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Surgical, metabolic, and managerial approach to geriatric abdominal trauma: a systematic analysis of damage control, neuroendocrine response, and continuity of care in long-term care facilities.

Surgical, metabolic, and managerial approach in geriatric abdominal trauma: a systematic analysis on damage control, neuroendocrine response, and continuity of care in long-term institutions

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Summary

Global population aging and the consequent shift in the epidemiological profile of trauma pose unprecedented challenges to healthcare systems, requiring a restructuring of care protocols for elderly patients who are victims of abdominal trauma. This scientific article proposes an exhaustive, technical, and integrative analysis of the application of Damage Control Surgery principles *adapted* to the physiology of senescence, as well as the critical management of the transition of care to Long-Term Care Facilities (LTCFs). **The methodology is based on an integrative narrative literature review, with critical analysis of international guidelines, studies in surgical metabolism, and fundamentals of health management.** The study is structured around seven high-density thematic axes, exploring topics ranging from the molecular biology of hemorrhagic shock to rehabilitation protocols and risk management in institutional settings.

The results indicate that survival and functional recovery depend on precise surgical intervention, early intensive support, and ongoing management focused on preventing frailty syndrome. It is concluded that the integration of high-complexity surgery and institutional geriatrics is the new paradigm for reducing morbidity and mortality.

Keywords: Geriatric Trauma. Damage Control Surgery. Surgical Metabolism. Long-Term Care Facility. Health Management.

Abstract

Global population aging and the consequent shift in the epidemiological profile of trauma pose unprecedented challenges to healthcare systems, requiring a restructuring of care protocols for elderly patients suffering from abdominal trauma. This scientific article proposes an exhaustive, technical, and integrative analysis on the application of Damage Control Surgery principles adapted to the physiology of senescence, as well as the critical management of the transition of care to Long-Term Care Institutions (LTC). The methodology is based on a systematic and critical bibliographic review, correlating Advanced Trauma Life Support (ATLS) guidelines, surgical metabolism studies, and health management theories. The study is structured into seven high-density thematic axes, exploring everything from the molecular biology of hemorrhagic shock to rehabilitation protocols and risk management in institutional environments. The results indicate that survival and functional recovery depend on precise surgical intervention, early intensive support, and continued management focused on preventing frailty syndrome. It is concluded that the integration between high-complexity surgery and institutional geriatrics is the new paradigm for reducing morbidity and mortality.

Keywords: Geriatric Trauma. Damage Control Surgery. Surgical Metabolism. LTC. Health Management.

1. Introduction

Trauma surgery, a discipline historically forged on the battlefields and adapted

In the context of urban violence, the country faces its greatest demographic transformation in the 21st century: the predominance

There is a growing number of elderly patients with limited physiological reserves and multiple comorbidities.

The classic approach, focused on immediate and definitive anatomical restoration, clashes head-on with

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the reality of geriatric homeostenosis, where the ability to maintain the stability of the internal environment Response to acute stress is drastically reduced.

Abdominal trauma in the elderly, frequently resulting from low-energy mechanisms. Like falls from one's own height, it often presents itself insidiously, masked by physiological changes due to aging and the chronic use of medications that block the usual compensatory adrenergic responses. This complexity requires the general surgeon not to not only technical skill, but a deep understanding of the pathophysiology of aging and a Clinical management skills that go far beyond the surgical procedure, encompassing the entire care cycle. From pre-hospital care to late-stage rehabilitation.

The central problem that motivates this scientific investigation lies in the clinical observation of Mortality and morbidity rates remain disproportionately high among elderly trauma patients. when compared to younger cohorts with lesions of similar anatomical severity (ISS - *(Injury Severity Score).* Failure to recognize early signs of hidden shock, the underestimation of the severity of injuries and the lack of specific resuscitation and rehabilitation protocols For the elderly, these are critical gaps in current care.

The hypothesis defended in this study is that the implementation of a care model integrated, combining the tactical aggressiveness of Damage Control Surgery with sophistication Intensive geriatric support and continuity of care in long-term care facilities. specialized [strategies] **constitute one of the most consistent strategies described in the literature for the improvement of clinical outcomes.**

The detailed analysis that follows dissects the molecular, surgical, and managerial components. This approach offers a robust theoretical framework for advanced medical practice.

2. Pathophysiology of hemorrhagic shock and the neuroendocrine response in the elderly.

The metabolic response to trauma in elderly patients is characterized by a profound Alterations in neuroendocrine adaptive capacity make the management of hemorrhagic shock more challenging. This presents an extremely complex challenge for the surgical team. Unlike a young adult, who It responds to hypovolemia with a vigorous release of catecholamines resulting in tachycardia and Peripheral vasoconstriction is observed in elderly individuals, who exhibit down *-regulation* of receptors . Cardiac and vascular beta-adrenergic receptors.

This means that the chronotropic and inotropic response to stress is attenuated, causing... which vital signs are traditionally used in screening, such as heart rate and blood pressure, They remain falsely normal until a sudden and irreversible hemodynamic collapse occurs. This The misleading "honeymoon phase" requires the surgeon to use metabolic markers of perfusion. tissue, such as serum lactate, base deficit, and central venous oxygen saturation, such as

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Primary guidelines for fluid resuscitation and indications for immediate surgical intervention.

Mitochondrial dysfunction associated with aging *(mitochondrial aging)* plays a role.
a central role in the elderly person's inability to tolerate prolonged periods of tissue hypoperfusion.
during trauma. With the reduction in the efficiency of the electron transport chain and the decrease
With low mitochondrial density, the cells of vital organs enter anaerobic metabolism much more frequently.
rapidly generating a lactic acid load that depletes physiological buffers. Acidosis
The resulting metabolic process has direct deleterious effects on myocardial contractility and, crucially,
It inhibits the function of proteases in the coagulation cascade, precipitating acute traumatic coagulopathy.

The surgeon must understand that, in the elderly, the window of opportunity to reverse this
Acidosis before it becomes lethal is significantly narrower, requiring a more aggressive approach.
A therapeutic approach to controlling the source of bleeding requires no hesitation.

Immunosenescence, or the aging of the immune system, alters the response.
Systemic inflammatory response (SIRS) to trauma, predisposing the elderly to a hyperinflammatory response.
initial findings regarding late-onset immunoparalysis. The phenomenon of *inflamm-aging* (chronic inflammation of
low-grade trauma associated with age) means that acute trauma is superimposed on an already activated immune system.
leading to a cytokine storm (TNF-alpha, IL-6, IL-1) that can cause endothelial injury.
disseminated, increased capillary permeability, and multiple organ dysfunction syndrome
(SDMO) regardless of the severity of the initial anatomical injury. Postoperative management should
to focus not only on supporting organs, but on modulating this immune response, avoiding insults.
Secondary complications such as nosocomial infections could act as a fatal " *second hit* ".

Decreased cardiovascular reserve is a determining factor in tolerance to resuscitation.
Volumetric stress required during hemorrhagic shock. The prevalence of diastolic dysfunction of
Left ventricular dysfunction and arterial stiffness in the elderly make fluid management a balancing act.
precarious balance between hypovolemia (which causes kidney failure) and hypervolemia (which causes acute edema).
(lung). The Frank-Starling curve in the aging heart is flattened, which means that the increase
Preload has little effect on cardiac output and carries a high risk of pulmonary congestion. The use of
minimally invasive hemodynamic monitoring or bedside echocardiography (POCUS)
Prescription by the surgeon or intensivist is mandatory to guide the administration of crystalloid and blood products.
with millimeter precision.

Renal function in the elderly, characterized by the loss of functional nephrons and a reduction in the rate of
glomerular filtration, it is extremely vulnerable to hypoperfusion and endogenous toxins released by
trauma (myoglobin, cytokines). Acute tubular necrosis (ATN) develops rapidly in these scenarios.
hypotension occurs, and the recovery of renal function is often incomplete, leading to kidney disease.
Chronic kidney disease or the need for dialysis. Preventing acute kidney injury requires maintaining a
adequate perfusion pressure, avoiding the use of nephrotoxic drugs (such as iodinated contrast agents and

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NSAIDs) and aggressively correcting rhabdomyolysis if present. Oliguria in the elderly should be interpreted as a red alert signal of impending systemic hypoperfusion.

Coagulopathy in geriatric trauma is exacerbated by the widespread use of medications. Antiplatelet and oral anticoagulant drugs for the prevention of cardiovascular events. presence of aspirin, clopidogrel, warfarin or new direct anticoagulants (DOACs) in the system of The patient transforms minor lesions into exsanguinating hemorrhages. The surgeon must have protocols. Clear institutional frameworks for the rapid reversal of these agents, using complex concentrates Prothrombin time, fresh frozen plasma, platelets, and tranexamic acid. Coagulation assessment. through viscoelastic methods (rotational thromboelastometry - ROTEM) allows therapy Goal-directed transfusion therapy, correcting specific coagulation defects without causing overload. Unnecessary volume.

Fragility of the central nervous system and a propensity for hypoactive or hyperactive *delirium* . These are frequent complications that increase mortality. The aging brain, with less reserve... Cognitive impairment and altered neurotransmission make it highly sensitive to hypoxia, hypotension, and other effects. Side effects of sedatives and opioid analgesics. The development of *delirium* in the ICU is not only not a behavioral disorder, but a marker of organic brain dysfunction and a predictor. Regardless of death and long-term functional decline, pain management should prioritize techniques for... Regional and opioid-sparing analgesia to protect cognitive function.

Pre-existing sarcopenia and protein-calorie malnutrition compromise the elderly person's ability to function properly. ...to heal surgical wounds and to wean patients off mechanical ventilation. Loss of mass Skeletal muscle reduces the reserve of amino acids necessary for phase-stage proteins. acute and immunoglobulins. Nutritional support should be initiated early, preferably administered enterally to maintain the integrity of the intestinal mucosal barrier and prevent translocation. Bacterial infection, which is a driver of abdominal sepsis. Nutritional assessment upon admission should guide the Metabolic therapy throughout the hospitalization period.

Accidental hypothermia is more rapid and severe in the elderly due to the loss of adipose tissue. subcutaneous, reduction of muscle mass (thermogenesis) and alteration of the thermoregulatory center Hypothalamic. Hypothermia inhibits platelet and coagulation enzyme function, contributing to The "lethal triad." Active warming of the patient should begin in the pre-hospital phase and be maintained. Aggressively during surgery and in the ICU. Preventing hypothermia is a maneuver of Resuscitation is just as important as blood transfusion.

It can be concluded that the pathophysiology of trauma in the elderly is a perfect storm of systemic vulnerabilities. The surgeon does not only treat an anatomical lesion, but tries to stabilize a physiological system on the verge of collapse. The recognition of these metabolic peculiarities and the Early and aggressive intervention to correct oxygen debt and coagulopathy are the

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3. Damage control surgery: indications, technique and geriatric particularities

Damage Control Surgery *(DCS)* represents a change.
A philosophical approach to severe trauma, prioritizing the restoration of physiology over physical rehabilitation.
from anatomical perspective. In elderly patients, whose physiological reserves are limited, the decision to abort a
The decision to opt for a shorter, definitive surgery in favor of an abbreviated laparotomy should be made even more strongly.
early. The classic indications for DCS are acidosis (pH < 7.2), hypothermia (< 34°C) and
Clinical coagulopathy—triggers should be elevated in the geriatric population. An elderly person may not
Tolerating reaching these extremes; therefore, conversion to damage control should be considered.
in the face of persistent hemodynamic instability, the need for massive transfusion, or complexity.
anatomical characteristics of the lesions that would require prolonged surgical time.

The abbreviated laparotomy technique focuses strictly on three objectives: control of
hemorrhage control, contamination control, and temporary closure of the abdomen.

In the control of hepatic hemorrhage, perihepatic packing *(packing)* with
Applying compresses is a life-saving maneuver, but it must be performed carefully to avoid compromising the condition.
Venous return via the inferior vena cava, which may already be impaired by hypovolemia. In livers
In cirrhotic or steatotic patients, common in the elderly, the parenchyma is friable and direct sutures are frequently necessary.
They fail, making *packing* the strategy of choice. Postoperative angioembolization is a
A valuable adjunct for controlling surgically inaccessible deep arterial bleeding.

Controlling contamination in hollow organ injuries requires quick and pragmatic decisions.
In hemodynamically unstable elderly patients, performing primary intestinal anastomoses
It carries a prohibitive risk of dehiscence due to splanchnic hypoperfusion and malnutrition.
resection of the injured segment with linear stapling of the ends (leaving the intestine in
Discontinuity) or exteriorization via stomas (colostomy/ileostomy) are the safest options.
in the context of damage control. Although a stoma impacts quality of life, it prevents
The catastrophe of postoperative fecal peritonitis in a patient who would not have the reserve to withstand it.
a reoperation for sepsis.

Management of the open abdominal wall (laparostomy) is a critical component of DCS.
Visceral edema and fluid resuscitation inevitably lead to increased intra-ventricular pressure.
Abdominal. Aponeurotic closure under tension would cause Abdominal Compartment Syndrome.
(ACS), resulting in renal and respiratory failure. The open abdomen technique with systems of
Negative pressure (VAC - *Vacuum Assisted Closure)* allows for the continuous drainage of fluids.
Quantification of blood loss and control of edema facilitates subsequent definitive closure. In
In elderly patients, the atrophic skin around the wound requires extra protection to prevent injury from the adhesive.

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dressing.

Splenic injury in the elderly presents a particular dilemma. Although splenic preservation While ideal for maintaining immunocompetence, non-surgical treatment (NST) has failure rates. Higher blood pressure in elderly patients and the risk of delayed bleeding can be fatal. During control laparotomy In case of damage, rapid splenectomy is often the most prudent decision to ensure hemostasis. definitive and avoid the need for reintervention. Prophylactic vaccination against germs. Encapsulated catheters must be provided post-operatively to prevent post-splenectomy sepsis (OPSI).

Vascular control of large abdominal vessels in the elderly is hampered by atherosclerosis. severe. Clamping of the aorta can cause fracture of calcium plaques and distal embolization or Iatrogenic dissection. The surgeon must manipulate the vessels with extreme caution, avoiding the use of Traumatic clamps in calcified areas. The use of temporary intravascular *shunts* may be necessary to maintain distal perfusion in complex injuries, preventing critical ischemia of lower limbs which, in elderly people with peripheral arterial disease, would quickly lead to amputation.

The scheduled reoperation ("second look") should occur as soon as the lethal triad is corrected. in the ICU, usually between 24 and 48 hours. In this second surgical stage, the surgeon removes the compresses, reassess the viability of the intestinal loops (which may have been doubtful in the first instance). (surgery), reconstructs intestinal transit if possible, and attempts are made to close the aponeurosis. In elderly patients, The edema may take longer to subside, requiring progressive closures or the use of meshes. Biological methods to prevent giant incisional hernias. Surveillance for specific complications of DCS, such as enteroatmospheric fistulas and cavity abscesses, should be intensively managed. Parenteral nutrition This may be necessary if the bowel cannot be used early. Management of drains and tubes. It must be rigorous to avoid infections associated with devices.

The surgical team must maintain constant communication with the therapy team. intensive care is needed to decide the ideal time for reoperation, based on physiological criteria of Stability. The surgeon's role as leader of the trauma team is crucial in the operating room. The decision to abort definitive surgery and opt for damage control requires authority and clarity of mind. Communication with the anesthesiologist and nursing staff. The surgeon must orchestrate the logistics of Rapid transfer to the ICU, ensuring that warming and resuscitation continue without interruption. interruption during transport.

It is concluded that damage control surgery in the elderly is a survival strategy. which demands surgical humility and physiological sophistication. The goal is not anatomical perfection, but The preservation of life in extreme conditions. Technical adaptation to the fragility of tissues and The ability to identify the elderly patient's organs is what distinguishes an experienced trauma surgeon and determines the success of the procedure. intervention.

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4. Pre-hospital assessment and management: the critical role of the SAMU (Mobile Emergency Care Service) in the chain of survival.

Pre-hospital care (PHC) forms the foundation of the chain of survival in
In cases of trauma, and in elderly patients, decisions made in the first few minutes have lasting repercussions.
Regarding the prognosis, SAMU, under specialized medical coordination, plays a vital role.
The main challenge in pre-hospital care is triage, initial stabilization, and transport to the appropriate unit.
In geriatrics, *undertriage* is the condition where the severity of injuries is underestimated due to...
mechanisms of low-energy trauma (falls) and the masked physiological response of the elderly.

Medical coordination should establish protocols that take into account any trauma in
elderly person considered potentially serious until proven otherwise, authorizing direct transport to centers
Level I trauma assessment, avoiding wasted time in less complex units. The assessment of
The scene and mechanism of trauma provide crucial clues. A fall from one's own height may appear
This may seem trivial, but in an anticoagulated patient it can result in intracranial or abdominal hemorrhage.
fatal. The regulating physician should instruct teams to actively seek information about the patient's history.
The patient's medical history, including comorbidities and medications in use, will influence the entire process.
subsequent treatment. The identification of beta-blocker use, for example, alerts the team.
so as not to rely on heart rate as an indicator of shock.

Airway management in the elderly presents specific anatomical challenges, such as...
presence of dental prostheses, arthritis of the cervical spine that limits neck extension and the
Relative macroglossia. Orotracheal intubation in pre-hospital care should be performed by qualified professionals.
Experienced professionals, using supraglottic devices as an immediate rescue plan. Pre-oxygenation
It is critical due to the reduced pulmonary functional reserve. The risk of aspiration is high due to the delay.
in gastric emptying and incompetence of the lower esophageal sphincter, requiring a maneuver of
Sellick and ready suction.

Immobilization of the spine and limbs must be adapted. Rigid boards
Conventional devices can cause pressure ulcers in elderly people in less than 30 minutes due to skin problems.
atrophic and bony prominences. The use of vacuum mattresses and rigorous padding of pressure points.
Pressure is mandatory. Restriction of cervical spine movement must take into account pre-existing kyphosis.
existing; forcing the neck into a neutral position can cause severe pain and even iatrogenic spinal cord injury.
Comfort during transportation is not a luxury, it's preventing complications.

Volume replacement in pre-hospital care should follow the concept of "controlled permissive hypotension".
except in cases of concomitant traumatic brain injury. Aggressive administration of large doses.
Large volumes of crystalloids can "wash away" clotting factors, worsen hypothermia, and cause
Congestive heart failure. The goal is to maintain cerebral and coronary perfusion (SBP 80-90
mmHg) until surgical control of the hemorrhage. Venous access may be difficult due to fragility.
Capillary; the use of intraosseous access should not be delayed in critically ill patients.

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Hypothermia prevention should begin at the scene. This includes removing wet clothing and using...
The use of aluminized thermal blankets and heating the ambulance's interior are measures...
Simple measures that save lives. Hypothermia established in the pre-hospital setting is an independent predictor of mortality is very difficult to reverse later. The SAMU team must be trained for
Having a "phobia of the cold" when managing a trauma patient.

Communication between the pre-hospital care team and the receiving hospital should be structured and planned in advance.
The case handoff report (MIST - *Mechanism, Injuries, Signs, Treatment)* allows the team to
Hospital trauma center: prepare the shock room, activate the blood bank and the surgical center before...
Patient arrival. In the case of elderly patients, informing them about the use of anticoagulants allows the...
The hospital should prepare the reversal agents immediately. This systemic integration reduces the time.
Balloon holder and surgical holder.

Ongoing training of intervention teams (doctors, nurses, drivers) in
Geriatric trauma is a responsibility of medical coordination. Realistic simulations that
Including geriatric mannequins and polypharmacy scenarios helps raise awareness among professionals about the nuances of this care. The creation of specific protocols for falls in the elderly, including
Assessment of hypoglycemia and cardiovascular causes (syncope) improves diagnostic accuracy.

Psychosocial support for the family at the scene or during transport is an integral part of
Humanized care. Trauma in an elderly person often destabilizes a family structure.
fragile. Empathetic and clear communication from the SAMU team helps to reduce anxiety and
It prepares the family for the next stages of treatment.

It is concluded that high-quality pre-hospital care in geriatric trauma requires a change in
Mentality: from "load and run" to "treat and transport intelligently." SAMU is not just...
A transportation service, but the extension of the ICU and surgical center onto the street. Medical leadership in Regulation and intervention are the factors that ensure limited resources are applied where they are needed.
greatest impact on survival.

5. Postoperative care in intensive care: advanced metabolic and organ support

The postoperative phase in the Intensive Care Unit (ICU) is the time when...
Homeostasis in the elderly patient is re-established. After damage control surgery, the patient arrives
admitted to the ICU in a precarious physiological state, often still acidotic, hypothermic, and with
coagulation disorders. The intensivist and the surgeon must work in unison to correct these.
parameters are established within the first 24 hours, aiming to optimize the patient for the planned reoperation.

Active internal and external rewarming is prioritized, as is enzymatic and platelet function.
It depends on normothermia. Ventilatory support in the elderly requires lung protection strategies.
rigorous. The aging lung has lower compliance and a smaller alveolar surface area, being

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More susceptible to ventilator-induced lung injury (VILI). Low tidal volumes (6 ml/kg of body weight) (predicted) and controlled plateau pressures are essential to avoid barotrauma. Weaning Ventilatory intervention should be aggressive but cautious, with daily spontaneous breathing trials, aiming to... Early extubation to prevent ventilator-associated pneumonia (VAP), which has a high mortality rate. In this age group, early tracheostomy may be beneficial in patients with a prognosis of... prolonged ventilation.

Hemodynamic management should be guided by tissue perfusion goals and not solely by... Blood pressure. The use of bedside echocardiography to assess ventricular function and response. Fluid monitoring is superior to static monitoring. The elderly patient has a narrow therapeutic window for... Fluid administration: insufficient volume perpetuates shock and renal failure; excessive volume precipitates it. Pulmonary edema and hepatic congestion. The rational use of vasopressors and inotropes, adjusted for Maintaining organ perfusion without imposing excessive afterload on the heart is a clinical art.

Nutritional therapy is a vital component of recovery. Trauma induces a state A hypercatabolic substance that rapidly depletes the muscle reserves of the elderly, worsening sarcopenia. Enteral nutrition should be initiated as soon as hemodynamic stability is achieved, even in low blood counts. doses (trophic nutrition) to maintain the integrity of the intestinal barrier and modulate the immune response. Protein intake should be increased (1.5 to 2.0 g/kg/day) to try to counteract catabolism. Strict glycemic control reduces the risk of infections and polyneuropathy.

Prevention and management of *delirium* are priorities in the ICU. Hypoactive *delirium* is common. in elderly patients and is frequently underdiagnosed, being associated with longer ventilation time and mortality. The ABCDEF strategy *(Awakening and Breathing Coordination, Delirium Monitoring/ management, early mobility, and family engagement* should be implemented. Avoid benzodiazepines, promote the sleep-wake cycle, ensure the use of eyeglasses and hearing aids and Allowing family members to be present are effective non-pharmacological measures.

Prophylaxis for venous thromboembolism (VTE) and gastric stress ulcers should be... protocol. The risk of bleeding must be weighed against the risk of thrombosis, which is very high in Elderly patient with multiple traumas and immobilization. The use of intermittent pneumatic compression should be universal, and pharmacological anticoagulation initiated as soon as surgical hemostasis is achieved. gastric protection with proton pump inhibitors is guaranteed. This prevents gastrointestinal bleeding. high levels in patients under intense physiological stress.

Preventing pressure injuries (bedsores) requires constant vigilance from the team. nursing care. The skin of the elderly is fragile and cutaneous perfusion is compromised by shock and Vasopressors. Scheduled repositioning, use of pressure redistribution surfaces and Skin hydration is a basic care step that prevents serious and painful complications. Mobilization Early intervention, led by physiotherapists, is essential to combat ICU-acquired weakness.

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Passive and active exercises, sitting on the edge of the bed, and assisted standing should be initiated early.
During mechanical ventilation, if stability allows. Preservation of muscle function.
This is the ultimate goal of intensive rehabilitation.

Antibiotic management should be carefully managed *(stewardship).* The elderly are at higher risk of...
Infections caused by multidrug-resistant germs due to previous hospitalizations and antibiotic use.
Culture surveillance and antibiotic de-escalation guided by microbiological results prevent
The emergence of drug resistance and toxicity.

It is concluded that intensive postoperative care in the elderly requires a specific approach.
Multidisciplinary and proactive. Each organic system must be supported and protected simultaneously.
Excellence in critical care is what allows the technical success of surgery to be translated into...
survival and functional recovery for the patient.

6. Management of long-term care facilities and the transition of care.

Hospital discharge does not mark the end of treatment for elderly patients who have suffered abdominal trauma.
But it marks the beginning of a new recovery phase that requires continued and specialized care.
Long-term care facilities for the elderly (ILPIs) assume a strategic role in the network of
Healthcare services, acting as transitional *care* and rehabilitation units. The concept
The modern ILPI (Long-Term Care Institution for the Elderly) is moving away from the asylum model of a "warehouse for the elderly" to become a center for...
Technical care integrated into a humanized and home-like environment.

Admission to a long-term care facility must be preceded by a Comprehensive Geriatric Assessment (CGA), which
It inventories the functional, cognitive, nutritional, and social capacities of the elderly. Based on the AGA,
An Individualized Therapeutic Plan (ITP) is developed, which defines personalized rehabilitation goals.
Post-trauma patients frequently present with ostomies and complex surgical wounds.
The healing process and feeding tubes require specialized nursing care.
24 hours a day, something most families cannot provide at home.

Physical rehabilitation in long-term care facilities focuses on restoring autonomy for Activities of Daily Living.
Daily Activities of Daily Living (ADLs). Physical therapists and occupational therapists work to restore muscle strength,
Balance and coordination, preventing further falls and promoting independence. The environment
The long-term care facility should be designed to be therapeutic, with grab bars, non-slip floors and...
Proper lighting, functioning as an extension of therapy. Prevention of the syndrome
Immobility is a daily obsession.

Clinical nutrition in long-term care facilities is adapted to the increased needs of convalescent patients.
High-protein, high-calorie diets, vitamin and mineral supplementation, and adaptation of
Food consistency for patients with dysphagia are strategies to combat sarcopenia and
accelerate wound healing. Mealtime is also a social event, combating the

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Isolation and depression.

Medication management is critical. Polypharmacy is the norm, and the transition from hospital to...
Long-term care facilities are a high-risk environment for medication errors. Medication reconciliation and review are crucial.
Periodic review of prescriptions for "deprescribing" unnecessary drugs and ensuring proper administration.
Correctly administering the medication at the right times is the responsibility of the institution's nursing and medical staff.

Psychosocial and cognitive support aims to maintain mental and emotional health. Trauma and...
Changes in environment can trigger episodes of confusion or depression. Playful activities,
Music therapy, cognitive stimulation, and integration with other residents create a sense of
Community and belonging. Maintaining family ties is encouraged, with the ILPI (Long-Term Care Institution for the Elderly) acting accordingly.
as a partner to the family in caregiving, offering support and guidance to family caregivers.

Infection prevention and control in public settings require strict protocols.
Hygiene, up-to-date vaccination of residents and staff, and isolation of suspected cases. The ILPI
must have the ability to identify early signs of clinical decompensation (such as infection).
(urinary tract infection or pneumonia) and intervene or refer to the hospital before the condition worsens.
Integration with the emergency and urgent care network ensures that, in the event of serious incidents, the
Residents have quick access to hospital-level care. Detailed clinical documentation at the long-term care facility facilitates this.
This transition provides the hospital with vital information about the baseline status and directives.
advance directives from the patient.

Palliative and end-of-life care are an integral part of care provided in long-term care facilities.
For patients with irreversible sequelae or terminal illnesses, the focus shifts from cure to comfort and...
Quality of life. Impeccable control of pain and symptoms, respect for dignity, and support.
Spirituality is the cornerstone of this phase of care.

It is concluded that specialized long-term care facilities are an indispensable link in the trauma care chain.
Geriatric care. The medical and administrative management of these institutions requires technical expertise to handle...
with clinical complexity and human sensitivity to create an environment that, despite being technical,
to feel like home. **Practical experiences in the management of Long-Term Care Institutions.**
Specialized studies demonstrate the viability and effectiveness of this care model.

7. Internationalization, innovation, and the future of healthcare management

Medicine and healthcare management are global fields where innovation and best practices are essential.
They do not respect borders. The internationalization of the medical career, **exemplified by initiatives of**
International experience in health consulting and management represents a strategic move of
The pursuit of excellence and the exchange of knowledge.

The US healthcare system, with its focus on efficiency, patient safety, and *value-*
Based Healthcare offers an advanced laboratory for the development of protocols that

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They can be adapted and applied in other contexts, including in Brazil. Management consulting
International health focuses on the transfer of *know-how* regarding hospital accreditation and management of
Patient flow and resource optimization. Implementation of international safety goals.
of the patient (correct identification, effective communication, medication safety, safe surgery,
Reducing infections and preventing falls is the foundation of any quality consulting.
The author's experience in managing emergency services in Brazil provides a unique perspective on
Resilience and creativity are valued in mature markets.

Information technology is the great enabler of modern management. Telemedicine, the
artificial intelligence to support clinical decision-making, *big data* analytics for population management and
Interoperable electronic health records are tools that international consulting helps to...
implement. The ability to analyze key performance indicators (KPIs) in real time allows to
Managers make evidence-based decisions, improving operational and clinical efficiency.

Cultural competence is essential for global performance. Florida, as a gateway to
Latin America requires a medicine that understands the cultural nuances of diverse populations.
Healthcare consulting firms should adapt technical protocols to local realities, respecting beliefs and
Patient values are essential to ensure adherence to treatment. Humanized care is a key value.
A universal principle that should permeate all actions.

Continuing education and team training are cornerstones of the consulting firm.
dissemination of advanced surgical techniques, life support (ATLS, ACLS) and crisis management
It raises the technical standard of partner institutions. The creation of bridges between academic centers and
Hospitals in different countries foster collaborative research and innovation.

Innovation in care models, such as "home hospitalization" *(Home Care)* and...
High-complexity long-term care facilities for the elderly (ILPIs) are a global trend in addressing population aging.
Strategic consulting helps investors and managers design these new business models.
ensuring economic viability and healthcare safety. The future of healthcare management depends on...
Full integration of the value chain. From pre-hospital care to rehabilitation, all links must communicate and operate.
under the same quality standards. The surgeon-manager, with his comprehensive view of the process.
The health-disease integration is uniquely positioned to lead this integration.

Ethics and social responsibility remain the guiding principles of our international operations.
The export of healthcare services should ultimately aim to improve access and quality.
The quality of life for the populations served. Commitment to science and to the patient is the language
A common thread that unites doctors and managers worldwide.

Adapting "Damage Control" protocols not only for surgery, but for the
Managing healthcare systems in crisis is a relevant intellectual contribution. Just as in
In the event of a trauma, management must quickly identify and correct financial and operational "bleeding."

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to save the institution and ensure its social mission.

It can be concluded that internationalization is not just a business, it is a mission of Disseminating excellence. By bringing the Brazilian experience of resource management to resource scenarios. limited to the American market, and bringing back the technology and processes from there creates a A virtuous cycle of learning and continuous improvement that benefits patients in both hemispheres.

8. Conclusion

A thorough analysis of the approach to abdominal trauma in elderly patients, integrated with management of health systems and continuity of care in long-term care facilities reveals A highly complex scenario that does not allow for simplistic or fragmented solutions. Surgery of Damage control, established as the gold standard for severe trauma, must be meticulously implemented. adapted to the fragile physiology and limited reserves of the geriatric patient.

The study demonstrated that surgical decisions should be guided by metabolic markers. early interventions and clinical judgment that weighs the aggressiveness necessary to save a life against the preservation of the already limited homeostenosis in elderly patients. It is evident that the intraoperative phase is just a critical chapter in a long and perilous journey of recovery. Excellence in postoperative intensive care, focused on correcting the lethal triad and rigorously preventing complications. Systemic complications such as *delirium,* renal failure, and infections are a determining factor for the Final outcome. Mortality in geriatric trauma often occurs not due to bleeding. initially, but due to the sequential organ failures resulting from the uncontrolled inflammatory response. and prolonged immobility.

The strategic importance of Long-Term Care Facilities for the Elderly (ILPI) Specialized skills emerge as a vital and often overlooked link in the chain of survival. The transition from the acute hospital model to continuous care should be fluid, protocol-based, and... integrated. The author's experience in founding and managing Bem Querer Residencial exemplifies how An entrepreneurial medical vision can fill critical healthcare gaps, transforming the... The concept of "asylum" in technical rehabilitation units that offer dignity, security and Quality of life for a vulnerable population.

Medical leadership in the management of emergency systems, such as SAMU, and in units. Reference hospitals prove to be fundamental for the organization of efficient trauma networks. In-depth knowledge of the front line (assistance) qualifies management to make logistical decisions and Clinics that save lives and optimize scarce resources. Public recognition through The Legislative Merit Medal reflects the tangible social impact and community relevance of this. Technical and humanized performance.

Managerial competence, combined with solid medical and surgical training, allows for optimization.

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financial and human resources, ensuring the sustainability of healthcare institutions in a An increasingly challenging market. The relentless pursuit of quality certifications, standardization. Streamlined processes and a focus on patient safety are the cornerstones of modern administration. responsible and ethical.

International career expansion and the pursuit of innovation in mature markets such as North American studies point the way to the evolution of health management. The exchange of knowledge, Technologies and management models across countries enrich medical practice and raise global standards. Safety and quality. Healthcare management consulting positions itself as the ideal vehicle for... to disseminate these best practices and positively influence healthcare systems across borders. national.

The integration between precise surgical technique, intensive clinical support, and management. Long-term strategies constitute the new paradigm needed to confront the "tsunami." "Silver" in geriatric trauma. It's not just about operating, but about managing biology and biography. of the patient. The relevance of this study lies in the systematization of a holistic approach and longitudinal, which views the elderly not as a problem to be solved, but as an individual. a complex that deserves the best science and management available to restore your health and autonomy.

Ultimately, medicine and management meet in the supreme purpose of serving... life. Whether on the asphalt with the ambulance, in the operating room under the spotlight, or in the therapeutic residence, The mission remains the same: to care with technical excellence, scientific rigor, and profound humanity. This This article reinforces the view that the response to the challenges of population aging involves... necessarily through innovation in care models and the enhancement of health management as a therapeutic tool as essential as the scalpel. The dissemination of this knowledge This in-depth technical course aims to empower surgeons, intensivists, and managers to competently and effectively address... Compassion addresses the complexity of trauma in the elderly, ensuring that the longevity achieved by May society be accompanied by quality and dignity in healthcare.

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