, 8 (8.3%) cases on haemodialysis, while the remainder were alive. Graft survival analysis showed GFR >15ml/min in 95/96 (99.0%) at 1 year, while at 5 years, 72/86 (83.7%) had GFR >15ml/min.

Conclusion:

This study from a tertiary care hospital in Pakistan highlights favourable long-term survival in paediatric renal transplant recipients, with most maintaining graft function at five years despite some renal decline

Keywords:

Paediatric, Renal Transplant, End-Stage Kidney Disease, Graft Rejection, Survival

Frequency of C4d-Negative Antibody-Mediated Rejection in Post Renal Transplant Patients at Shifa International Hospital, Islamabad

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Background:

Antibody-mediated rejection (AMR) is a significant complication in renal transplant recipients, with emerging recognition of C4d-negative AMR. The identification of this subtype is crucial for optimizing clinical outcomes and improving graft survival.

Objective:

To determine the frequency of C4d-negative Antibody-Mediated Rejection in post renal transplant patients at Shifa International Hospital, Islamabad.

Method:

A cross-sectional study was conducted at the Nephrology department of a private tertiary care hospital, including 99 adult post-renal transplant patients. Patients with history of immunosuppressive therapy, connective tissue disorder, seropositive/seronegative arthritis, heart diseases, asthma, tuberculosis or liver diseases. Ultrasound-guided needle allograft biopsies were performed at 1 month following ABO-incompatible and/or HLA-incompatible live donor transplants. Staining for C4d was performed on frozen tissue by indirect immunofluorescence technique to confirm presence or absence of C4d antibody-mediated rejection. The frequency was determined and correlated with age, gender, socioeconomic status, smoking status, and common comorbidities.

Results:

There were 97 transplant patients included in the study. There were 78 (80.4%) males and 19 (19.6%) females with mean age of 49.63316.49 years. Out of 97 patients, 55 (56.7%) were found to have C4d-negative antibody-mediated rejection, while 42 (43.3%) did not have C4d-negative antibody-mediated rejection. There was no significant association between C4d-negative rejection and age (p=0.14), gender (p=0.15), family income (p=0.13), occupational status (p=0.62), residence status (p=0.45), diabetes (p=0.96), hypertension (p=0.60), dyslipidemia (p=0.45) and smoking status (p=0.70).

Conclusion:

The study found a moderately high frequency of C4d-negative AMR in patients undergoing ABO-incompatible and/or HLA-incompatible live donor kidney transplants. These findings underscore the importance of timely identification of C4d-negative AMR to prevent graft scarring, transplant glomerulopathy, and graft loss, ultimately improving long-term transplant outcomes.

Keywords:

Renal transplantation, C4d-negative Antibody mediated rejection, graft rejections, end stage renal disease, Living donor

Post-operative Challenges in Pediatric Renal Transplant with reconstructive bladders

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Background:
Renal transplant is the treatment modality for children with end stage renal disease. Pediatric
Transplants are steadily increasing; as a result, pediatricians, urologists and general practitioners are more likely to see these kids in their clinical practice. Even though immediate post-op care is provided by the transplant team, these kids would eventually need outpatient care in their local community.
Reconstructive Bladders impel a unique challenge not only for the child and family but also for the doctor to achieve optimal graft functioning. It is crucial for their primary care providers and pediatricians to be knowledgeable about their specific needs and be competent in providing care for these bladders. Primary Doctors play a crucial role in managing these complex cases.

Objective:

To describe complications faced by renal graft recipients with lower tract reconstructive surgery. And to educate primary doctors in managing/ optimizing these patients.

Method:
Single institution retrospective review from 2022 to 2024, All patients (Pediatric Population up to 16 years of age) that underwent reconstructive surgery prior Transplant. All types of complications related to reconstruction were included along with management options. Lastly, smooth Transition and care with education of doctors were the main emphasis of our review.
Transition of care focused on Good communication, Detailed discharge summary, Handouts with diagrams for bladder care, Bladder surveillance for possible tumor development in augmented segment.

Results:
- Successful graft function with reduced complications.
- Effective transition of care improved patient outcomes.

Conclusion:

Transition of care for Reconstructed bladder is as important as care for Graft.
Prompt and timely care would not only reduce complications but also reduced morbidity and Mortality

Keywords:

Renal transplant, pediatric urology, reconstructive bladder, graft function, postoperative care, primary care management, bladder surveillance

Optimizing Outcomes: Live Donor Kidney Transplants in Pediatric Patients

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Background:

Pediatric kidney transplantation offers a definitive treatment for end-stage renal disease (ESRD), yet optimizing outcomes remains a challenge. This study evaluates clinical outcomes, complications, and survival rates in pediatric recipients undergoing live donor kidney transplants (LDKT)at the Pakistan Kidney and Liver Institute & Research Center (PKLI & RC), Lahore, Pakistan.

Objective:

To evaluate the clinical outcomes, complications, and survival rates of pediatric patients undergoing live donor kidney transplantation (LDKT) at Pakistan Kidney and Liver Institute & Research Center (PKLI & RC), Lahore.

Method:

This retrospective cohort study included pediatric patients under 15 years who underwent LDKT between September 2018 and February 2025. Patients with a minimum one-year post-transplant follow-up were analyzed. Data was collected from electronic medical records and analyzed using SPSS version 27. Kaplan-Meier survival analysis was utilized for graft and patient survival evaluation.

Results:

A total of 36 pediatric recipients underwent live donor kidney transplantation, aged 8 to 15 years (range: 7 years), mean age of 12.42 3 2.40 years, weight was 27 kg (IQR = 12) and BMI of 15.84 3 2.23 kg/m^2. The majority were male 28(77.8%), and mothers were the most common donors 19(52.8%). Blood group B was predominant 16(44.4%), and idiopathic causes were the leading etiology of ESRD 11(30.6%). Hypertension was the most prevalent comorbidity 32(88.9%). Immunosuppression induction primarily involved antithymocyte globulin (91.7%, n=33), with all patients maintained on tacrolimus-based regimens. Post-transplant complications were infrequent, with early medical complications in 4(11.1%) mainly infections and late complications in 6(16.7%) (including sepsis, BK virus, and acute rejection). Surgical complications were rare. Graft function remained stable, with serum creatinine levels increasing slightly to 1.06 3 0.50 mg/dL at one year. Kaplan-Meier analysis showed a 33(91.7%) graft survival rate and 34(94.4%) patient survival rate, with mean graft and patient survival times of 70.9 3 3.37 and 73.02 3 2.73 months, respectively.

Conclusion:

Live donor kidney transplantation in pediatric patients is feasible with acceptable short-term outcomes. Meticulous surgical techniques, tailored immunosuppression, and comprehensive post-transplant care are critical to its success.

Keywords:

Pediatric kidney transplant, live donor, graft survival, surgical complications, immunosuppression, end-stage renal disease.

Short-Term Clinical Outcomes of Kidney Paired Donation in Living Donor Kidney Transplants: A Retrospective Study

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Background:

Kidney Paired Donation (KPD) is an innovative strategy to overcome blood group and HLA incompatibility in living donor kidney transplantation by facilitating donor-recipient exchanges. It expands transplant opportunities for patients with incompatible donors, improving access to life-saving treatment. Despite its success globally, KPD remains underutilized in Pakistan. This study evaluates the short-term clinical outcomes of KPD transplants performed at Pakistan Kidney and Liver Institute & Research Centre (PKLI & RC), Lahore.

Objective:

To evaluate the short-term outcomes of Kidney Paired Donation (KPD).

Method:

This was a retrospective observational study of patients who underwent KPD transplants in the Department of Kidney Transplantation Surgery at Pakistan Kidney and Liver Institute & Research Centre (PKLI & RC), Lahore, Pakistan. Twenty-eight patients underwent two-way KPD transplant from August 2022 to July 2024 were included. Patient demographics, perioperative variables, including delayed graft function(DGF), surgical site infection(SSI), graft survival, patient survival, and rejection, were recorded.

Results:

Most recipients were male (25, 89.3%) while most donors were female (20, 71.4%). The average age of recipients and donors were 32.62314.05 and 36.8+/-7.1 years respectively. Most recipients had blood group A (13, 46.4%) while 11(39.3%) had B, 2(7.1%) had AB and 2(7.1%) had blood group O. The best tissue match was 5/8 (1, 3.6%) with a minimum of 0/8 (43.9%). Recipients with single artery allografts were 20(71.4%), 7(25.0%) had two and 1(3.6%) had three arteries. Mean warm ischemia time, cold ischemia time, anastomosis time and operative time were 109.1+/-32.0 seconds, 27.3.0+/-6.9 minutes, 58.0+/-17.3 minutes, and 206.5+/-47.4 minutes respectively. Creatinine levels were 1.4330.43 mg/dL at 6 months, and at 1 year. No DGF or 30-day mortality was reported. One (3.6%) patient had SSI and another had arterial anastomosis leakage, treated with oral antibiotics and anastomosis revision, respectively, with stable graft function post-operatively. Post-operative outcomes showed one graft loss due to acute T-cell mediated rejection. The Kaplan-Meier survival analysis revealed a graft survival rate of 96.4% at the time of the first graft loss at 9 months and 100% patient survival.

Conclusion:

KPD in living donor kidney transplants leads to favorable short-term clinical outcomes, with high graft survival and low complication rates and has the potential to expand kidney transplant opportunities in Pakistan.

Keywords:

Kidney Paired Donation, Living Kidney Donor, Kidney Transplant

Outcomes and Innovations in Kidney Transplantation: A Meta-Analysis of Graft Survival, Patient Survival, and Post-Transplant Complications

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Background:

Kidney transplantation is the preferred treatment for end-stage renal disease (ESRD), offering superior survival and quality of life compared to dialysis. Advances in surgical techniques, donor selection, and immunosuppression have improved outcomes, yet challenges such as organ shortages, rejection, and long-term complications remain. Novel approaches, including HIV-positive donor transplantation and robot-assisted kidney transplantation (RAKT), require further evaluation to assess their efficacy and safety.

Objective:

This meta-analysis aims to evaluate kidney transplant (KT) outcomes, including graft survival, patient survival, renal function, rejection rates, and post-transplant complications. Additionally, the study assesses the impact of emerging innovations such as HIV-positive donor transplantation and robotic surgery on patient outcomes.

Method:

A systematic review of studies published between 2020 and 2025 was conducted using PubMed, ScienceDirect, and the New England Journal of Medicine. The initial search retrieved 214 studies, which were screened based on inclusion and exclusion criteria through title and abstract screening, 48 studies selected for full-text review. Following a detailed assessment, 26 high-quality studies involving 90,307 patients were included in the final meta-analysis. The included studies consisted of randomized controlled trials, cohort studies, and observational analyses reporting key post-transplant outcomes.

Results:

One-year patient survival exceeded 90%, with graft survival rates between 85-95%. Three-year patient survival remained favorable (ffi85%). Acute rejection rates were between 10-20% at one year. HIV-positive donor kidney transplants demonstrated outcomes comparable to standard transplants. RAKT showed low complication rates and high graft survival.Tacrolimus was used as the maintenance immunosuppression in majority cases which contributed in lowering the risk of graft rejection. One of the studies, involving data from 72,980 patients, HLA compatibility tests showed increased risks of graft failure in biologically related living donor KT than in non-related living donor KT. The leading causes of post-transplant morbidity included infections, malignancies, and cardiovascular disease.

Conclusion:

Kidney transplantation remains a highly effective treatment for ESRD, with continued improvements in outcomes. Innovations such as HIV-positive donor transplants and robotic-assisted procedures are expanding donor availability and enhancing surgical

safety. Future research should focus on long-term outcomes and precision immunosuppression strategies, moreover HLA compatibility can be a gauge in standard pre transplant screening procedures to further optimize transplant success.

Keywords:

Kidney transplantation, graft survival, immunosuppression, robotic surgery, HIV-positive donors

Hemodialysis versus Renal Transplantation: Unveiling the Safer Path for Cardiovascular Health in End Stage Renal Disease patients

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Background:

Hemodialysis and renal transplantation, is the treatment of choice among End Stage Renal Disease (ESRD) patients. The rate of increased morbidity and mortality secondarily to Cardiovascular Diseases (CVD) cannot be ignored among the subjects due to accompanying challenges of the procedure such as hemodynamic instability, valvular damage, and ischemic events. Comparatively reduced challenges and timely decision of better treatment choice would help for better prognosis thus improving the outcomes.

Objective:

The study aims to compare the valvular, dynamic and anatomical findings of transthoracic echocardiography among hemodialysis and renal transplant patients.

Method:

A retrospective comparative cross-sectional study was conducted at Renal Transplant Unit and Nephrology unit, Dow University Hospital, Dow University of Health Sciences. A total number of 70 participants (35 from each group i.e. hemodialysis and post renal transplant) were recruited for study. Transthoracic echocardiographic details of each subject were recorded after informed consent and the data was analyzed statistically using SPSS version 24.0

Results:

The mean age of the population was 37 years and 83.33% were males. The mean ejection fraction was significantly lower in hemodialysis i.e. 56.2% as compared to transplant i.e., 62% (p-value < 0.05). Both systolic and diastolic diameters were insignificantly raised among hemodialysis patients (32.305 & 46.3 mm versus 30 & 43.7 mm). Left ventricular hypertrophy was more common (I.e. 40% versus 24%) among post-transplant whereas pericardial effusion (I.e. 21% versus 16.67%) among hemodialysis subjects. Severe valvular abnormalities were more common among hemodialysis subjects with 5.4% had mitral regurgitation and 2.7% had tricuspid regurgitation.

Conclusion:

The study showed overall worsening echocardiographic findings among hemodialysis group as compared to renal transplant suggesting that renal transplant is associated with better cardiovascular outcomes and reduced morbidity. Implementing better strategies in transplantation is the need of time and would help in reducing the overall burden of disease.

Keywords:

End Stage Renal Disease; Hemodialysis; Renal Transplant; Transthoracic Echocardiography; Ejection Fraction.

Vascular Anastomosis Time And Early Graft Function

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Background:

Warm ischemia is the primary cause of DGF in renal transplant patients. Prolonged recipient warm ischemia can cause delayed graft function (DGF), resulting in poor graft outcomes. Short vascular anastomosis time (VAT) is considered beneficial for prompt early graft function (EGF).

Objective:

To determine the effect of VAT on EGF.

Method:

A retrospective cohort study of 360 living donor renal transplants (LDRT) performed between January 2019 and January 2025 at the Renal Transplant Unit of Rehman Medical Institute, Peshawar. The study population was divided into two groups based on VAT; GI with VAT less than 40 minutes, GII with VAT more than 40 minutes. Cold saline irrigation was used to maintain low graft temperature during implantation.

Results:

There were 360 patients in this cohort, mean age (years) was 36.05310.40 range (9-57) for GI and 37.61310.87 range (13-55) for GII, recipient male to female ratio was 7.6:1. Donor mean age was 32.67310.31 range (19-58) for GI and 33.98310.58 range (18-62) for GII, donor male to female ratio was 1.14:1. Sixteen patients had poor EGF (3.33%), eight DGF (1.67%) and eight SGF (1.67%). Mean VAT in GI was 37.2331.93 vs. mean VAT in GII 47.0736.90 (p value .00001). Time taken for 50% reduction in serum creatinine (SC50), SC at discharge, and last SC (minimum 3 months post-transplant) in both groups were comparable. No significant difference was found in incidence of poor EGF in the 2 groups (OR 0.19, 95% CI, P=0.355).

Conclusion:

In the presence of low graft temperature, prolonged VAT did not adversely affect EGF.

Keywords:

Vascular anastomosis time (VAT) early graft function (EGF), Delayed graft function (DGF)

Comparison Of Right Vs. Left Donor Kidney Transplants

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Background:

Transplant teams often hesitate to use the right kidney (RK) in living donor (LD) transplants due to the complexities of anastomosing the short, thin-walled right renal veins, which can potentially lead to graft loss or graft dysfunction. Nevertheless, circumstances may arise where selecting the RK over the left kidney (LK) is unavoidable. Consequently, it is crucial to thoroughly examine the implications of such a choice on the overall transplant outcome.

Objective:

To compare transplant outcomes between recipients of RK and LK while examining the factors that influence these outcomes.

Method:

We retrospectively analyzed data from adult patients who received LD kidney transplants involving meticulous patient selection and surgical techniques at our center from January 2020 to December 2023.We included all kidney donors who were over 18, fit to donate, and had undergone diethylenetriamine pentaacetic acid (DTPA) split function and/or computed tomography based volumetry. The variables examined comprised donor and recipient demographics, and outcome measures included technical graft loss (TGL), delayed or slow graft function (SGF), and post-transplant serum creatinine (SC) trends. We used a logistic regression model to assess the likelihood of adverse outcomes considering the donor kidney side.

Results:

Of the 250 transplants performed during the period, 56(22%) were RKs.The recipient demographics and transplant factors were comparable for the right and LKs, except that the donor warm and cold ischemia time were shorter for RKs. TGL and SGF each occurred in 2% (n = 1) of RKs and 0.5% (n = 1) of LKs, the difference being insignificant. These complications, however, were not related to the venous anastomosis. One RK (2%) developed delayed graft function after 48 hours, which was attributable to post-operative hypoxia rather than the surgical technique. The post-transplant SC trend and mean SC at the last follow-up were similar across both kidney sides.

Conclusion:

The donor kidney side has little impact on post-transplant adverse events and graft function in LD transplants, provided that careful patient selection and precise surgical techniques are employed.

Keywords:

Living donor; Right kidney; Right renal vein; Venous anastomosis; Technical graft loss; Early graft function

Medical Complications After Live Donor Kidney Transplantation: An Experience from Tertiary Care Hospital of South Punjab, Pakistan

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Background:

Medical complications are a significant concern following renal transplantation, potentially impacting graft survival and patient well-being. Identifying these complications can aid in early intervention and improved post-transplant care.

Objective:

To determine the frequency of medical complications after renal transplantation in recipients.

Method:

This prospective cohort study was conducted at the Nephrology Unit, Bahawal Victoria Hospital, Bahawalpur, from December 2018 to March 2022. All patients undergoing renal transplantation during this period were included, except those unwilling to participate or lost to follow-up. Pre-transplant work-up and routine investigations were performed for all participants. Baseline characteristics of recipients and donors were recorded, and the frequency of post-transplant medical complications was noted.

Results:

A total of 39 renal transplant recipients were analyzed, with 32 (82.1%) being male and a mean age of 30.3137.21 years. The mean duration of dialysis before transplantation was 6.8135.15 months (range: 0-24 months). The mean donor age was 35.9039.36 years. The mean follow-up duration was 26.15311.62 months.

Renal graft dysfunction was observed in 10 (25.6%) patients. The most common medical complications post-transplantation were:

- Sepsis: 19 (48.7%)
- Anemia: 19 (48.7%)
- Secondary polycythemia: 10 (25.6%)
- CMV infection: 4 (10.3%)
- New-onset diabetes mellitus: 3 (7.7%)

Mortality occurred in 2 (5.1%) patients, with sepsis being the cause of death in both cases.

Conclusion:

Medical complications are common after renal transplantation, with sepsis being particularly prevalent in the first six months post-transplant. Early recognition and man-

agement of these complications are crucial to reducing morbidity and mortality in transplant recipients.

Keywords:

Renal transplantation, medical complications, sepsis, anemia, polycythemia, CMV infection, new-onset diabetes mellitus, renal graft dysfunction.

Addressing Rural-Urban Disparities in Access to Renal Transplantation in Pakistan

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Background:

Pakistan's healthcare system is marked by stark rural-urban disparities, with 62% of the population residing in rural areas but only 20% of transplant facilities located outside major cities like Karachi and Lahore. This inequity exacerbates the burden of end-stage renal disease (ESRD) for rural patients, who often cannot afford travel or treatment costs.

Objective:

This narrative review assesses rural-urban disparities in access to renal transplantation in Pakistan and explores strategies to improve equity in transplant care.

Method:

We analyzed hospital data, patient registries, and policy reports from 2015 to 2024, focusing on transplant outcomes and access challenges in rural Punjab, Sindh, and Khyber Pakhtunkhwa. We also reviewed mobile health initiatives and public-private partnership models.

Results:

Rural patients face a 40% lower likelihood of receiving a transplant compared to urban patients, primarily due to transportation barriers and lack of local dialysis centers. Only 5% of rural ESRD patients are referred to transplant centers annually. Initiatives like SIUT's mobile dialysis units have reached 10,000 rural patients since 2018, but transplant follow-up remains challenging due to limited local expertise.

Conclusion:

Bridging rural-urban disparities requires decentralized transplant care, mobile health units, and training for rural healthcare providers. Future research should focus on cost-effective models to expand transplant services to underserved regions.

Keywords:

renal transplantation, rural-urban disparity, Pakistan, healthcare access, mobile health

Impact of donor Gender on graft outcomes after Living Donor kidney transplantation

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Background:

Transplantation is increasingly recognized as a better alternative to dialysis for end-stage renal disease (ESRD) patients, with living donor transplants generally showing better outcomes. Despite insights into the influence of various donor and recipient factors, the role of donor gender in transplant outcomes remains underexplored.

Objective:

To evaluate recipient outcomes of female donor kidneys (FDK) compared to male donor kidneys (MDK) in living donor kidney transplant (LDKT).

Method:

A retrospective analytic cohort study was conducted involving 250 patients aged 18 years and older who underwent living donor kidney transplantation. Participants were categorized based on donor-recipient gender combinations, and outcome measures included immediate graft function, delayed graft function, slow graft function, rejection rates, and post-transplant serum creatinine trends. Kaplan-Meier survival curves were used to assess graft and patient survival. Data analysis was performed using statistical software, incorporating chi-square tests, t-tests, ANOVA, Cox proportional hazards modeling, and log-rank tests.

Results:

Among the 250 transplants analyzed, donor demographics revealed near equality in male and female donors (124 female vs. 126 male), with a significant majority of male recipients (213). The study found no statistically significant differences between male and female donors concerning graft function and post-transplant serum creatinine levels. However, male recipients consistently exhibited higher serum creatinine levels compared to female recipients. While graft and patient survival rates did not differ significantly across gender combinations, female recipients demonstrated consistently better outcomes.

Conclusion:

Our study indicates that female donors do not negatively impact immediate graft function or short-term outcomes in living donor kidney transplantation.

Keywords:

Living donor kidney transplantation, donor gender, graft function, kidney transplant outcomes, serum creatinine, recipient gender, graft survival, patient survival.

Parvovirus B19 Infection in Renal Transplant Recipients with Persistent Anemia

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Background:

Anemia is the most common problem affecting the population worldwide. Because of its multifactorial nature, its treatment is challenging particularly in immunosuppressed individuals. It also affects the renal transplant recipients (RTX) severely and the possible cause may include viral infections such as Parvovirus B19 (PV B19) infection. It is a common human pathogen, occurs worldwide and its infectivity depends upon the host's hematological and immunological status. Although anemia is the main clinical manifestation of the virus, it is also associated with hepatitis, pneumonitis, myocarditis, and allograft dysfunction in RTX.

Objective:

To determine the parvovirus B19 infection in renal transplant recipients with persistent anemia

Method:

A pilot study was conducted in 80 individuals with 50 RTX with anemia, 10 RTX without anemia as pathological control (PC) and 20 healthy blood donors (healthy control [HC]). Anti-Parvovirus B19 IgM and IgG (anti-PV B19 IgM/IgG) antibodies (Abs) were detected by indirect ELISA.

Results:

We found IgM positivity in three RTX (6%) and negative in 44 (88%) while three (6%) had indeterminate results in the patients group. The PC group had 2 (20%) positive and 8 (80%) negative results. All HC group individuals were negative.

While IgG Abs were found in 26 RTX (52%) in the patient group, 7 RTX (70%) in the PC group and 17 (85%) in the HC group. These Abs were negative in 15 RTX (30%) in the patient group and 9 (18%) had indeterminate results.

Conclusion:

This study shows that PV B19 virus has an important role in causing anemia in RTX. Presence of IgM Abs in RTX without anemia signifies its association with other clinical features. This virus may also be contributing to graft dysfunction. There is a need to do such studies on a larger sample size incorporating molecular methods to detect the virus in RTX.

Keywords:

Anemia, PV B19, Renal Transplant Recipients

Frequency of Acute Kidney Injury in Renal Transplant Recipients during the First Month after Transplant: A Single Centre Study in a Resource Limited Setting

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Background:

The purpose of this study is to robustly identify the acute insult and provide timely treatment for graft longevity.

Objective:

The study aimed to determine the incidence and frequency of Acute Kidney Injury (AKI) in renal transplant recipients in the first month after Renal Transplant.

Method:

We conducted a retrospective study on 195 renal transplant recipients aged 18-70 years at Pakistan Kidney and Liver Institute and Research Centre and followed their 30-day post-transplant course. Patients that remained admitted due to any immediate surgical complication or had irreversible graft failure were excluded. The Incidence and Frequency of Acute Kidney Injury is calculated as per AKI Definition and Staging in Kidney Disease: Improving Global Outcomes (KDIGO).

All patients' serum creatinine level was checked immediately following renal transplant and at 7th, 14th, 21st, 28th and 30th post-transplant day.

Results:

Mean Baseline Creatinine was 1.11 mg/dL which was achieved between day 3-7 following transplant surgery. 41.54% (n= 81) of patients had acute kidney injury. 86.4% (n=70) of patients experienced AKI once during this period while 13.58% of patients (n=11) had two episodes. 73 patients had stage 1 AKI (90.1%), 3 patients had stage 2 AKI (3.703%) and 5 patients had stage 3 AKI (6.2%).

The most common reason for AKI was prerenal (dehydration) in 24 patients out of 81 (29.62%). The second was urinary tract infection in 23 patients (28.39%). 20 patients (24.69%) had drug-induced acute kidney injury. Calcineurin Inhibitor toxicity in 8.6% (n=7) and Acute Tubular Injury / Necrosis in 7.407% (n=6). Only one patient had an episode of Acute Antibody Mediated Rejection that caused Acute Kidney Injury.

Conclusion:

Even though most episodes of AKI completely resolve to baseline creatinine, it is pivotal to timely diagnose and treat AKI in post-renal transplant patients.

Keywords:

Renal transplant; Kidney Injury; Infection

Successful Renal Transplantation in a 15-Year-Old Girl with Nephropathic Cystinosis: A Case Report

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Abstract:

Cystinosis is an autosomal recessive lysosomal storage disorder(bi-allelic mutations in the CTNS gene) characterized by the defective transport of the amino acid cystine out of the lysosome due to a deficiency of cystinosin, the lysosomal cystine transporter. Patients have lysosomal cystine accumulation in various tissues, leading to cellular stress and damage, particularly in the kidney, cornea, and other extrarenal tissues. Cysteamine, a cystine-depleting agent, improves survival and delays the progression of disease, but it does not prevent the development of either renal failure or extrarenal complications. Furthermore, the drug has severe adverse effects that significantly reduce patient compliance. Allogeneic hematopoietic stem cell transplantation (HSCT) is currently established as a therapeutic option for many inborn errors of metabolism, where the main pathologic driving factor is an enzyme deficiency. Nephropathic cystinosis is a rare autosomal recessive lysosomal storage disorder that leads to progressive renal failure, often necessitating renal transplantation. We present the case of a 15-year-old girl with end-stage renal disease (ESRD) secondary to nephropathic cystinosis, successfully managed with a live donor renal transplantation.

Introduction

Cystinosis is characterized by lysosomal cystine accumulation and crystallization, and manifests clinically with severe polyuria and loss of a diverse range of substances normally reabsorbed in the kidney proximal tubules (renal Fanconi syndrome), leading to end-stage renal disease (ESRD) during childhood or early adolescence. Extrarenal manifestations include photophobia, retinopathy, endocrine dysfunction (hypothyroidism, endocrine pancreatic insufficiency, hypogonadism), peripheral myopathy, and central nervous system complications, which mostly develop during the second and third decades of life. In cystinosis patients, phagocytic cells, such as blood granulocytes and bone marrow and tis- sue macrophages, accumulate large amounts of cystine due to their phagocytic nature and their inability to process the phagocytized crystals. The only available treatment for cystinosis is the cystine-depleting amino thiol cysteamine. However, this drug does not prevent progressive disease, but merely

postpones the development of ESRD and extrarenal complications. Moreover, cysteamine has numerous side effects that severely limit patient compliance. Renal transplantation is the treatment of choice for ESRD in these patients. However, post-transplant management must address systemic manifestations of cystinosis, including growth retardation, skeletal deformities, and ocular complications.

There are 3 major phenotypes for cystinosis. Infantile nephropathic cystinosis is the most severe type, and constitutes >95% of cases. This disease presents with renal impairment during the first year of life, and development of renal failure by the end of the first decade, along with multiorgan damage. Few cystinosis patients present with juvenile nephropathic cystinosis, which is a milder form of the disease that induces renal injury at a later age. Thirdly is the ocular type, which manifests only with photophobia due to corneal cystine crystal deposition, and spares other organs.

Case Presentation:

A 15-year-old girl presented with complaints of renal failure and had been on maintenance hemodialysis for two years through a left radiocephalic arteriovenous fistula (AVF). She exhibited growth retardation with bowed legs and impaired visual acuity, necessitating cysteamine eye drops. Her blood group was A positive, and due to the absence of a compatible related donor, she was placed on a paired donor list. She subsequently underwent renal transplantation on April 30, 2024.

Pre-Transplant Management:

Six weeks prior to transplantation, she was initiated on oral cysteamine (mercaptamine bitartrate), starting at 50 mg four times daily (QID) and titrated up to 100 mg QID, along with ophthalmic cysteamine. Pre-transplantation assessment revealed normal thyroid function, neurological status confirmed on MRI brain, and cardiac status which were within normal limits. However, she had secondary hyperparathyroidism with normal calcium,

elevated phosphorus, and an intact parathyroid hormone level of 230 pg/ml, managed with alfacalcidol.

Transplant Details:

She received a blood group-compatible, A-positive, live-nonrelated kidney transplant from a 35-year-old female donor through a paired donor exchange program. HLA matching revealed a 6/8 mismatch, with negative flow cross-match and Luminex results, allowing the transplant to proceed per hospital protocol.

Induction Therapy:

- rATG: 6 mg/kg cumulative divided over three days
- IV Methylprednisolone: 250 mg once daily for three days
- Tacrolimus: 2 mg twice daily (initiated 24 hours before transplantation)
- Mycophenolic acid: 500 mg twice daily (initiated 24 hours before transplantation)

Post-Transplant Course:

The transplant surgery was uneventful. The patient achieved a nadir serum creatinine of 0.8 mg/dL and was discharged on the fourth post-operative day.

One-Year Post-Transplant Follow-Up:

- Maintained baseline creatinine around 0.9 mg/dL
- Tacrolimus levels stabilized around 7 ng/mL
- Immunosuppressive regimen: Mycophenolic acid 500 mg once daily, Prednisolone 5 mg daily
- Persistent hypertension managed with Carvedilol
- Increased linear growth by approximately 5 cm; however, growth hormone therapy was not pursued due to concerns over immunological rejection and unsatisfactory bone age findings

Challenges and Future Considerations:

Despite successful renal transplantation, the patient continues to experience growth retardation and bowed legs. A multidisciplinary approach involving endocrinology and orthopedic specialists is essential for long-term management. The role of cysteamine therapy in mitigating extra-renal manifestations remains a key focus in her ongoing care.

Conclusion:

This case highlights the feasibility and success of renal transplantation in patients with nephropathic cystinosis. While renal function post-transplant has been excellent, extra-renal complications such as skeletal abnormalities and growth delay require continued attention. Early diagnosis and comprehensive multidisciplinary care remain crucial in optimizing long-term outcomes for these patients.

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The Effect of Multiple Renal Arteries Graft in Renal Transplantation

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Background:

The presence of multiple renal arteries (MRA) in kidney grafts poses concerns in transplantation due to an increased risk of vascular and urologic complications. Understanding its impact on transplant success and patient survival is essential for improving outcomes.

Objective:

To assess the incidence of complications in recipients with single vs. multiple renal arteries and evaluate their effects on transplant success and patient survival.

Method:

A retrospective review of 240 renal transplant recipients over three years was conducted. Of these, 40 (16.6%) had MRA grafts. CT renal arteriography was used to identify vascular anatomy. Complications related to urology, vascular health, and hypertension were analyzed. Vascular reconstruction was performed in 26 cases using conjoined anastomosis, in 10 cases using end-to-side anastomosis, and in 4 cases with multiple anastomoses. Data were collected using a structured proforma.

Results:

Among 240 patients, 40 had grafts with MRA. No significant difference was observed in donor age or renal failure causes between groups ($p = 0.841, 0.343$). The leading causes of renal failure were idiopathic and diabetes mellitus. Complications were significantly correlated between groups ($p = 0.001$). Patients with MRA experienced more urinary ($p = 0.24$) and vascular complications, with a significant difference in bleeding disorders ($p = 0.033$). However, overall vascular complications were not statistically significant ($p = 0.197$).

Conclusion:

Multiple renal arteries in kidney grafts did not negatively impact postoperative urologic or vascular complications, kidney allograft survival, or patient survival compared to single-artery grafts. Kidney transplantation using MRA grafts can be performed successfully.

Keywords:

Multiple Renal Arteries, Kidney Transplantation, Vascular Complications, Urologic Outcomes, Graft Survival.

Frequency of Helicobacter Pylori Infection in Gastric Biopsies in Renal Transplant Recipients With Upper Gastrointestinal Symptoms

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Background:

Helicobacter pylori (HP) is an important etiologic factor in gastritis, peptic ulcer disease, and malignancy in the general population. There is currently no information on the prevalence of HP in renal transplant recipients (RTRs) in Pakistan.

Objective:

To determine the frequency of HP infection in gastric biopsies in RTRs with upper GI symptoms.

Method:

A descriptive cross-sectional study was performed from December 2019 to May 2020. All RTRs of age range 10-65 years of any gender who had any one or more of the upper GI symptoms and in whom GI endoscopy and biopsies were performed, were included. Patient demographics, clinical characteristics, histology, and presence/absence of HPwere gathered from original biopsy reports. Data was analyzed by using IBM SPSS statistics 22.

Results:

A total of 106 RTRs underwent gastric biopsies during the above study period. Out of these, 86 (81.1%) were males and 20 (18.9%) females, with a male-to-female ratio of 4.3:1. The mean age of all patients was 34.5310.15years (range: 12-65 years).

HP infection was positive in 11 (10.4%)cases. Chronic active (diffuse) inflammation was observed in 9 (81.81%), chronic active (focal) gastritis in 1 (9.09%), and follicular gastritis with activity in 1 (9.09 %) biopsies. Intestinal metaplasia (IM) was found in 2 (18.2%) biopsies. All patients in the positive group were males (100%).

The most frequent GI complaints noticed in HP positive patients were weight loss in 9 (81.81%)patients, followed by epigastric pain in 3 (27.27%) patients. No correlation was found between gender (p=0.168) and age (p=0.36) and the occurrence of HP infection.

Conclusion:

The frequency of HP infection is 10.4% in our RTRs, which is quite low. Further, large-scale studies are needed to determine the true prevalence of this common pathogen in our transplant population.

Keywords:

Kidney transplant recipients, H. pylori, peptic ulcer disease, Pakistan

Efficacy and Safety of Everolimus with Reduced Tacrolimus Versus Standard Tacrolimus in Liver Transplant Recipients: A Systematic Review and Meta-Analysis

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Background:

Liver transplantation (LT) requires immunosuppression to prevent rejection while minimizing adverse effects. Tacrolimus (TAC) is standard but linked to nephrotoxicity and leukopenia. Everolimus (EVR) with reduced-dose TAC (rTAC) offers a potential alternative, potentially improving safety while preserving efficacy.

Objective:

To compare everolimus with reduced-dose tacrolimus (EVR + rTAC) versus standard tacrolimus (sTAC) in liver transplant recipients, assessing composite efficacy as the primary outcome, with graft loss , peripheral edema , mortality and evaluating safety via incidence of adverse events.

Method:

PubMed, Cochrane Library, Embase, and ClinicalTrials.gov were systematically searched from inception until 1st March, 2025. Randomized controlled trials (RCTs) comparing everolimus with reduced-dose tacrolimus (EVR + rTAC) versus standard tacrolimus (TAC) in liver transplant (LT) recipients were included. A random-effects model was used for meta-analysis to calculate pooled risk ratios with 95% confidence intervals (CI).

Results:

Seven studies involving 1,853 patients (922 in the EVR + rTAC group, 931 in the sTAC group) were included. EVR + rTAC showed no significant difference in the composite efficacy outcome [RR: 0.78; 95% CI: (0.59–1.03); p = 0.08]. Graft loss was comparable between groups [RR: 1.32; 95% CI: (0.68–2.54); p = 0.41]. EVR + rTAC significantly reduced leukopenia risk [RR: 2.87; 95% CI: (1.99–4.13); p < 0.00001] but increased peripheral edema [RR: 1.65; 95% CI: (1.30–2.11); p < 0.0001]. No significant differences were observed in mortality [RR: 1.27; 95% CI: (0.79–2.04); p = 0.32] or serious adverse events [RR: 1.04; 95% CI: (0.94–1.15); p = 0.47].

Conclusion:

Everolimus with reduced tacrolimus showed comparable efficacy to standard tacrolimus, with no significant differences in graft loss or mortality. However, it reduced leukopenia risk but increased peripheral edema. Further studies are needed to refine immunosuppressive strategies.

Keywords:

Liver transplantation, immunosuppression, tacrolimus, everolimus, reduced-dose tacrolimus, nephrotoxicity, leukopenia, peripheral edema, graft loss, mortality, adverse events, meta-analysis.

Economic Burden of Liver Transplantation in Pakistan

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Background:

Liver transplantation in Pakistan imposes a significant financial burden due to high costs and limited insurance. The lack of adequate financial support worsens long-term economic hardship.

Objective:

To assess the economic consequences of liver transplantation, focusing on costs and economic hardship.

Method:

A desk-based review was conducted using PubMed, Google Scholar, and PakMediNet, focusing on articles published in the last 10 years. Keywords included "economic consequences," "liver transplant," and "Pakistan." A narrative synthesis identified key themes such as treatment costs, financial burden, financial support, and access to services.

Results:

Initially, we screened the titles and abstracts of the first five pages on Google Scholar (n=50). Additionally, we screened articles retrieved from PubMed and PakMediNet (n=285), for a total of 335 articles. Shortlisted articles were screened in full text for key theme extraction. The nine most relevant articles were included in the synthesis. The following common themes were extracted and combined.

- The estimated cost of a liver transplant in Pakistan is around USD 45,000, making it unaffordable for many (Dogar et al., 2022).
- Indirect costs, such as travel and lost income, constitute a significant proportion of the total cost, further worsening the financial burden (Salim 2021, Rizvi et al., 2009).
- Limited insurance and financial aid force patients to rely on charities (Tariq 2024, Dar et al., 2023).
- Urban areas have better transplant facilities, creating regional disparities (Arisar 2018, Khan et al., 2024).
- Many patients resort to borrowing or selling assets, leading to long-term financial instability (Ullah et al., 2022, Memon et al., 2013).

Conclusion:

Liver transplantation in Pakistan imposes a severe financial burden due to high costs, limited insurance, and inadequate financial support. Policies expanding financial aid

and insurance are needed. Future research should explore sustainable funding models to reduce patients' economic hardship.

Keywords:

Liver Transplantation, Economic Burden, Financial Hardship, Healthcare Affordability, Pakistan

Advancements and Challenges in Liver Transplantation: Overcoming Barriers to Life-Saving Care

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Background:

Liver transplantation (LT) is an essential treatment for individuals with end-stage liver disease (ESLD), acute liver failure, and specific liver cancers, including hepatocellular carcinoma. The prevalence of liver disease in Pakistan is significant, predominantly caused by hepatitis B and C viruses, as well as non-alcoholic fatty liver disease (NAFLD). Despite considerable advancements in liver transplantation, obstacles remain regarding donor availability, budgetary limitations, and post-transplant management.

Objective:

This study seeks to examine the present condition of liver transplantation in Pakistan and discern the obstacles to its broader success.

Method:

This study examines primary data from 500 liver transplant recipients treated at three prominent transplantation centres in Pakistan—Karachi, Lahore, and Islamabad—from 2018 to 2023. Patient demographics, donor origins, surgery results, survival rates, and complications were analysed. A survey was administered to 200 potential donors and healthcare personnel to evaluate attitudes and obstacles about organ donation.

Results:

Among the 500 liver transplant cases, 87% were living donor liver transplants (LDLT), while 13% were from deceased donors. The one-year survival rate was 85%, aligning with international benchmarks. The primary reason for liver transplantation (LT) was hepatitis C virus (HCV) at 65%, followed by non-alcoholic fatty liver disease (NAFLD) at 18%, and hepatitis B virus (HBV) at 10%. 72% of patients reported financial constraints, with 60% necessitating external funding support. Among the polled potential donors, 68% identified religious views and insufficient awareness as the principal factors contributing to their reluctance towards organ donation. Post-transplant problems were infections (30%), graft rejection (12%), and metabolic abnormalities (8%).

Conclusion:

Despite notable advancements in liver transplantation in Pakistan, substantial obstacles persist regarding organ donor shortages, financial accessibility, and post-transplant care. Enhancing deceased donor programs, executing nationwide organ donation awareness initiatives, and augmenting post-transplant healthcare infrastructure are critical for improving transplantation results. Additional research and legislative measures are required to tackle these ongoing issues and enhance accessibility for patients in need.

Keywords:

Liver transplantation, Pakistan, organ donation, living donor liver transplantation, hepatitis, financial obstacles, post-transplant care.

Hepatic Artery Thrombosis (HAT) is a dreadful complication for transplant surgeons, what causes it?

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Background:

Hepatic artery thrombosis (HAT) is a critical complication in liver transplantation, particularly in living donor liver transplantation (LDLT). The risk of graft loss leads to the need for re-transplant and identifying another donor. Identifying risk factors associated with HAT can improve patient outcomes.

Objective:

To evaluate various risk factors in the incidence of HAT in LDLT and determine the association of surgical and clinical variables with HAT development.

Method:

A retrospective analysis using a prospectively maintained database was conducted on 500 LDLT cases from March 2019 to October 2023. Data were obtained from electronic health records, including demographic details, full clinical data, liver-specific assessments (e.g., CTP grade, MELD Na), and surgical factors (e.g., ischemic times, surgery duration). HAT was defined as thrombosis occurring within the first 30 days post-transplant, confirmed by imaging. Statistical tests (chi-square, Mann-Whitney U) analyzed HAT incidence across all available variables, while logistic regression models were used to assess risk factor associations.

Results:

Among the 500 patients (382 males and 118 females; mean age 43.8 years), HAT was recorded in 10 cases (2%) with annual incidences of 1.67%, 2.37%, and 1.99% for the years 2021, 2022, and 2023, respectively. Analysis identified significant associations between HAT and two factors: prolonged recipient surgery duration ($p = 0.001$) and increased cold ischemia time ($p = 0.057$). Other factors, including recipient gender ($p = 0.707$), age ($p = 0.611$), blood group compatibility ($p = 1.000$), anastomotic techniques, donor arterial anatomy, and type of reconstruction, showed no statistically significant association with HAT. HAT cases exhibited a higher incidence of postoperative complications, including a 17.44-fold increase in mortality risk (95% CI: 4.52-67.28) and a need for re-exploration ($p < 0.001$).

Conclusion:

Prolonged recipient surgery duration and increased cold ischemia time are significant risk factors for hepatic artery thrombosis (HAT) in LDLT. While recipient demographics, blood group compatibility, and anastomotic techniques did not show statistical association with HAT, affected patients faced significantly higher postoperative complications, including increased mortality risk and need for re-exploration. These find-

ings highlight the necessity of optimizing surgical duration and ischemic control to mitigate HAT risk and improve patient outcomes in LDLT.

Keywords:

Hepatic Artery Thrombosis (HAT), Living Donor Liver Transplantation (LDLT), Ischemic Time, Surgery Duration, Graft Loss, Re-Exploration.

Optimizing Immunosuppressive Strategies in Liver Transplantation: A Meta-Analysis of Outcomes and Complications

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Background:

Liver transplantation is the definitive treatment for end-stage liver disease, with 1-year survival exceeding 90%. Advances in immunosuppressive therapy have improved graft survival while reducing acute rejection rates. However, long-term complications such as calcineurin inhibitor nephrotoxicity, infections, malignancies, and metabolic disorders remain significant challenges. This meta-analysis evaluates immunosuppressive strategies in liver transplantation, focusing on tacrolimus-based regimens, adjunct therapies, and immunosuppression minimization strategies to optimize post-transplant outcomes.

Objective:

This study aims to assess patient and graft survival, acute rejection rates, and the impact of immunosuppressive regimens on transplant outcomes. The analysis also evaluates strategies for reducing long-term complications, including CNI-associated renal dysfunction and malignancy risk.

Method:

A systematic literature search was conducted in PubMed and Wiley Online Library (January 2024–March 2025). Studies reporting adult liver transplant outcomes, including 1-year and 5-year survival, acute rejection, immunosuppressive regimens, and major complications, were included. Random-effects models were used for pooled analysis of survival rates, risk ratios, and treatment effects.

Results:

A total of 42 studies (N > 20,000 liver transplant recipients) were included. The pooled 1-year survival rate was 90.8% (95% CI: 88.0%–93.0%), with 5-year survival at 72.5% (95% CI: 68.0%–76.7%). Tacrolimus-based therapy was associated with 15% lower 1-year mortality risk (RR: 0.85) compared to cyclosporine. Perioperative dexmedetomidine reduced CNI-associated renal dysfunction (35% vs. 50%, p=0.042). Preemptive CMV therapy improved immune responses and reduced late CMV disease. Malignancy rates were 43.4% in long-term survivors, with calcineurin inhibitor discontinuation reducing cancer risk (HR: 0.60).

Conclusion:

Tacrolimus-based regimens remain the gold standard for liver transplant immunosup-

pression. Steroid minimization, MMF adjunct therapy, and mTOR inhibitors offer alternatives for reducing long-term complications. Further research should explore individualized immunosuppression tapering strategies to enhance long-term patient safety and graft survival.

Keywords:

Liver transplantation, Immunosuppression, Tacrolimus, Transplant survival, Acute rejection

Outcomes of donor surgery in living donor liver transplantation: Impact of safe donor selection criteria

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Background:

Donor safety is of utmost importance in Living donor liver transplantation (LDLT). The process of selecting living donors requires a thorough assessment of various medical, psychological, and graft factors to ensure optimal results.

Objective:

To provide the safe selection criteria for LDLT donors showing promising outcomes in terms of morbidity and mortality. Data on selection criteria is disparate and limited in our set up.

Method:

Retrospective data of 95 LDLT donors was analyzed who were selected according to the selection criteria set by the department based on general history, baseline blood tests and then special work up. All donors were assessed by a multidisciplinary team including ethical, mental and psychological stability. Donors with major comorbidities, fatty Liver, abnormal LFTs and fibrosis were not accepted. Acceptable minimum GRWR 0.8 and FLR was 30 %. Grafts up to two arteries, two portal veins and two bile ducts were acceptable. Outcomes in terms of donor morbidity and mortality were calculated.

Results:

From a total 95 donors, 56 were male and 39 were female. Mean age was 27 years and BMI 24. GRWR was 0.8 or more and FLR was more than 30 % in all donors. 98 % grafts were with single while 2 % were with two hepatic arteries. Type A portal vein was in 96% grafts while type B in 4%. Two bile ducts were present in 28 % grafts. Postoperative average hospital stay was 5 days, complication rate was 3 % and mortality was 0 %.

Conclusion:

Donor safety should be of prime importance during the selection process. Risks can be minimized by using a safe selection criteria.

Keywords:

Donor selection criteria, Living Donor Liver Transplantation, LDLT Donor outcomes

Role of cell saver and Rotem analysis in reducing blood transfusion requirements in LDLT - our experience

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Background:

Living donor liver transplantation (LDLT) is a high-risk surgery that frequently results in severe bleeding and necessitates large blood transfusions. The use of cell saver technology and ROTEM-guided transfusion algorithms has emerged as an effective strategy to minimize blood product utilization while optimizing patient outcomes

Objective:

This study aimed to evaluate the impact of cell saver technology and ROTEM analysis on reducing blood transfusion requirements in LDLT patients and compare their effectiveness with traditional transfusion protocols.

Method:

A retrospective comparative study was conducted at Bahria International Hospital Orchard, Lahore, from July 1, 2017 to 28 February, 2025. A total of 95 patients at risk of massive bleeding (≥70 mL/kg) were included. Patients were divided into two groups: Group A (Pre-ROTEM): Managed with ASA transfusion guidelines. Group B (ROTEM): Managed using the ROTEM-based transfusion algorithm and intraoperative cell saver technology. Perioperative characteristics, blood product consumption, and transfusion-related complications were analyzed.

Results:

ROTEM + Cell Saver group (Group B) the group required significantly fewer transfusions of red blood cells (p=0.03), fresh frozen plasma (p=0.001), and massive transfusion protocol application (p=0.004) compared to the pre-ROTEM group. However, there was no significant difference in platelet transfusion requirements between the two groups (p=0.08). Despite reducing overall blood product usage, ROTEM and cell saver technology implementation increased the overall cost due to the need for specialized equipment and reagents.

Conclusion:

ROTEM-guided transfusion and cell saver technology effectively reduce unnecessary blood product usage and transfusion-related complications in LDLT without increasing intraoperative bleeding risks. However, the higher cost associated with ROTEM implementation may be a limiting factor, necessitating a cost-benefit analysis for its broader application in resource-limited settings.

Keywords:

Liver transplant, ASA guideline, Thromboelastogram

Transplant Rejection-Related Mortality in Adults in the United States: A Two-Decade Long Analysis

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Background:

Aging individuals often have weakened immunity, thereby increasing the risk of transplant rejection. However, the trends for transplant rejection-related mortality have not been investigated.

Objective:

Evaluating epidemiological mortality trends in transplant rejection-related deaths among adults aged ≥55 in the United States.

Method:

For this study, we conducted an analysis of the CDC WONDER database, focusing on death certificate data from 1999 to 2020. Age-Adjusted Mortality Rates (AAMRs) and annual percentage changes (APCs) were calculated with 95% confidence interval (CIs), adjusting for variables including year, sex, ethnicity, and geographic location.

Results:

A total of 22,475 transplant rejection-related deaths occurred between 1999 to 2020. There was a rise in AAMR from 10.3 in 1999 to 15.9 in 2012 (APC: 2.54; 95% CI: 1.62 to 3.47), which was followed by a decline to 12.8 in 2020 (APC: -3.03; 95% CI: -4.70 to -1.33). The overall AAMR was twice as high in men compared to women (AAMR men: 17.8 vs women: 8.6). Non-Hispanic (NH) Black or African American had the highest AAMR (13.8), followed by NH White (13.3) and Hispanic (10.4). The Midwest had the highest AAMR (15.6), followed by South (13.1), Northeast (11.7) and West (11.2). Statewise, Minnesota had the highest AAMR (20.7), and New York had the lowest (7.9). Urban (13) and rural areas (12.3) both had similar AAMRs.

Conclusion:

After a notable rise in transplant rejection-related mortality from 1999 to 2012, the overall mortality took a significant decline in the following years. Furthermore, notable disparities according to race, gender, and geographic location were revealed. Improving access to healthcare services in underserved regions is essential to curb the mortality rate.

Keywords:

Transplant, Rejection, Mortality, Adults

Trends in Hepatocellular carcinoma and Diabetes related Mortality among Older adults in the US from 1999-2020

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Background:

Hepatocellular carcinoma (HCC) is the predominant liver malignancy and a significant cause of mortality in the United States. Diabetes Mellitus (DM) is also a prevalent condition affecting a large portion of the population. Individually, both diseases contribute significantly to mortality rates; however, their correlation and combined impact remain understudied. There is an urgent need to explore this association along with its geographic and regional disparities.

Objective:

To analyze the co-occurrence of HCC and DM in the U.S. population, assessing trends in mortality rates and disparities based on gender, race/ethnicity, geographic region, and metropolitan status.

Method:

The CDC WONDER database was used to extract data from the death certificates of the U.S. population. The de-identified data included cases of coexisting HCC and DM in adults aged 45 and older from 1999 to 2020. Age-adjusted mortality rates (AAMRs) and annual percent changes (APCs) were calculated and further stratified by gender, race/ethnicity, census region, and metropolitan status.

Results:

A total of 34,039 deaths were recorded for patients with coexisting HCC and DM. Key findings include:

- Gender Disparity: AAMRs were consistently higher in men (APC 3.29, 95% CI: 3.06 – 3.52) compared to women (APC 2.45, 95% CI: 2.00 – 2.89).
- Race/Ethnicity: AAMRs were highest among Asian or Pacific Islander populations, followed by White, Hispanic or Latino, and Black or African American populations.
- Regional Variation: The Western region had the highest mortality rates (APC 14.81), while the Northeastern region had the lowest (APC 1.77).
- Metropolitan Status: The highest AAMRs were found in Micropolitan areas (APC 11.03), while the lowest were in Small Metro areas (APC 3.27).
- Data Limitations: Some data for the American Indian/Alaska Native population was unreliable in the database.

Conclusion:

Mortality associated with HCC and DM has increased over the years, with the highest trends observed in Asian/Pacific Islander men residing in Micropolitan and Western regions. The growing burden of HCC and DM demands immediate attention and targeted interventions to mitigate their impact on mortality in the U.S. population.

Keywords:

Hepatocellular carcinoma, diabetes mellitus, mortality trends, CDC WONDER, racial disparities, geographic variation, U.S. population.

Reducing Graft-Versus-Host Disease in Bone Marrow Transplantation by Using PostTransplant Cyclophosphamide Medicines

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Background:

Bone marrow transplantation (BMT) is a life-saving treatment for leukemia and other hematologic disorders. However, Graft-Versus-Host Disease (GVHD) remains a significant challenge, where donor immune cells attack the recipient's tissues. Standard immunosuppression using Tacrolimus and Methotrexate is effective but does not completely eliminate the risk of severe GVHD. Post-Transplant Cyclophosphamide (PTCy) has emerged as a promising alternative therapy for GVHD prevention.

Objective:

This study aims to evaluate whether PTCy reduces GVHD incidence and improves survival outcomes in BMT patients at Bahawal Victoria Hospital (BVH).

Method:

A retrospective analysis was conducted on 100 BMT patients at BVH over the past three years. Patients were divided into two groups: Group 1 (n = 50) received standard therapy with Tacrolimus and Methotrexate, while Group 2 (n = 50) received Post-Transplant Cyclophosphamide (PTCy) along with Tacrolimus. Key parameters evaluated included GVHD incidence and severity (mild, moderate, severe), 1-year survival rates, and post-transplant infection rates. Statistical analysis was performed using the Chi-square test for GVHD incidence, the Kaplan-Meier survival curve for long-term survival assessment, and the t-test for infection rate differences.

Results:

The study found that the PTCy group had a 30% lower GVHD incidence (28% vs. 40%) and a 66% reduction in severe GVHD cases (5% vs. 15%). The Chi-square test confirmed statistical significance ($p < 0.05$). The 1-year survival rate was higher in the PTCy group (80%) compared to the standard therapy group (75%), with Kaplan-Meier analysis indicating better long-term survival. Infection rates were slightly lower in the PTCy group (25% vs. 30%), and the t-test showed no significant difference ($p > 0.05$), suggesting that PTCy does not increase infection risk.

Conclusion:

Post-Transplant Cyclophosphamide (PTCy) significantly reduces GVHD while maintaining high survival rates and not increasing infections. These findings suggest that PTCy should be considered as a preferred GVHD prevention strategy in BMT patients at BVH.

Keywords:

Bone marrow transplantation, Graft-Versus-Host Disease, Post-Transplant Cyclophosphamide, GVHD prevention

Allogeneic Hematopoietic Stem Cell Transplantation in Therapy-Related Myeloid Neoplasms: A Systematic Review and Meta-Analysis

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Background:

Therapy-related myeloid neoplasms (t-MN), including therapy-related acute myeloid leukemia (t-AML) and therapy-related myelodysplastic syndrome (t-MDS), occur as secondary malignancies after chemotherapy or radiation therapy. Allogeneic hematopoietic stem cell transplantation (allo-HCT) remains the only curative option, though outcomes are limited by toxicity and disease recurrence.

Objective:

To evaluate the survival outcomes, relapse rates, and graft-versus-host disease (GvHD) incidence in patients with therapy-related myeloid neoplasms (t-MN) undergoing allogeneic hematopoietic stem cell transplantation (allo-HCT) by systematically analyzing published literature.

Method:

Following PRISMA guidelines, we searched PubMed, Scopus, Google scholar and ClinicalTrials.gov uptill November 30, 2024. Of 1520 screened studies, 23 met inclusion criteria, with data extracted on survival outcomes, relapse rates and graft-versus-host disease (GvHD). Kaplan-Meier survival data were analyzed using R.

Results:

The analysis included 6213 patients (median age: 18+ years), with 62.3% having t-AML, 23.5% t-MDS, and 5% mixed presentation. The median time from prior therapy to t-MN diagnosis was 158 months.

- Overall Survival (OS): Median OS was 17 months (95% CI: 13.7-21.1), and the estimated mean OS was 46 months (95% CI: 42.1-49.6). OS probabilities were 71.3% at 6 months, 55.3% at 12 months, 40% at 36 months, and 33.6% at 60 months.
- Disease-Free Survival (DFS): Median DFS was 9.1 months (95% CI: 7.4-11.2), and mean DFS was 35 months (95% CI: 33.4-41.9). DFS probabilities were 60% at 6 months, 45% at 12 months, 32.7% at 36 months, and 34.3% at 60 months.
- Subgroup Analysis: t-AML patients had a median OS of 16 months and a mean OS of 44.2 months.
- GvHD: Acute GvHD prevalence was pooled from 16 studies, with detailed subgroup analyses.

Conclusion:

Allo-HCT offers a potential cure but is associated with high relapse and treatment-related mortality. Optimized transplant strategies are needed to improve survival outcomes.

Keywords:

Therapy-related myeloid neoplasms, allogeneic hematopoietic stem cell transplantation, survival outcomes, graft-versus-host disease.

Effects of Autologous Hematopoietic Stem Cell Transplantation on Female Fertility in Multiple Sclerosis: A Systematic Review and Meta-Analysis

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Background:

This research was conducted to determine the effect of autologous hematopoietic stem cell transplantation (AHSCT) on female fertility in multiple sclerosis (MS).

Objective:

To evaluate the impact of autologous hematopoietic stem cell transplantation (AHSCT) on female fertility in multiple sclerosis (MS) patients by analyzing pregnancy prevalence, menstrual restoration, and reproductive outcomes.

Method:

PubMed, Scopus, Google Scholar, and the Cochrane Library were searched using the search string: (multiple sclerosis OR MS) AND (AHSCT OR Autologous hematopoietic stem cell transplantation) AND (pregnancy OR pregnant OR conception OR conceive OR gestation*) Only those studies that involved AHSCT in MS female patients were included in the study. All statistical analyses were conducted in Review Manager 5.4.1. Studies meeting inclusion criteria were selected. The Random effect-effect model was used to calculate the Inverse Variance (IV) and their corresponding 95% confidence interval (CI). Moreover, qualitative analysis was conducted to analyze anti-mullerian hormone level (AMH), amenorrheic status, restoration of menstruation, pregnancy outcome, and mode of delivery post-AHSCT. Four cohorts were used in the study.

Results:

The prevalence of pregnancy was reported as 10% (95% CI= 4-17%, I2=20%). Qualitative analysis reports a positive correlation between the restoration of normal menses, live birth, and normal vaginal delivery with AHSCT while a negative correlation is reported between AMH, amenorrhea, abortion, and cesarean section with AHSCT.

Conclusion:

Our systematic review and meta-analysis are the first to demonstrate an effect of AHSCT on female fertility in MS patients however small sample size and limited number of studies are the main limiting factors. Further studies are needed to strengthen the findings of our study.

Keywords:

AHSCT; pregnancy; MS; prevalence; fertility.

Efficacy and Safety of Bone Marrow Stem Cells Transplantation in Patients with Ischemic Stroke: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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Background:

Stroke affects approximately 15 million people worldwide each year, resulting in 6 million deaths and 4 million cases of disability. Beyond the acute phase, treatment options remain limited, with intravenous thrombolysis restricted by a narrow therapeutic window. Bone marrow stem cells (BMSCs) have shown potential in enhancing recovery by reducing apoptosis and inflammation while promoting angiogenesis. This meta-analysis aims to evaluate the efficacy and safety of BMSCs in ischemic stroke.

Objective:

To assess the efficacy and safety of bone marrow stem cells (BMSCs) in ischemic stroke by analyzing their impact on neurological recovery, functional outcomes, infarct volume, and adverse events.

Method:

A comprehensive literature search was conducted across PubMed, Google Scholar, DOAJ, and the Cochrane Library to identify studies evaluating BMSC therapy in ischemic stroke. The primary outcome measured was the change in National Institutes of Health Stroke Scale (NIHSS) scores. Secondary outcomes included Barthel Index (BI) scores, Modified Rankin Scale (MRS) scores, mean change in infarct volume, and incidence of adverse events. A random-effects model was used to calculate the Mean Difference (MD) with 95% Confidence Intervals (CI). Meta-analysis was performed using Review Manager version 5.4.1.

Results:

Seven randomized controlled trials (RCTs) were included in the analysis. No significant differences were observed between the intervention and control groups in:

- BI score improvement (MD: 0.99, 95% CI: -1.04 to 3.03; $p = 0.34$; $I = 0\%$)
- MRS score reduction (MD: -0.02, 95% CI: -0.20 to 0.17; $p = 0.34$; $I = 32\%$)
- Infarct volume reduction (MD: -0.66, 95% CI: -3.37 to 2.05; $p = 0.63$; $I = 11\%$)

However, significant improvements were observed from pretreatment in:

- NIHSS score reduction (MD: -5.46, 95% CI: -6.74 to -4.19; $p < 0.0001$; $I = 100\%$)
- BI score improvement (MD: 29.21, 95% CI: 17.59 to 40.83; $p < 0.0001$; $I = 99\%$)
- MRS score improvement (MD: -0.56, 95% CI: -1.00 to -0.12; $p = 0.01$; $I = 99\%$)

No significant improvement in infarct volume was observed from pretreatment (MD: -4.72, 95% CI: -15.32 to 5.87; $I = 84\%$). Mortality occurred in 8 out of 75 patients. Reported adverse events included seizures (10/45), hypotension (4/88), edema

(3/88), pneumonia (3/75), hypertension (3/88), and fractures (3/75).

Conclusion:

Due to small sample sizes, varying routes of BMSC administration, and differences in stroke stages (acute and subacute) across studies, larger, well-designed clinical trials are needed. Future research should focus on enhancing the robustness and reliability of meta-analysis findings to establish optimal treatment strategies for ischemic stroke patients.

Keywords:

Ischemic Stroke, Bone Marrow Stem Cells (BMSCs), Neurological Recovery, Functional Outcomes, Meta-Analysis, NIHSS, Barthel Index, Modified Rankin Scale.

A Real-World data of 100 Day outcomes of Multiple Myeloma patients undergoing Autologous Stem Cell Transplant using Non-Cryopreserved Stem Cells

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Background:

Autologous Stem Cell Transplantation (ASCT) is a key treatment for Multiple Myeloma (MM), traditionally using cryopreserved stem cells. However, non-cryopreserved stem cells offer a cost-effective alternative, eliminating cryoprotectant toxicity. This study evaluates the day 100 outcomes of ASCT with non-cryopreserved stem cells in MM patients.

Objective:

To evaluate the day 100 outcomes of ASCT using non-cryopreserved stem cells in MM patients.

Method:

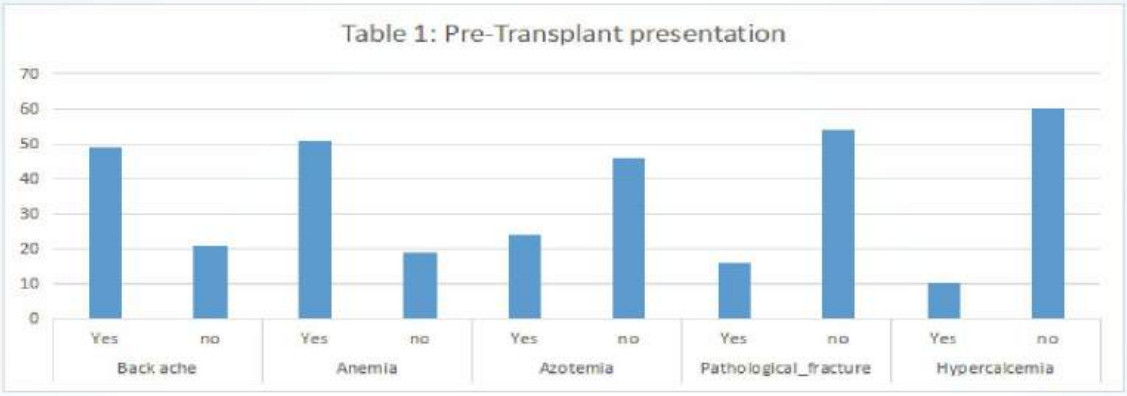
The study included seventy patients who underwent ASCT with non-cryopreserved stem cells for MM between January 2009 and September 2023 at Armed Forces Bone Marrow Transplant Centre, Rawalpindi Pakistan. Patients were followed up to day +100 post-transplant in terms of their platelets and neutrophil engraftment, transplant related mortality, its associated complications and duration of hospitalisation.

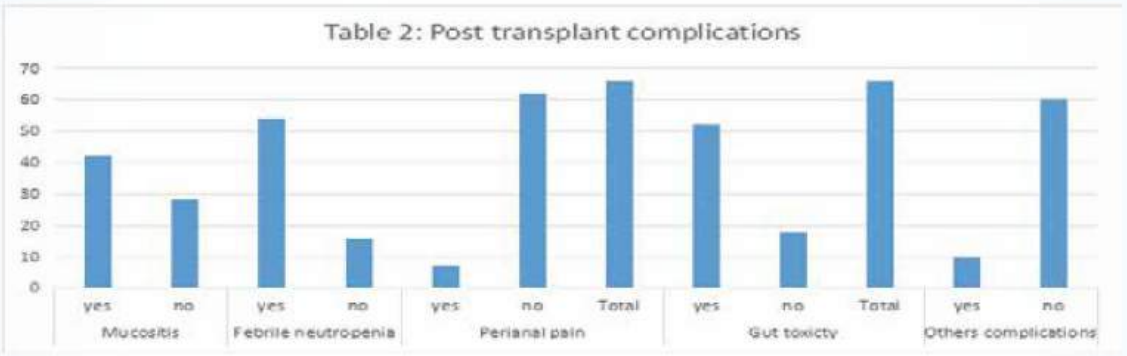
Results:

The median age of the patients at the time of transplant was 49.97(+-9.79) years. Male to female ratio was 3:1. The most common presenting symptom was backache (70%) while anaemia was the usual initial laboratory findings (73%). The Mobilization strategy in the majority of patients (70%) was Chemotherapy granulocyte colony stimulating factor, and most of the patients (55%) were in complete remission (CR) at the time of ASCT. The conditioning regimen used commonly (85%) was Melphalan 200 mg/m2. The median days for engraftment of neutrophils and platelets were 11(IQR 10.75-12) days and 16 (IQR 15-18) days, respectively. The median duration of hospitalisation after transplant was14 days (IQR: 13 to 16). Febrile neutropenia was documented in 80.3% patients. Overall and disease-free survival was 100% at day 100.

Conclusion:

Non-cryopreserved stem cells offer a cheaper, convenient and effective alternative for the cryopreserved stem cells. Non-cryopreserved stem cells were associated with rapid neutrophil and platelet engraftment and should be preferred stem cell source in resource limited centres.





"No conflict of interest to disclose"

Keywords:
Multiple Myeloma, Autologus stem cell transplant, Engraftment

Nanoparticle-Based Localized Immunomodulation in Bone Marrow Transplantation: A Systematic Review

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Background:

Bone marrow transplantation (BMT) is a crucial treatment for hematologic disorders; however, immune-related complications such as graft rejection and graft-versus-host disease (GVHD) limit its success. Traditional immunosuppressive therapies pose risks of broad immune suppression and severe infections. Nanoparticle-based localized immunomodulation offers an alternative approach by delivering immunosuppressive agents directly to the graft site, reducing systemic side effects and enhancing immune regulation.

Objective:

This review aims to evaluate the effectiveness of nanoparticle-mediated immunomodulation compared to traditional immunosuppressive treatments, focusing on graft survival, GVHD reduction, and transplantation outcomes.

Method:

A systematic search was conducted using PubMed, Google Scholar, and Wiley Online Library with keywords including "Nanoparticles," "Immunomodulation," "Bone Marrow Transplant," "Nanoencapsulation," "GVHD," and "Stem Cell Transplantation." Studies published between 2017 and 2023 were included. The selection criteria focused on cohort studies, randomized controlled trials (RCTs), systematic reviews, and meta-analyses evaluating nanotechnology-based immunomodulation in BMT. Clinical trials, case reports, conference abstracts, and editorial letters were excluded. An independent reviewer screened titles, abstracts, and full-text articles for eligibility.

Results:

Allogeneic hematopoietic stem cell transplantation (HSCT) incorporating nanoengineered immunomodulatory strategies demonstrated improved graft survival and reduced GVHD severity in mouse models. Encapsulation of donor T cells within nanomaterials inhibited immune synapse formation with recipient antigen-presenting cells (APCs), downregulating co-stimulatory interactions such as CD28-CD80, ICOS-ICOSL, and CD40L-CD40. This transient suppression of cytotoxic responses within the graft microenvironment reduced reliance on systemic immunosuppression. Additionally, engineered T-cell encapsulation preserved apoptotic regulatory pathways, including FAS-FASL signaling, within leukemic cells, optimizing graft-versus-leukemia (GVL) effects while mitigating GVHD.

Conclusion:

Nanoparticle-driven immunomodulation presents a promising strategy to enhance graft acceptance and minimize GVHD in bone marrow transplantation. Future

research should explore chitosan-based nanoparticles for targeted immunosuppressive delivery, leveraging their biocompatibility, controlled release properties, and reduced systemic toxicity.

Keywords:

Nanoparticles, Immunomodulation, Bone Marrow Transplant, Nanoencapsulation, GVHD, Stem Cell Transplantation.

From Graft to Survival: Mortality Trends in Bone Marrow Transplant Rejection Mortality in the United States, An Insight of CDC WONDER Analysis

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Background:

Bone marrow transplantation (BMT) is a critical treatment for hematologic disorders, but rejection remains a life-threatening complication.

Objective:

This study analyzes mortality trends related to BMT rejection in the United States from 1999 to 2020 to identify disparities and inform clinical and public health strategies.

Method:

Mortality data (1999–2020) were extracted from CDC WONDER. Age-adjusted mortality rates (AAMR) with 95% confidence intervals (CI) were calculated. Crude mortality rates (CMR) and age-adjusted mortality rates (AAMR) per million were stratified by age, gender, race, and U.S. Census, demographics, geographic regions, and urbanization levels. Joinpoint regression analyzed annual percent change (APC) and average APC (AAPC).

Results:

BMT rejection was a contributing factor in 15,466 deaths overall. After a steep initial decline (1999–2003: APC = -8.13) and a gradual decline (2003–2020: APC = -1.24), the overall AAMR decreased from 0.3 (1999) to 0.156 (2020). Disparities by gender remained whereas both sexes experienced notable declines, men's baseline AAMR was greater (0.373 compared to 0.266 in 1999). In contrast to decreases in younger groups, age-specific trends showed a worrying increase in mortality among those aged 55–85+ (APC = 5.02, 1999–2012). There were clear racial differences between Black and Hispanic populations that saw more consistent drops, whereas White people saw varying declines. In terms of geography, Nevada had the lowest AAMR (0.110) and Alaska the highest (0.260). While regional decreases varied, the Southern region saw the biggest drop (APC = -3.30). Metropolitan areas saw sharper early declines (APC = -7.26, 1999–2004) compared to nonmetropolitan regions (APC = -2.51). Most deaths (85.21%) occurred in hospitals.

Conclusion:

Even though the mortality rate from BMT rejection has dramatically declined over the past 20 years, enduring inequalities underscore the necessity of focused treatments,

especially for older patients and areas with higher rates. Mortality risks may be further reduced by improved post-transplant care and fair access to new therapeutic techniques.

Keywords:

Bone Marrow Transplantation (BMT), Rejection Mortality, Trend Analysis

Comparative Analysis of Mesenchymal Stem Cell Therapy Effectiveness for Graft-versus-Host Disease in Pakistan

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Background:

Graft-versus-host disease (GVHD) is an important complication that affects the survival and quality of life of bone marrow transplant (BMT) patients. Global evidence has proven mesenchymal stem cell (MSC) therapy a promising intervention to mitigate GVHD severity.

Objective:

This research aims to study the potential of MSC therapy for the treatment of GVHD in Pakistan by evaluating treatment outcomes, financial sustainability, and regulatory barriers. The findings will be compared with global standards to identify challenges and opportunities for implementation.

Method:

A comprehensive literature review was conducted to compare the outcomes of MSC therapy in GVHD patients worldwide. The success rate of BMT in Pakistan, available GVHD treatment protocols, and healthcare infrastructure were evaluated. Financial sustainability was evaluated through previously published reports on cost-effectiveness, and regulatory challenges were identified by analyzing national policies and consultant opinions.

Results:

International studies report significant improvements in GVHD therapy with MSC management, decreased mortality, and improved patient recovery. Studies show that MSC therapy reduces acute GVHD-associated mortality by 30%. In Pakistan, GVHD incidence among stem cell transplant recipients is 34%, with acute GVHD mortality at 8.8% and chronic GVHD mortality at 12%. In contrast, countries implementing MSC therapy report a post-GVHD survival rate of up to 80%, highlighting the potential for improved patient outcomes in Pakistan. A rough cost estimation suggests that MSC therapy requires a high initial investment; long-term benefits may outweigh conventional GVHD management costs. However, policy gaps and limited budgets remain major hurdles.

Conclusion:

MSC treatment is a groundbreaking opportunity to improve GVHD outcomes in Pakistan. A triple-phased strategy is recommended to facilitate MSC therapy's entry into Pakistan's healthcare system, including regulations, public-private partnerships, and pilot clinical trials. Future research should focus on developing cost-effective MSC production and enhancing local expertise to improve accessibility and affordability.

Keywords:

Graft-versus-host disease, mesenchymal stem cell therapy, bone marrow transplant, GVHD treatment, healthcare policy

Initiation Of Haploidentical Stem Cell Transplantation with Post-Transplant Cyclophosphamide in Children: A Low Middle Income Country Institutional Experience

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Background:

Haplo-identical hematopoietic stem cell transplant (HSCT) is a curative treatment especially for countries where bone marrow registries are non-existent.

Objective:

We present our experience with haplo-identical HSCT in pediatric patients.

Method:

Retrospective data collected and analyzed for patients ≤18 years, from January 2017-December 2022.

Results:

Cohort of 20 patients, median age at transplant was 61.5 (IQR:124) months. Fourteen (70%) malignant, 6 (30%) benign diseases. Donors were father in majority (9/20; 45%). Stem cell source was (peripheral blood 8, marrow 8, combined 4). Donor specific antibodies were positive in 6 (30%). Median CD34 cells dose infused: 9.35 x106/kg. Median engraftment time: 15 (IQR:17) days. Acute and chronic graft versus host disease (GVHD) occurred in 12/20 (60%) and 5/20 (25%), respectively. Complications included infection/sepsis (14/20; 70%), cytomegalovirus reactivation (14/20; 70%), sinusoidal obstruction syndrome (1/20; 5%), primary graft failure (PGF) (6/20; 30%), secondary graft failure (4/20; 20%). PGF was more common in benign conditions (p=0.003) and less prevalent in cases with aGVHD (p=0.007). aGVHD was more common in malignant conditions (p=0.007). Overall survival (OS), relapse free survival (RFS), and treatment related mortality (TRM) was 40%, 50%, and 35% respectively). Median time of survival and relapse were 8 (IQR:15) and 9 (IQR:13) months respectively.

Conclusion:

OS was comparable to that of other low middle income countries. GVHD was a major challenge, along with sepsis and CMV infection. Half of the leukemias relapsed. Graft failure was a major concern in non-malignant diseases.

Keywords:

Haplo-identical HSCT, Pediatric Transplantation, GVHD, Graft Failure

Analysis of Factors Influencing CD34+ Stem Cells Yield in Pediatric HSCT Donors

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Background:

Stem cells are collected from peripheral blood or bone marrow, with various factors influencing CD34+ cell yield.

Objective:

This study analyzed factors affecting CD34+ cell yield in donors of pediatric patients undergoing hematopoietic stem cell transplantation (HSCT) from January 2017 to December 2024.

Method:

A retrospective review of patient charts was conducted, analyzing donor age, gender, peripheral blood indices, marrow harvest techniques, and mobilization strategies using descriptive and nonparametric statistical methods.

Results:

The study included 53 HSCT donors (49 allogeneic, 4 autologous). Among allogeneic donors, 53% were female, with a median age of 168 months. Donors were 55% fully matched and 45% haploidentical. Collection methods included bone marrow harvest (37%), peripheral blood stem cells (PBSC) collection (35%), and both (28%). Mobilization strategies were G-CSF alone (45%), G-CSF with plerixafor (37%), and no mobilization (18%).

Median CD34+ yields were 8.38 10 HPC/kg for bone marrow-only donors, 11.48 10 HPC/kg for PBSC-only donors, and 5.34 10 HPC/kg (PBSC) and 1.10 10 HPC/kg (marrow) for combined donors. Bone marrow yields were negatively correlated with donor age (p=0.033), male gender (p=0.021), and harvest volume (p=0.007). PBSC yields were positively correlated with age (0.036), duration of G-CSF use (p=0.013), and hemoglobin levels (p=0.047) and negatively with apheresis volume (p= 0.031).

Conclusion:

Marrow yields were reduced by older donor age, male gender, and large harvest volumes, while PBSC yields were negatively impacted by apheresis volume. Routine use of plerixafor may not be necessary; mobilization strategies should be optimized and implemented following marrow harvest.

Keywords:

CD34+ Cell Yield, Hematopoietic Stem Cell Transplantation (HSCT), Peripheral Blood Stem Cells (PBSC), Bone Marrow Harvest, Stem Cell Mobilization, G-CSF, Plerixafor, Apheresis, Donor Characteristics, Pediatric Transplantation

Comparative Outcomes of Allogeneic and Autologous Bone Marrow Transplantation: A Meta-Analysis

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Background:

Bone marrow transplantation (BMT) is a critical treatment for hematological malignancies and severe hematological disorders. The choice between allogeneic and autologous transplants depends on multiple factors, including disease type, relapse risk, and potential complications such as graft-versus-host disease (GVHD). While allogeneic transplants offer better long-term remission, they come with higher risks, whereas autologous transplants have lower GVHD incidence but a greater likelihood of relapse. This meta-analysis aims to provide a comparative evaluation of these two transplantation modalities.

Objective:

The primary objective of this meta-analysis is to compare survival rates, GVHD incidence, relapse rates, and engraftment success in patients undergoing allogeneic versus autologous BMT. By synthesizing existing evidence, this study aims to provide a comprehensive evaluation of the clinical outcomes associated with each approach.

Method:

A systematic electronic search was conducted using PubMed, ScienceDirect, and Google Scholar. The inclusion criteria encompassed randomized controlled trials (RCTs), cohort studies, and case-control studies reporting on survival, GVHD incidence, engraftment, and complications, with a minimum follow-up of six months. A total of 24 studies met the eligibility criteria, involving 2,394 patients. The selection process involved independent review by three researchers, with conflicts resolved by a fourth reviewer.

Results:

Among the included studies, total number of patients was 2,394 out of which 66.7% received allogeneic transplants, while 20.8% underwent autologous transplantation and another 12.5% were divided into groups that received either allogeneic or autologous transplant. Survival rates varied among the groups, with allogeneic transplants showing improved long-term remission but a significantly higher incidence of GVHD. Conversely, autologous transplantation was associated with lower GVHD rates but an increased risk of relapse. Engraftment success, transplant-related complications, and disease-free survival outcomes were also compared across the studies.

Conclusion:

This meta-analysis highlights the trade-offs between allogeneic and autologous BMT. While allogeneic transplantation provides better long-term disease control, it poses substantial risks, particularly GVHD. Autologous transplantation remains a viable alter-

native for patients at risk of GVHD but carries a higher relapse probability. These findings underscore the need for individualized treatment decisions, balancing survival benefits with potential complications.

Keywords:

Bone marrow transplantation, Allogeneic transplant, Autologous transplant, Hematopoietic stem cell transplant, Graft-versus-host disease

Donatio Organorum- Reluctance to Organ Donation Medical Students; a Cross-Sectional Descriptive Study

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Background:

Organ donation is the act of removing an organ or tissue from a donor and transplanting the said organ/tissue to a recipient. Despite being the only definitive treatment for end-organ failure, there is a lot of hesitation surrounding the practice of organ donation. Even among medical students, who are more aware of the benefits of organ donation than the general public, this reluctance is widespread. Therefore, we conducted this research to determine the basis of this skepticism, so that the root causes can be identified and eradicated. Our research sought to ascertain the overall attitudes of Rawalpindi Medical University, Pakistan's students towards organ donation, the associated factors that influenced this attitude (religious devotion, gender, age, year of study) and the reasons for the hesitance.

Objective:

To assess the attitudes of medical students at Rawalpindi Medical University towards organ donation and identify factors influencing their willingness, including religious beliefs, gender, age, and year of study.

Method:

A cross-sectional study targeting the students of first to final year MBBS was conducted at Rawalpindi Medical University, Pakistan in the year 2022. The sample size was calculated using OpenEpi software and came out to be 292. The students enrolled at Rawalpindi Medical University during the year 2021-2022 were made a part of the study. A self-structured questionnaire that was developed after substantial research was used to collect the data using a non-random convenience sample technique. Chi Square test was used to determine significance after data analysis using SPSS-22.

Results:

A total of 290 students participated in the study, 58 from each year. All of the participants were Muslim. A very strong correlation was found between high devoutness and willingness towards organ donation ($p = 7.4252E-13$). Only 9/290 (3%) of people in Pakistan have joined The Transplantation Society of Pakistan; the main cause of this low ratio is that very few people were aware that such a group even existed (according to 62% of the responders). The mistrust of doctors and the belief that appropriate efforts would not be done to resuscitate patients who have signed up for organ donation is a significant factor in the anxiety surrounding organ donation.

Conclusion:

There are several reasons why people are reluctant to donate their organs, including a

lack of understanding of religious perspectives on the subject, mistrust of medical professionals and medical administration, and general public ignorance. We can make significant progress toward closing the gap between the demand for and supply of organ donations if these problems are remedied. The most effective strategy to stop organ trafficking is through organ donation. Through seminars, conversations, and workshops, we need to raise awareness about organ donation.

Keywords:

Awareness (D001364); Knowledge (D019359); Medical students (D013337); Organ donation; Organ transplantation; Tissue and organ procurement (D009927); Willingness.

Ethics, Policy, and Public Health in Transplantation: A Multidisciplinary Perspective

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Background:

Organ transplantation is a critical medical advancement that saves lives but is fraught with ethical, policy, and public health challenges. Key issues include organ scarcity, equitable allocation, informed consent, and the ethical implications of organ commercialization. These challenges require a multidisciplinary approach to ensure fairness, transparency, and effectiveness in transplantation systems.

Objective:

This study aims to examine the ethical dilemmas, policy frameworks, and public health implications in transplantation. It seeks to identify gaps in current practices and propose evidence-based solutions to enhance equity, ethical standards, and transplantation outcomes globally.

Method:

A mixed-methods approach was used, combining a systematic literature review, analysis of global transplantation data, and interviews with stakeholders, including transplant professionals, ethicists, policymakers, and patients. Case studies from diverse healthcare systems were analyzed to identify best practices and persistent challenges.

Results:

The study found significant disparities in access to transplantation, driven by socioeconomic and geographic factors. Ethical concerns included organ trafficking and inconsistent consent protocols. Policy gaps were identified in organ allocation systems and international collaboration. Public health strategies, such as increasing deceased donation rates and public awareness campaigns, were shown to improve transplantation outcomes.

Conclusion:

Transplantation ethics, policy, and public health are deeply interconnected. Addressing these challenges requires a holistic approach that prioritizes equity, ethical rigor, and robust policy frameworks. By fostering global cooperation and implementing targeted public health interventions, the transplantation community can enhance access, fairness, and outcomes for patients worldwide.

Keywords:

Organ transplantation, Ethical dilemmas, Policy frameworks, Public health implications, Organ allocation

A Sustainable Model for Renal Transplantation in Low-Resource Settings: The SIUT Experience

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Background:

Pakistan, with a population of over 240 million, has an estimated end-stage renal disease (ESRD) incidence of 100 per million, yet only 10% of patients access renal replacement therapy due to cost and resource limitations. The Sindh Institute of Urology and Transplantation (SIUT) has pioneered a free, community-supported renal transplantation model since the 1980s.

Objective:

This narrative review examines the SIUT model as a sustainable approach to renal transplantation in low-resource settings, highlighting its scalability.

Method:

We reviewed operational data, patient outcomes, and funding mechanisms from SIUT's records (1986–2024), supplemented by comparative analyses with other low-income country models.

Results:

SIUT has performed over 6,000 renal transplants, with a 90% graft survival rate at one year, funded through a 40-60% government-community partnership. Challenges include reliance on living donors (95% of cases) and limited deceased donor programs. The model's annual budget of $28 million (2010) has remained sustainable through local philanthropy, reducing patient costs to zero.

Conclusion:

The SIUT model demonstrates that free, integrated dialysis and transplant services are feasible in low-resource settings with strong community support. Future research should explore integrating deceased donations to enhance scalability.

Keywords:

renal transplantation, low-resource settings, SIUT, Pakistan, sustainability

Immunosuppression in Transplantation: Balancing Efficacy and Long-Term Outcomes

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**Denotes the presenting author*

Background:

Immunosuppressive therapy is critical for preventing graft rejection in transplant recipients, but long-term use is associated with significant complications, including infections and malignancies.

Objective:

This narrative review evaluates the evolution of immunosuppressive strategies in transplantation, focusing on achieving a balance between efficacy and long-term patient safety.

Method:

We reviewed clinical trials and observational studies from 2012 to 2024, focusing on calcineurin inhibitors, mTOR inhibitors, and novel biologics in renal and liver transplantation.

Results:

Modern protocols combining tacrolimus with mycophenolate mofetil have reduced acute rejection rates to below 10%. However, long-term use increases the risk of nephrotoxicity and infections by 25%. Emerging biologics, such as belatacept, show promise in reducing these risks but are limited by high costs and variable efficacy in high-risk patients.

Conclusion:

Tailored immunosuppression regimens that minimize toxicity while preventing rejection are essential for improving long-term outcomes. Future research should focus on personalized medicine approaches and the development of cost-effective biologics.

Keywords:

immunosuppression, transplantation, calcineurin inhibitors, biologics, long-term outcomes

Reforming Deceased Organ Donation in Pakistan: Lessons from UAE

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Background:

Pakistan faces a severe organ shortage, relying on living donors despite 150,000 annual deaths from organ failure. Deceased organ donation (DOD) remains rare due to misconceptions, legal gaps, and weak infrastructure. The UAE's opt-in system demonstrates how legal clarity and public engagement improve donation rates.

Objective:

This study compares the DOD frameworks of the UAE and Pakistan, analyzing legal structures, religious perspectives, and public attitudes to identify strategies for Pakistan.

Method:

A comprehensive literature review was conducted using PubMed, the Transplantation journal, and government health portals, applying the search term "deceased organ donation" AND "UAE." Data was also extracted from IRODaT and UAE health authorities and studies were screened for policy relevance and full-text availability in English. Findings were categorized into legal frameworks, religious perspectives, and public attitudes through thematic analysis.

Results:

The UAE opt-in system, established by the 2016 transplant law and 2017 brain death decree, increased DOD rates from 0.32 to 9.16 pmp (2017–2023). Standardized protocols, hospital-based Organ Procurement Units (H-OPUs), and Transplant Procurement Management (TPM) training improved compliance and brain death referrals by 35%. Fatwas and the SEUSA methodology reinforced religious acceptance (74.6%). Awareness campaigns and the Hayat platform increased public willingness (60–68%). ICU director appointments and donor coordinators boosted early donor identification by 38%, cut referral time from 10 to 3 days, and raised DOD rates to 9.16 pmp in 2023. In contrast, Pakistan's weak enforcement of the 2010 Transplantation Act led to only 10 deceased donors in a decade. Religious resistance remains high, with 28% aware that Islam permits organ donation. Only 51.5% of healthcare professionals support DOD, and 60% of ICU doctors cannot define brain death.

Conclusion:

Pakistan can improve DOD by enforcing a well-defined brain death criteria, establishing a donor registry, and standardizing identification. Fatwas, education, and awareness campaigns should promote donations. TPM training for ICU physicians is essential for donor identification, referrals, and counseling.

Keywords:

Deceased organ donation; UAE; Pakistan; Brain death; Transplantation laws

Bridging Ethics, Religion, and Policy: Transforming Organ Donation in South Asia

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Background:

Organ transplantation is a life-saving medical procedure, yet deceased organ donation rates remain low in South Asia due to ethical, religious, and societal barriers. Misconceptions about brain death and socioeconomic inequalities further hinder donation. Many individuals remain unaware of the medical and legal aspects of organ donation, contributing to hesitation and reluctance. Additionally, the lack of a robust healthcare infrastructure and inadequate government initiatives exacerbate the challenge. These issues must be addressed to improve access to transplantation and increase the availability of donor organs.

Objective:

This research aims to analyze the ethical dilemmas in organ donation and allocation, identify religious misconceptions, and suggest policy changes that can promote donation rates and ensure fair access to transplantation in South Asia. By understanding the key barriers, this study seeks to propose solutions that can enhance awareness, streamline regulations, and improve healthcare systems to support organ donation and transplantation efforts.

Method:

This qualitative study utilized semi-structured interviews, questionnaires, and document reviews collected from hospitals, policy documents, and NGO reports. A thematic analysis was conducted to identify major ethical and policy challenges associated with kidney transplantation. Expert consultations and a comprehensive literature review further informed the study, allowing for a deeper understanding of the existing gaps in deceased organ donation systems.

Results:

Public education on organ donation remains insufficient, with cultural and religious beliefs significantly contributing to hesitancy. Many people in South Asia are misinformed about the religious stance on organ donation, leading to widespread misconceptions and resistance. Ethical challenges such as organ trafficking, unfair access, and the prevalence of black-market transactions continue to pose significant threats to the integrity of the transplantation process. Healthcare system deficiencies, including a lack of specialized medical staff, inadequate infrastructure, and prolonged waiting lists, further obstruct organ transplantation. Additionally, gender disparities remain evident, as women in South Asia face inequitable access to transplants due to socio-economic limitations and psychological factors. Weak deceased donor programs and flawed allocation systems contribute to policy gaps, while donors often bear financial burdens related to travel, medications, and lost wages despite medical costs being covered.

Conclusion:

A multi-dimensional strategy is necessary to overcome the barriers to deceased organ donation in South Asia. Public awareness campaigns, legal actions against organ trafficking, and equitable allocation policies are critical steps in addressing this issue. Implementing presumed consent laws can help increase donation rates, while stronger enforcement measures and religious involvement can build public trust in the process. Technological advancements such as xenotransplantation, stem cell research, and AI-driven healthcare solutions can reduce dependency on human donors and improve transplant success rates. Additionally, establishing organ banks for corneas, investing in storage facilities, and collaborating with private sectors for efficient transport and preservation of organs can enhance the overall transplantation process. Addressing these ethical, legal, and social challenges is crucial to improving transplantation systems in South Asia and ultimately saving lives.

Keywords:

Organ transplantation, deceased donation, South Asia, ethical dilemmas, religious misconceptions, policy reforms, xenotransplantation, AI in healthcare.

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