



Legacy Emanuel Verified Level I Shock Trauma Center and
Emergency Department

Organized Approach to Trauma and Emergency
Care in a Verified Level I Shock Trauma Center

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I. WELCOME

Welcome to the Legacy Emanuel Verified Level I Shock Trauma Center and Emergency Department at Legacy Emanuel Hospital, Portland, OR. Our Verified Level I Shock Trauma service has been a formally organized service since 1980. Since that time, hundreds of surgeons, residents, physician assistants, and nurses have rotated throughout the Trauma Center and Emergency Department.

Trauma is a major national healthcare concern. To help advance the care of injured people, the American College of Surgeons Committee on Trauma established a trauma/consultation program in 1987. The program's goal was to assist hospitals in improving care for injured patients and verify that high standards are maintained at their institutions. The American College of Surgeons Committee on Trauma instituted a series of criteria published in a reference guide, "Resources for Optimal Care of the Injured Patient." Verification for the American College of Surgeons Committee on Trauma has become recognized both in the medical and lay communities as a standard of excellence. Designation is a careful process that is coordinated through the State's Department of Health and Human Services Bureau.

A significant number of scientific articles have been reported on the favorable influence of the institutional trauma center verification program on saving patient's lives.¹ These articles reported positive quantitative and qualitative changes in both trauma patient care and institutional pride. The American College of Surgeons Committee on Trauma verification process is not an isolated event in the lifetime of the trauma program at Legacy Emanuel Hospital. Reverification is required every three years.

We are dedicated to saving the lives of all of our patients and ensuring that each patient receives proper rehabilitation so that they can continue to make our country and world a better place to be. To find more information about the verification process, please check the website of The American College of Surgeons at www.facs.org.

II. MILESTONES

During the past 30 years, our Trauma and Emergency Department have been team players making landmark changes in Trauma Care and Emergency Medicine. We have improved health care, saved lives, and have become the model for excellence that has been represented throughout the State of Oregon and as well as our country.

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| 1985 | Mobile Surgical Transport was developed to bring the trauma team and surgical resources to an unstable patient at a referring hospital. |
| 1986 | Joanne Fairchild, Michelle Haun-Hood and Andrew Burnett developed Trauma Nurses Talk Tough, a prevention program given by trauma nurses to School children. Today this program is featured in grade schools and high schools nationwide. |
| 1988 | Legacy Emanuel Hospital completed a \$25 million renovation of the West Wing, including the Emergency Department, surgical suites and intensive care unit. The unique floor plan features the "Corridor of Life"-a continuous hallway with trauma resuscitation areas, CAT scan/radiology, operating suite, and ICU radiology all interconnected to facilitate resuscitation and diagnostic workup |
| 1988 | Legacy Emanuel Hospital was designated a Level I trauma hospital by the State of Oregon, one of two in its newly established, regionalized trauma system. Emanuel's program features full-time trauma surgeons and a Chemical Dependency Nurse Program (now called TRAC, the program was developed in 1988 and formally joined Trauma Services in 1996.) |
| 1998 | The 10-year anniversary of the creation of Legacy Trauma Services is celebrated, including a tribute to Dr. William B. Long, III. |
| 1999 | Legacy Trauma Services is featured in two episodes of Trauma Life in the ER- on The Learning Channel |
| 2001 | Under the leadership of Dr. William B Long, III and Dr. Richard F. Edlich, Legacy Healthcare System banned the use of the harmful cornstarch powder in its examination and surgical gloves. |
| 2002 | The Trauma Physician Assistant role was created to offset the newly instituted ACGME resident work hours rulings, as well as to enhance continuity of care |
| 2003 | Legacy Shock Trauma Center at Legacy Emanuel Hospital in Portland, OR received verification by the American College of Surgeons as a Verified Level I Shock Trauma Center. |
| 2006 | Governor Christine Gregoire enacted Legislation that requires mechanical lift systems to be used in all hospitals in the State of Washington. After passage of this legislation, Legacy Healthcare System installs patient lift systems in all of its hospitals in Washington and Oregon. |
| 2006 | Dr. Richard F. Edlich was the recipient of the Distinguished Alumni Award from the University of Minnesota Healthcare System ⁶ for his development of emergency medical systems in our country, the Northfork Research Park in Charlottesville, VA, and the first IS-bed bum center at the University of Virginia Health Science, Charlottesville, VA. |
| 2007 | Dr. William B. Long, III and Dr. Robert Zura, Assistant Professor of Orthopedic Surgery at Duke Medical Center, Durham, NC completed a poster that outlines |

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| | the use of the double-glove hole indication system used in surgery that prevents the spread of deadly blood-borne viral infection from the patient to the operating room staff. Framed posters were present at the Shock Trauma Center as well as many other hospitals throughout the world. |
| 2007 | Dr. R. Bryan Bell, Dr. Timothy Osborn, Dr. Eric I. Dierks, Dr. Bryce E. Potter, and Dr. William B. Long, III were awarded the Oral and Maxillofacial Surgery Foundation Daniel M. Laskin Award for the most outstanding article for "Management of Penetrating Neck Injuries: A New Paradigm for Civilian Trauma." J Oral Maxillofac Surg. 2007; 65:691-705. This article documented that computed tomographic and geography dramatically altered the management of patients with penetrating neck injuries. |
| 2008 | Dr. Richard F. Edlich, Dr. William B. Long, III, Dr. K. Dean Gubler, Margot E. Chase, Allyson L. Fisher, Catherine L. Cross, and six other leaders in healthcare co-authored a CitizenOs Petition to the United States Food and Drug Administration to ban the use of cornstarch powder on examination and surgical gloves. With the passage of this CitizenOs Petition, Germany, the United Kingdom, and the United States will be the three countries in the world that have banned the dangerous cornstarch powder on medical gloves. |
| 2008 | On September 12th, the 20th Anniversary of the Oregon Trauma System was celebrated in Portland, OR by gifted trauma surgeons and their staff at a meeting. |
| 2008 | On October 27th, Dr. Richard F. Edlich received the James D. Mills Award on the 40th anniversary of the American College of Emergency Physicians for his development of emergency medical systems in our country as well as a trauma system in the Commonwealth of Virginia with the guidance and advice of his mentor, Dr. R Adams Cowley, Baltimore, MD. |

III. Unique Floor Plan

Legacy Verified Level I Shock Trauma Center is recognized for its unique physical layout, quality of patient care, and the dedication of its staff.

The architectural design of the Legacy Verified Shock Trauma Center and Emergency Department is modeled after the R Adams Cowley Shock Trauma Center in Baltimore, MD (Fig. 1).¹ Dr. R Adams Cowley was the founder of the first Shock Trauma Center in our Country. Unfortunately many trauma surgeons in our country have never visited his landmark program that is specifically designed to save the lives of the patients in the "Golden Hour."



Figure 1: R Adams Cowley Shock Trauma Center

Dr. R Adams Cowley served as the mentor for Dr. William B. Long III, who was guided by Dr. Cowley to save the lives of trauma patients within the "Golden Hour."

The floor plan has surgical and critical care areas that feature the "Corridor of Life," a unique floor plan to facilitate resuscitation of the critically injured trauma patient (Fig. 2). There are five resuscitation bays and five operating suites centrally located in the Emergency Department/Trauma Unit with full radiographic services, including a dedicated highspeed spiral CT scanner. West Wing ICU and the Trauma Recovery and Acute Care Unit (TRACU) are directly adjacent. This design provides efficient use of resources, facilitates immediate surgical management from the Emergency Department, and minimizes patient transport. There is one other unique feature of the five resuscitation bays. Each of these resuscitation rooms has overhead Guldman ceiling lifts that allow the trauma patient to be transferred from the bed to a stretcher without the lifting assistance of the trauma surgeon, residents, physician assistants, or nurses, markedly reducing the frequency of back injuries to the patient and healthcare workers.

Legacy Healthcare System is the only healthcare system in the State of Oregon that requires the use of ceiling lifts in all of its hospitals as well as its hospice, dramatically reducing the frequency of back injuries to patients and the healthcare team. The design of the Legacy Verified Level I Shock Trauma Center is to facilitate transfer of the seriously ill or injured patient to the operating room within the "Golden Hour."

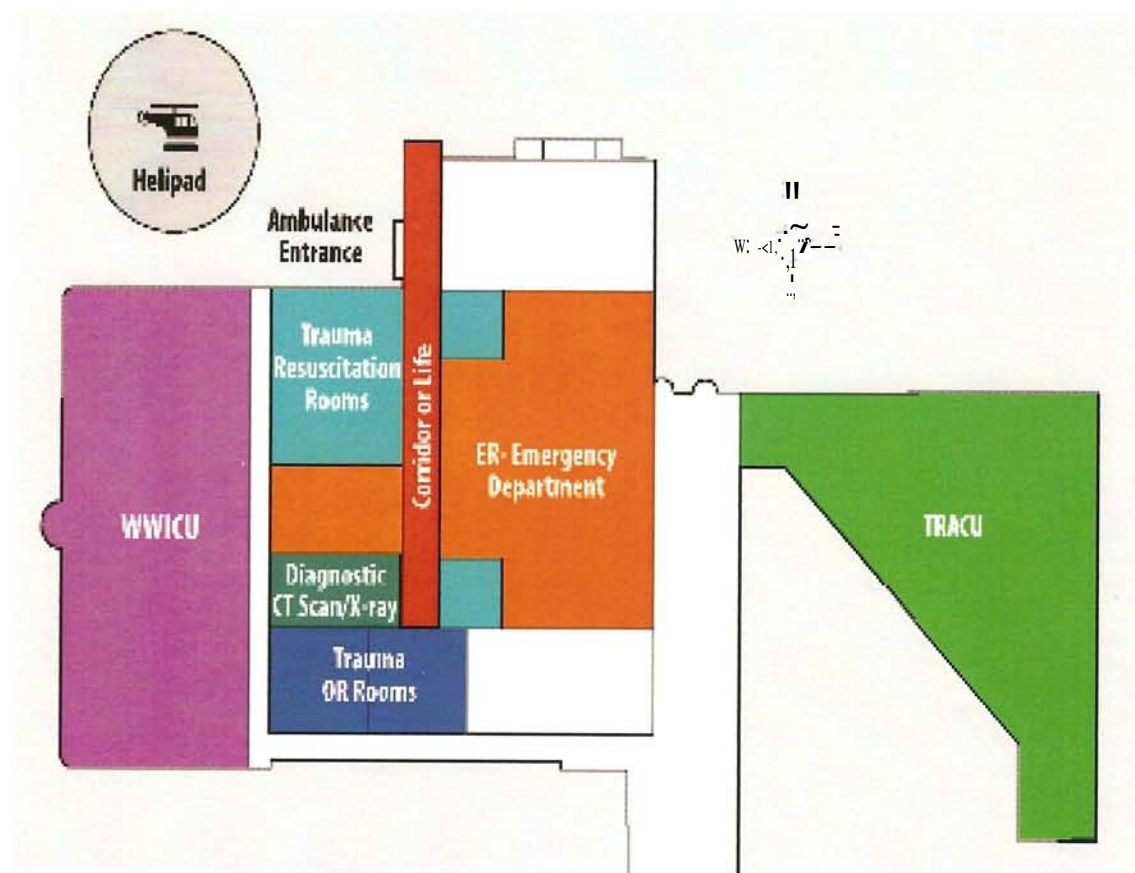


Figure 2: Unique Trauma Floor Plan

Dr. William B. Long, III and Dr. Richard F. Edlich, Director of Trauma Prevention, Education, and Research at Legacy Shock Trauma Center, teamed up with other committed physicians and nurses in the Pacific Northwest to convince the Government of Washington to co-sponsor and enact legislation that requires mechanical lift systems in all hospitals in the State of Washington. It is indeed unfortunate that this legislation was not expanded to nursing homes and hospices in Washington. Because Legacy Healthcare System has one hospital in Washington, its administration decided to have lift systems throughout the Legacy Healthcare System in Oregon, including its hospice (Fig. 3). This was a landmark decision because Washington remains the only State in the United States to require lift systems in all hospital facilities, thereby preventing serious back injuries to the patients and healthcare workers.²



Figure 3: Guldman Overhead Patient Lift System

We encourage the family members as well as discharged patients treated in Legacy Verified Level I Shock Trauma Center to visit the "Hall of Hope." This corridor is accessible to wheelchairs so that all individuals can enjoy the framed prints of the patients and their family members whose lives were saved at our Shock Trauma Center. In addition, we have framed copies of newspaper articles of celebrated members of our team who have saved the lives of the sick and injured, bringing hope to many who have lost hope. This is our Quest!

IV. An Organized Approach to Trauma and Emergency Care

In an effort to provide an organized approach in emergency and trauma care, we have been strong supporters of the new architectural design of the Legacy Emanuel Verified Level I Shock Trauma Center in Portland, Oregon. Our Organized approach in our Level I Shock Trauma Center and Emergency Department has the following ten components: (1) Two landing pads for the Life Flight Helicopter Air Transport System (Fig. 4 and 5).



Figure 4: Ground Level Helicopter Pad for Life Flight



Figure 5: Roof Top Helicopter Pad for Life Flight

(2) Trained paramedics at the scene of the accident as well as on the helicopter, who will stabilize the patients in route to the Shock Trauma Center and Emergency Department (Fig. 6).



Figure 6: Trained Paramedics and Life Flight Crew

(3) Trained trauma nurses and trauma technicians to transfer the patient from the helicopter by stretcher to the resuscitation area; if there is a special complication, such as an airway problem, the anesthesiologist and or trauma surgeon may meet the helicopter on the roof as well. (4) Trauma surgeons, board-certified in surgery, with a certificate of added qualification in surgical critical care, to treat the critically ill trauma patients in the resuscitation area. (5) Five unique resuscitation bays designed for ventilator support, intravenous fluid resuscitation, physical examination, and preoperative treatment of life threatening injuries before transfer to one of five adjacent OR suites. All resuscitation bays have overhead lift systems for patient and healthcare worker safety (Fig. 7).



Figure 7: Unique Resuscitation Bay

(6) A CT scan and portable X-ray units in the admission area that aid in the diagnosis of the injury (Fig. 8).

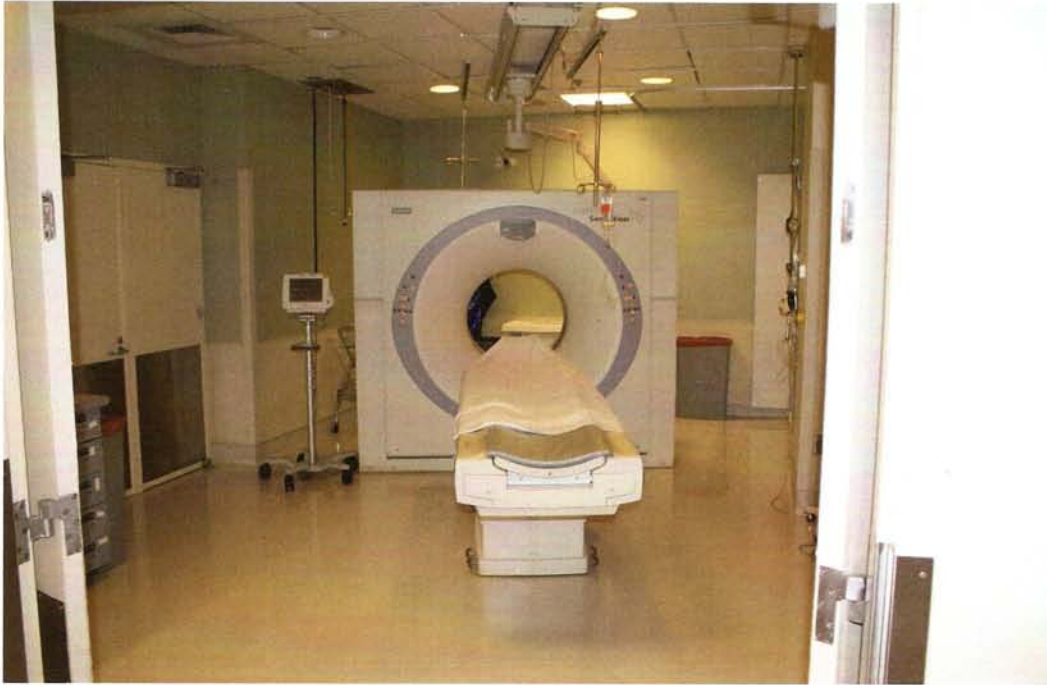


Figure 8: CT Scan Adjacent to OR Suite

(7) Operating rooms adjacent to the admission area for repair of serious traumatic injuries or illnesses (Fig. 9).



Figure 9: Operating Room Adjacent to Resuscitation Bays

(8) A surgical intensive unit to care for the trauma patient; (9) A team of specialty physicians trained in a wide variety of specialties who work as a multidisciplinary unit caring for the hospitalized patient; and (10) An ambulatory outpatient unit that allows the patient to be followed in the center after discharge.

Our team approach to patient care has promoted medical and surgical advances that are being replicated throughout the country. Together Dr. Robert Visser, Director of the Department of the Emergency Department, and Dr. William B. Long III have tried to implement the use of emergency medical examination gloves that have a glove hole leakage rate of 1% (Fig. 10). The Food and Drug Administration requires a glove hole leakage rate for examination gloves of 4%, an invitation to spread deadly blood borne viral infections.³ Another unique accomplishment has been the use of a new Biogel double glove hole indication systems by all operating personnel. These gloves have a unique feature in that they can detect holes in the outer glove of the double glove hole indication system. When a hole is detected in the outer glove, the double hole indication system is removed and replaced with a new double hole indication system. Realizing the need to utilize this system in all operating rooms in our country, Dr. William B. Long III and Dr. Robert Zura, assistant professor of orthopedic surgery, Durham Medical School, Durham, NC, teamed up to devise this poster that is being used in operating rooms throughout our country outlining the guidelines of the use for this double hole indication system (Fig. 11).⁴

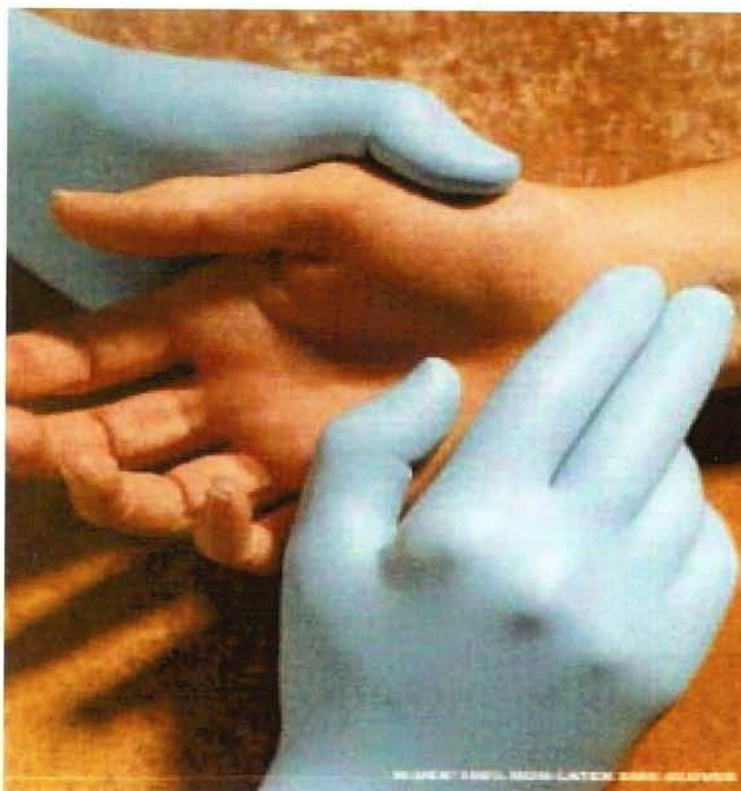


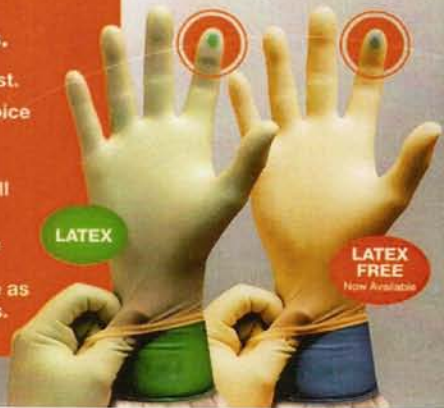
Figure 10: Emergency Medical Examination Gloves

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Invented by: Dr. William B. Long III, Professor and Medical Director of Trauma Services, U.S.F. Agency Trauma Center, Portland, OR, and Robert D. Zurek, MD, Assistant Professor of Trauma Orthopedic Surgery, Duke University Medical Center, Durham, NC. Biogel, Biogel-Ind, Biogel-Indicator, Biogel-Indicator™, Green Indicator™, Latex, Latex-free, and Biogel are registered trademarks of Medtronic Group of companies. Distributed by Medtronic Health-Care US, LLC, Watrous, Georgia 30092. © 2007 Medtronic Health-Care US, LLC. All rights reserved. LIT 1 0734

Figure 11: Double Surgical Glove Indication System Poster

When patients are transported on a backboard, our teams of gifted emergency medical technicians transport all of the patients on a Back Raft system placed carefully above the backboard to prevent the development of pressure ulcers (Fig. 12).



Figure 12: Back Raft System for Back Boards to Prevent Pressure Ulcers

The floor plan has surgical and critical care units that feature the "Corridor of Life," a unique floor plan that facilitates resuscitation of critically injured patients. The design of the trauma and emergency medical resuscitation bays at Legacy Shock Trauma Center were formulated by the gifted head of trauma surgery, William B. Long III (Fig. 13).



Figure 13: Transfer of Patient on a Stretcher through the Corridor of Life

There are five trauma resuscitation rooms and four operating suites centrally located in the Emergency Department/Trauma Unit with full radiographic services, including a dedicated high speed spiral CT scanner. West Wing ICU and the Trauma Recovery and Acute Care Unit (TRACU) are directly adjacent. This design provides efficient use of resources, facilitates immediate surgical management from the Emergency Department, and minimizes patient transport. There is one unique feature of the five resuscitation rooms. Each of these resuscitation rooms has overhead Guldman ceiling lifts (fig. 3) that allow the trauma patient to be transferred from the bed to a stretcher without lifting assistance of the trauma surgeon, residents, physicians assistants, or nurses, markedly reducing the frequency of back injuries to the patient and healthcare workers. Legacy Healthcare System is the only healthcare system in Oregon that requires the use of ceiling lifts. The design of the Legacy Verified Level I Shock Trauma Center and Emergency Department is to facilitate transfer of the seriously ill or injured patient to the operating room within the "Golden Hour."

Patients requiring intensive care are admitted to either the adjacent West Wing ICU or the second floor ICU-East. There are a total of 25 ICU beds, 14 in West Wing ICU and 11 in ICU-East. These units specialize in critical care for trauma and surgical patients. Nursing staff is specially trained in trauma, neurosurgical, and cardiac critical care.

TRACU was designed to centralize all trauma patients. The unit has a 36 bed step-down unit that is a key component of the trauma program. The RN staff predominantly cares for a variety of complex patients, which include neurological, surgical, orthopedic and trauma patients. The unit is capable of providing care for complex patients with issues such as portable ventilator management, quadriplegia, paraplegia, and head injuries.

As Dr. Long and Dr. Edlich reflect on this exciting adventure with Dr. Visser in providing an organized approach to Trauma and Emergency Medical Care, we have prepared a gift for the reader, a Surgical Knot Tying Manual. The front page of the manual is depicted below (Fig. 14). In efforts to express our thanks for reading this manual, we will send to each of the readers a copy of the Surgical Knot Tying manual. Our knot tying manual will provide new insights in how our team of health care workers can provide the best care in saving lives.⁵



Figure 14: Surgical Knot Tying Manual

**To receive a free copy of the Surgical Knot Tying Manual
please contact Dr. Richard F. Edlich at
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V. References

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