

Index

1 Morbid Obesity: Risks, Management, and the Role of the Healthcare Team

2 Artificial Intelligence and the Future of Medical Diagnosis

3 Biomedical Department Updates

4 Comprehensive Cancer Care at NDU Hospital: Innovation, Compassion, and Humanity

5 Spotlight on the Maintenance Department at NDUH

6 Innovations And New Frontiers in Blood Banking

7 Rotavirus – Epidemiology, Pathogenesis, Clinical Features, and Management

8 Hyperbaric Chamber

Morbid Obesity: Risks, Management, and the Role of the Healthcare Team



Morbid obesity has become one of the most pressing health challenges worldwide, and our hospital is no exception. Defined as a body mass index (BMI) of 40 or higher (or 35 with obesity-related illnesses), morbid obesity is more than a number—it represents a major risk factor for multiple life-threatening conditions.

Health Risks of Morbid Obesity

Excess body weight places strain on nearly every system of the body. Among the most common complications are:

- Cardiovascular disease – including hypertension, coronary artery disease, and heart failure.
- Type 2 diabetes mellitus – often leading to kidney damage, neuropathy, and vascular complications.
- Obstructive sleep apnea – a serious but often overlooked condition that contributes to daytime fatigue and cardiovascular risk.
- Joint disease – osteoarthritis and limited mobility, which further worsen weight gain.
- Increased cancer risk – particularly breast, colon, and endometrial cancers.
- Beyond physical health, morbid obesity impacts mental health, social well-being, and quality of life.

Medical (Non-Surgical) Management

For many patients, the first-line approach involves lifestyle and pharmacologic therapy.

- Lifestyle interventions: A structured program of nutrition, exercise, and behavioral therapy remains the cornerstone of treatment.
- Medications: Newer anti-obesity drugs such as GLP-1 receptor agonists (e.g., semaglutide) have shown promising results in promoting weight loss and improving glycemic control.

Benefits: Non-invasive, improves overall health habits, can lead to gradual but sustained weight loss.

Limitations: Results may be modest, and long-term adherence is challenging.

Surgical Management

When medical therapy is insufficient, bariatric (weight-loss) surgery becomes a powerful option. The most common procedures include:

- Sleeve gastrectomy – removing a large portion of the stomach to reduce food intake.
- Gastric bypass – altering the digestive tract to restrict food absorption and intake.

Benefits: Significant and sustained weight loss, improvement or remission of diabetes, reduction in cardiovascular risk, improved mobility and quality of life.

Risks: As with any surgery, there are potential complications, including bleeding, infection, nutritional deficiencies, and need for lifelong follow-up.

The Role of Nurses and the Healthcare Team

- Providing education and counseling.
- Supporting patients through lifestyle changes.
- Monitoring for complications of obesity and post-operative care.
- Offering encouragement and empathy, which are critical to long-term success.

Conclusion

Morbid obesity is also a public health concern that requires teamwork and compassion. With the right combination of medical therapy, surgical options, and supportive care, we can help patients achieve better health and restore quality of life.

Dr. Charbel Aoun, General Surgery

In this newsletter you can expect:

Definition & Importance

Health Risks

Management Options

Surgical (bariatric surgery)

Role of Nurses & Healthcare Team

Key Takeaways

Artificial Intelligence and the Future of Medical Diagnosis

Artificial Intelligence (AI) has become an essential tool in modern medicine. Far from being a futuristic promise, it is already present in many clinical fields. By analyzing medical images or biological signals, AI can detect very subtle anomalies, sometimes invisible to the human eye, and provide valuable support to healthcare teams.

In practice, AI can review medical scans within seconds to detect early lesions, interpret physiological signals to identify hidden disorders, or combine different clinical data to predict disease progression. These applications enable faster screening, more personalized care, and better-targeted prevention.

A Partner for the Clinician

Medical diagnosis relies on the analysis of a vast amount of information: imaging, lab results, medical history, and symptoms. This volume of data continues to grow. AI offers crucial support by processing it quickly, reducing the risk of error, and helping in decision-making.

It acts as a second reading, improving patient safety and optimizing the use of medical time.

Toward Predictive and Personalized Medicine

Beyond diagnosis, AI paves the way for predictive and individualized medicine. The use of genetic, biological, and clinical data makes it possible to anticipate the risk of certain conditions and to adapt treatment plans to each patient's specific profile. This represents a step toward truly personalized medicine, more effective and centered on the individual.



Challenges Ahead

Like any innovation, AI raises important questions:

Ethical: Who is responsible if an algorithm makes a mistake?

Technical: How can we ensure the performance and accuracy of systems in real clinical practice?

Confidentiality: How can we guarantee the security and protection of medical data?

Human: How do we preserve the doctor-patient relationship, built on listening and support, that no machine can replace?

Conclusion: An Alliance, Not a Substitution

Artificial Intelligence does not signal the end of human medical diagnosis. On the contrary, it is a unique opportunity to improve accuracy, reduce delays, and enhance the quality of care. The physician's role remains essential: to interpret, to decide, and above all, to support the patient. AI is not a competitor but a partner. Together, they are shaping the future of medicine more modern, more efficient, and always profoundly human.

Rania Sfeir, Coordinator - Medical Management Department

In this newsletter
you can expect:

Introduction

Current
Applications

Current
Applications

Future Potential

Challenges Ahead

Key Takeaways

Biomedical Department Updates

Driving Innovation in Patient Care

The Biomedical Department is leading major upgrades to strengthen clinical and diagnostic services. A new MRI system is being built entirely from the ground up—covering everything from the construction of the dedicated room and the specialized Faraday cage to the installation of the full MRI system itself—ensuring the highest imaging quality. A digital radiography unit is also being prepared to deliver faster results with lower radiation exposure.

On the first floor, a new department will enhance patient monitoring with central stations, motorized beds, and advanced bedside equipment. Syringe pumps integrated with docking stations will connect directly to the monitoring system, reducing manual checks and improving infusion safety through real-time oversight.

Additional upgrades include warming machines for operating rooms and a therapeutic apheresis machine for the Blood Bank.

Prioritizing Preventive Maintenance

Alongside new technology, the Biomedical Department is committed to preventive maintenance—the backbone of safe, reliable care. Through regular inspections, calibrations, and servicing, we address issues early, reducing breakdowns and costly downtime.

This proactive approach keeps equipment ready when patients need it, extends device lifespan, and protects both patients and staff. Most importantly, it ensures clinicians can rely on dependable tools to deliver faster, safer, and more consistent care.



Recent Achievements

By strengthening documentation and training, the Biomedical Department has improved efficiency and reduced equipment misuse. Building on this, the team has delivered key projects that elevated clinical services:

- **Laboratory & Blood Bank:** Relaunched with advanced analyzers, sterilization equipment, a biological safety cabinet, and upgraded storage—ensuring reliable diagnostics and safe transfusions.
- **Hospital-Wide:** Added a CT injector, mobile X-ray, surgical camera system, neuromuscular monitor, defibrillators, ventilators, fetal monitor, ECGs, and portable ventilator to expand capacity and safety. Specialized tools like an Auto-ref Keratometer (Ophthalmology) and Laryngo-Rhino Fiberscope further enhanced diagnostics.
- These milestones highlight our commitment to innovation, safety, and continuous improvement in patient care.

Looking Ahead

With new projects nearing completion and a strong maintenance culture in place, the Biomedical Department remains committed to powering the hospital's mission: delivering safe, efficient, and modern healthcare.

**Eng. Myriam Awaida, FMS Manager -
Biomedical Department**

In this newsletter
you can expect:

Driving Innovation
in Patient Care

Prioritizing
Preventive
Maintenance

Recent
Achievements

Looking Ahead

Comprehensive Cancer Care at NDU Hospital: Innovation, Compassion, and Humanity

At Notre Dame University Hospital, our Department of Oncology-Hematology is committed to providing the highest standards of cancer care — where science, teamwork, and humanity meet. Our mission extends beyond treatment alone: it is about standing beside our patients and their families at every stage of their journey.

Empowering Our Nurses

Oncology care is a team effort, with nurses at its core. Beyond administering chemotherapy, they provide comfort, education, and vital support to patients and families. Over the past year, we invested in specialized training in chemotherapy, patient safety, and family communication—ensuring care that is not only clinically excellent but also compassionate and human.

Innovations and Achievements

We have expanded access to novel therapies and strengthened multidisciplinary tumor boards to deliver personalized treatment plans. Through conferences and workshops, our team stays at the forefront of scientific progress—advancing our mission to lead in cancer care in Lebanon.

The Role of Palliative Care

Palliative care at NDU Hospital focuses on quality of life, not giving up. We provide pain management, psychological, nutritional, and spiritual support, helping patients and families face advanced cancer with dignity, comfort, and meaning.



Psychological Support: A New Dimension of Care

Cancer challenges not only the body but also the mind. Patients and families often face anxiety, fear, and uncertainty throughout treatment. Recognizing this, our department is working toward integrating dedicated psychological consultations into our care pathway.

By adding mental health professionals to our team, we aim to provide a safe space where patients and caregivers can express their emotions, build resilience, and find strength during difficult times. This step reflects our belief that true healing must address both the physical and emotional dimensions of illness.

Looking Ahead

Our vision is to continue building a department that combines cutting-edge treatments with deep humanity. We aim to strengthen our community outreach, expand survivor programs, and develop new pathways for early diagnosis. Above all, we pledge to keep patients at the center of every decision, guided by science but rooted in compassion. In oncology, progress is measured not only in years of survival, but in moments of relief, dignity, and hope. At NDU Hospital, we are proud to walk this path together—with our patients, their families, our nurses, and our dedicated colleagues across disciplines.

Dr. Mansour Salem, Head of Oncology-Hematology Department

In this newsletter you can expect:

Commitment to Excellence

Empowering Nurses

Innovations & Achievements

Palliative Care with Dignity

Psychological Support

Looking Ahead

Spotlight on the Maintenance Department at NDUH

Behind the smooth functioning of every hospital lies a dedicated team working tirelessly to ensure that the environment is safe, reliable, and efficient.

At NDUH, the Maintenance Department plays a vital role in supporting patient care by making sure that our facilities, equipment, and infrastructure remain in excellent condition around the clock.

Safeguarding Patients and Staff

The Maintenance team is responsible for much more than routine repairs. Every action—from checking the generators and HVAC systems, to monitoring elevators, medical gases, and fire safety systems—directly contributes to the safety of our patients, staff, and visitors.

Preventive maintenance schedules are carefully followed to minimize risks and ensure compliance with hospital and national safety standards.

Driving Digital Transformation

In recent years, the department has been at the forefront of digital transformation. Moving away from traditional paper-based systems, the team has succeeded in making nearly 70% of its operations paperless. This shift has streamlined reporting, improved efficiency, and allowed maintenance requests to be tracked and resolved more quickly.

A major milestone is the development of an AI-powered Maintenance Bot, designed to read and prioritize work requests, link them with hospital systems, and support decision-making in real time. This innovation not only reduces response time but also helps the department focus on critical tasks without delay.



Prepared for Emergencies

Maintenance at NDUH is also deeply integrated into the hospital's emergency preparedness plans. Whether in fire response, evacuation, or disaster situations such as earthquakes, the team has clear procedures to isolate power, secure medical gases, and support safe evacuations. Their role is essential in keeping the hospital resilient during crises.

Looking Ahead

As NDUH continues to expand its services, the Maintenance Department remains committed to innovation and excellence. With ongoing training, new technologies, and a strong spirit of teamwork, the department is setting an example of how technical support services can transform into strategic partners in healthcare.

In short: the Maintenance Department is not just about fixing what's broken—it's about protecting lives, ensuring safety, and building the future of NDUH.

Eng. Ralph Harfouch, Head of Maintenance Department

In this newsletter you can expect:

Essential Role in Patient Safety

Digital Transformation in Action

Emergency Preparedness

Looking Forward

Tone of Appreciation, Innovation, and Trust

Innovations And New Frontiers in Blood Banking

Blood Banking developed rapidly over the past hundred years and more so over the past 20 years to catchup with the digital and technological revolutions. Innovations in blood banking include new methods to enhance safety, efficiency, and availability of blood products, aiming to overcome challenges like supply shortages and ensure better patient outcomes.



Blockchain, AI and Data Science

Technologies: Provide a transparent and secure blood tracking from donation to recipient, reducing fraud and aiding hemovigilance, managing inventory, and classifying post-transfusion adverse events.

Mobile Apps and Digital Platforms

Streamline donor management, blood inventory tracking, and communication, improving operational efficiency, integration of IoT devices (sensors) and AI for real-time monitoring, management, and predictive analytics in blood banks.

Blood Testing & Processing

Automated Blood Testing Systems: Faster, more accurate diagnostics with minimal human intervention, using high-throughput screening and multiplexing.

Cryopreservation:

Freezing red blood cells below -80°C can extend their viability for up to ten years, crucial for rare blood types and emergencies.

Additive Solutions

Used to preserve the viability of blood products by providing nutrients and stabilizers, mitigating damage.

Freeze-Dried Plasma

Improves the safety and efficacy of plasma, making it a valuable resource for local production and emergency situations.

Artificial Oxygen Carriers (AOCs)

Hemoglobin-based or perfluorocarbon-based substitutes for red blood cells that can deliver oxygen when blood transfusion is not an option.

Drones

Being explored as delivery vehicles for blood in remote areas to address distribution challenges.

Combined Blood Products

Development of transfusion products that combine red blood cells and plasma in a single bag for easier administration in certain situations where indicated.

Dr. Tarek Wehbeh, Head of Blood Bank

In this newsletter you can expect:

Smarter Systems

Advanced Testing & Processing

New Alternatives

Revolutionary Logistics

Rotavirus – Epidemiology, Pathogenesis, Clinical Features, and Management

What is Rotavirus?

- Double-stranded RNA virus, Reoviridae family
- Major cause of severe diarrhea in infants/children
- Discovered in 1973, globally prevalent

Rotavirus Virology

- Non-enveloped, 11 dsRNA segments
- Icosahedral, triple-layered structure
- Key antigens:
 - VP4 (P protein, attachment/neutralizing)
 - VP7 (G protein, immune target)
- Group A most common in humans

Rotavirus Epidemiology

- Leading cause of gastroenteritis in <5 yrs
- Pre-vaccine: ~500,000 deaths/year → now <200,000
- Winter peak (temperate climates)
- Transmission: fecal-oral, contaminated surfaces, rarely droplets

Rotavirus Pathogenesis

- Ingestion → infects small intestine enterocytes
- Causes: cell lysis, villous atrophy, malabsorption
- NSP4 enterotoxin → secretory diarrhea
- Results: watery diarrhea, vomiting, dehydration

Rotavirus Clinical Features

- Incubation: 1–3 days
- Symptoms: fever, vomiting, watery diarrhea (5–10 days), abdominal pain, dehydration signs
- Duration: 3–8 days
- Adults: often asymptomatic/mild

Rotavirus Complications

- Severe dehydration, electrolyte imbalance, hospitalization
- Rare: seizures, intussusception (post-vaccine concern)



Rotavirus Diagnosis

- Clinical + stool tests: EIA, RT-PCR, latex agglutination
- Labs: CBC, electrolytes for dehydration assessment

Rotavirus Differential Diagnosis

- Viral: Norovirus, Adenovirus, Astrovirus
- Bacterial: E. coli, Salmonella, Shigella, Campylobacter
- Parasitic: Giardia lamblia

Rotavirus Treatment

- No antivirals → supportive only
- Rehydration: ORS, IV fluids if severe
- Nutrition: continue breastfeeding/normal diet, avoid sugary drinks
- Medications: ondansetron (vomiting), zinc 10–20 mg x 10–14 days; antidiarrheals not for children

Rotavirus Prevention

- Hygiene: handwashing, sanitation, clean water
- Vaccination (most effective):
 - Rotarix (2 doses), RotaTeq (3 doses), others (Rotavac, Rotasiil)
 - Start <15 weeks, finish by 8 months

Global Impact of Rotavirus

Vaccination

- Fewer hospitalizations & deaths
- Herd immunity benefits
- Challenges: lower efficacy in low-income areas, cold chain limits

Special Considerations

- Immunocompromised: avoid live vaccines
- Preterm: vaccinate if stable
- Intussusception: slight post-vaccine risk, benefits outweigh

Randa Haddad, Head of Pharmacy Department

In this newsletter you can expect:

What is Rotavirus

Virology

Epidemiology

Pathogenesis

Clinical Features and Complications

Diagnosis and Differential Diagnosis

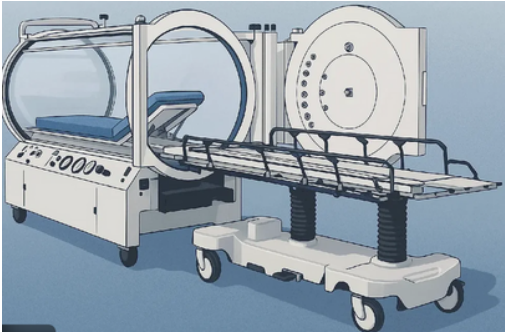
Treatment

Prevention and Global Vaccination Impact

Special Considerations

Hyperbaric Chamber

At our hospital, we are proud to be among the few healthcare institutions equipped with a hyperbaric chamber, making us a unique resource in the region. The hyperbaric chamber plays a crucial role in the treatment of various medical conditions, such as carbon monoxide poisoning, decompression sickness, and chronic non-healing wounds.



The use of the hyperbaric chamber enhances oxygen delivery to tissues, accelerates healing processes, and reduces inflammation. This allows us to provide more comprehensive and effective care to our critically ill patients.

This unique capability sets us apart and underscores our commitment to providing exceptional, state-of-the-art care.

**Martha Kfoury, Head Nurse -
Intensive Care Unit**

In this newsletter
you can expect:

Hyperbaric
Chamber at Our
Hospital

Conditions Treated

How It Works

Benefits for
Patients

Why It Sets Us
Apart