# Dedication

This report is dedicated to the outstanding members of Oregon's prehospital and trauma care communities, without whom the achievements described here would not have been possible.

Special appreciation is extended to the hospitals participating in the Oregon Trauma System, the members of the State Trauma Advisory Board (STAB), the Area Trauma Advisory Boards (ATABs), State Emergency Medical Services Committee (SEMSC), State Emergency Medical Services for Children Advisory Committee, and the various county EMS planning and advisory boards, whose service to the emergency medical system has been invaluable.
Included in this appreciation is recognition of William Long M.D. for his outstanding leadership, dedication and service to trauma care, including his years of service as the STAB chairperson.

All Oregonians owe a debt of gratitude to these dedicated professionals and zealous advocates for excellence in trauma care.

## Figure 1: Trauma Registry Patients
## 1992 – 2005

## N = 99,662

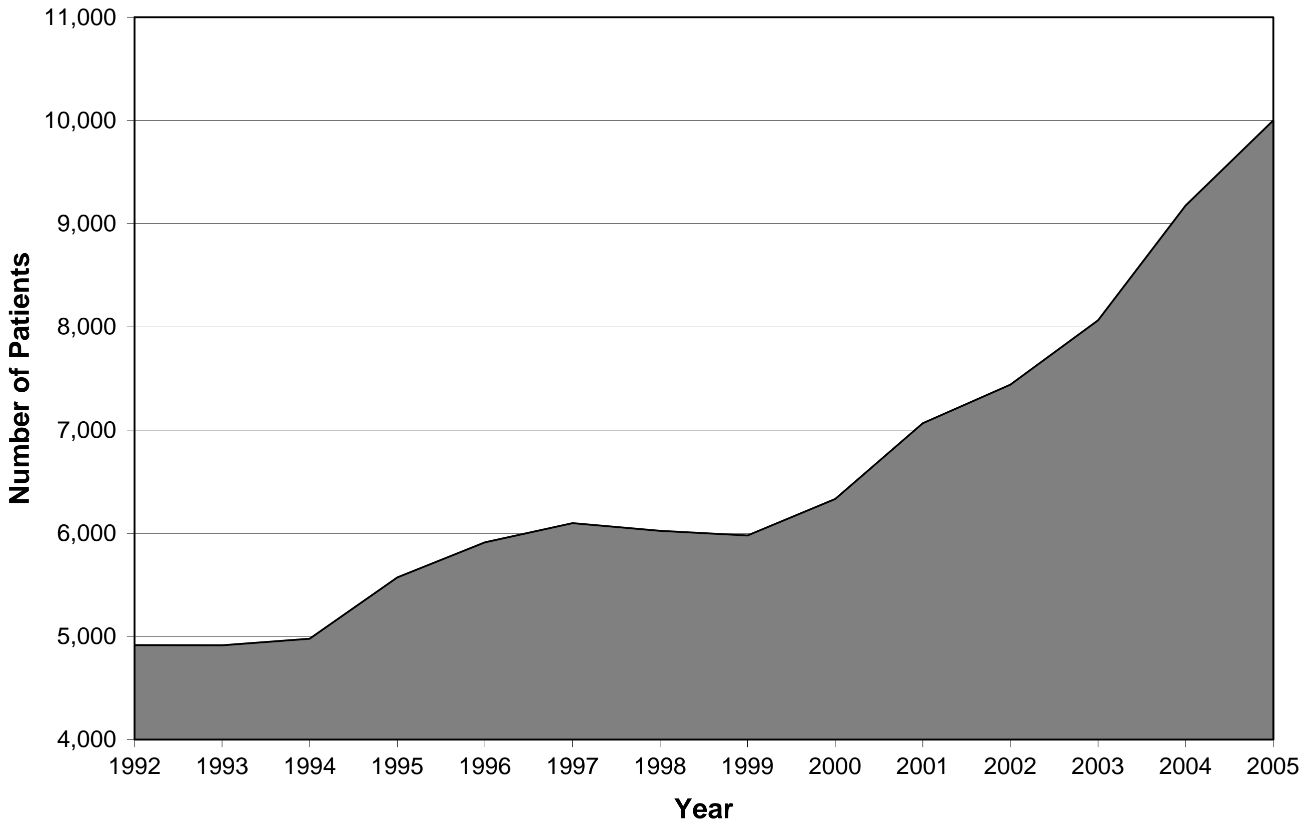


Figure 1 presents the cumulative trauma patient volume over the 14-year history of the Oregon Trauma Registry. Compared to 1992, the annual trauma patient volume in 2005 has doubled.

## EXECUTIVE SUMMARY

This report summarizes the events that led to the development of the Oregon Trauma System, and the components that characterize it today. Oregon Trauma Registry data are used to describe Oregon's trauma system, it's patient population, and to analyze whether changes in practice and patient outcome have occurred over the past several years.

- There are 49 acute care facilities participating in the Oregon Trauma System: forty-four in Oregon, four in Washington, and one in California.
- Motor vehicle crashes accounted for nearly half of all patients reported to the Oregon Trauma Registry.
- Eighty-two percent of all trauma registry patient deaths occurred after motor vehicle crashes (40%), falls (32%), and firearm incidents (11%).
- Of the patients tested for blood alcohol, 37.5% tested positive: 11.7% with a level of less than .08 gm/100cc, and 25.8% above the legal limit of .08 gm/100cc.
- Of all patients transported from the injury scene, 48% were taken directly to a Level I trauma facility, 22.3% to a Level II, 21.5% to a Level III, and 8.2% to a Level IV facility.
- July and August are the months with the highest trauma volume across the state.
- Sixty-eight percent of patients identified for trauma system care required hospitalization; 10.6% underwent immediate surgery; and 20.1% were admitted to an intensive care unit from the emergency department.
- 17,163 operative procedures were performed on injured patients.
- While adult trauma injuries have been rising, the number of pediatric trauma injuries has remained fairly steady over the past ten years.
- The most frequent causes of pediatric trauma are motor vehicle crashes (39%) and falls (18%).
- The geriatric age group, although small in number, evidences a greater incidence of severe traumatic injury than other age groups.
- Falls (43.3%) and motor vehicle crashes (40.2%) are the most common causes of injury for geriatric trauma patients.

# INTRODUCTION

This report is intended for use by health professionals as an adjunct to public education; for local and state leaders working to reduce the impact of injury in individual regions and throughout the state; and for interested individuals wishing to learn more about one of the most serious public health problems in the State of Oregon. The first Oregon Trauma System Biennial Report, highlighting prehospital care, trauma hospital care, and specific population groups at high risk for injury, was published in 1991-1992.

In 2003-2004, traumatic injuries from both intentional and unintentional means accounted for the deaths of 3,220 Oregonians. Approximately ten times the number of people killed each year in Oregon is seriously injured enough to require hospitalization; many are permanently disabled. In 2003, the National Safety Council estimated the cost of hospitalization for injured patients in Oregon at $2,100 per capita - an estimated 7.4 billion dollars.

A systematic approach to trauma care provides the best means to protect the public from premature death and prolonged disability. A trauma care system reduces death and disability by identifying the causes of injury and promoting activities to prevent injury from occurring. A system also assures that the required emergency medical resources are available, that the necessary infrastructure is in place to deliver the “right” patient to the “right” hospital, and that the hospital coordinates the resources necessary to return the patient to the highest level of function possible.

Oregon is recognized throughout the nation as a leader in trauma systems development. The second state to develop any sort of statewide trauma system (Maryland is recognized as the first); Oregon was the first state to develop a system which included small rural hospitals as well as large urban facilities. Today, this organized system continues to operate with 49 voluntarily participating hospitals, coordinated by state and regional boards that plan, implement, and monitor the system’s activities in collaboration with the state’s Department of Human Services.

## OREGON TRAUMA REGISTRY

The 2004-2005 Biennial Trauma Report describes the trauma patient population treated in the Oregon Trauma System in the years 2004 and 2005. The data was compiled from forty-six designated trauma care facilities that submitted specific information about the causes of injury, emergency response, hospital management, and outcome of the injured patients meeting trauma system entry criteria.

Oregon trauma system hospitals are required to report specific data to the Oregon Trauma Registry (OTR) within 90 days of death or discharge of a trauma system patient. Facilities submit data either electronically or hard copy to the Department of Human Services. Each facility retains a copy of the data submitted for their own use in quality improvement and program management activities.

The OTR compiles data for patients who meet criteria for trauma system entry in one of four ways:

Field Entry: patients who are entered into the Trauma System by field personnel based on identified prehospital triage criteria.

Emergency Department (ED) Entry: any patient for whom the trauma team is activated at the receiving hospital or any patient whose injuries require a surgeon's evaluation and treatment.

Entry at Transfer: any patient transferred to a trauma center for trauma care not available at their facility; patients who met triage criteria or interhospital transfer guidelines at the transferring facility.

Retrospective Entry: patients who did not receive a trauma team response but retrospectively, at either the transferring or receiving facility, have either an Injury Severity Score greater than 8; death; a major operative procedure to head, chest or abdomen within 6 hours of hospital arrival; or admission to the Intensive Care Unit within 24 hours of arrival.

Also included is any patient previously treated within the trauma system (at any trauma hospital) that required unplanned readmission for treatment of injuries or complications resulting from the initial injury.

In the 2004-2005 Biennial Trauma Report, the following parameters apply:

- The population includes patients meeting Oregon Trauma Registry entry criteria in the field or at the hospital. Patients not meeting criteria are not included. Conclusions from this report are not appropriate to extrapolate to all injured patients.
- The population is confined to trauma patients who arrive for care at an Oregon-designated trauma center. Injured patients who are not transported to the hospital, including those who are declared dead at the injury site, or who refuse or do not seek hospital care, are not included.

- The population includes both Oregon residents and non-residents who were treated in an Oregon-designated trauma center.
- Injured persons receiving care at a non-trauma hospital in Oregon are not included.
- While 50 hospitals participate in the Oregon Trauma System, four hospitals that are located in Washington and Idaho do not submit patient data to the Oregon Trauma Registry, resulting in data from 46 hospitals contributing to this report.

The following statements apply to data analysis found in this report:

- Patient records with missing variable data are not included in the tabulation when that particular variable is being examined. This phenomenon may result in a variation in total patient counts depending on the variables being examined in each chart.
- Major Trauma is defined as injuries that result in death, intensive care admission, a major operation of the head, chest or abdomen, a hospital stay of three or more days, or an Injury Severity Score (ISS) of greater than 15.
- Minor Trauma is defined as patient who is entered into the trauma system, has an ISS of less than or equal to 15, and survives to hospital discharge.
- Pediatric patients are ages 0 to and including 18 years of age.
- Geriatric patients are age 55 years or older.
- Response Time is calculated from dispatch time to the time the transporting EMS unit arrives at the scene.
- Scene Time is the calculated time from the time the transporting EMS unit arrives at the scene to the time of their departure with the patient.
- Transport Time is calculated from the time of scene departure to the time of arrival at the trauma center.

Additional data presented in this report was obtained from the Oregon Department of Human Services, The Office for Oregon Health Plan Policy & Research; the Department of Human Services, Center for Disease Prevention and Epidemiology, Health Statistics Section; the Oregon Department of Transportation, Transportation Safety Division; and the Oregon State Police. We thank them for their contributions to this Oregon Trauma Registry report.

## MEMBERS OF THE OREGON STATE ADVISORY BOARDS

The following are lists of the talented professionals and citizens who served the state of Oregon on trauma-related advisory boards giving of their time and knowledge and providing invaluable guidance for the Oregon Trauma System. We thank them for their many contributions to the Department of Human Services, and their efforts on behalf of their fellow Oregonians.

### MEMBERS OF THE STATE TRAUMA ADVISORY BOARD

Robert Read, M.D., Chairman
Surgeon, Good Samaritan Regional Medical Center, Corvallis, OR
ATAB 2

Mary Barnum, R.N.
Emergency Nurse
Medford, OR
ATAB 5

Will Bean, R.N.
Trauma Nurse Coordinator
Madras, OR
ATAB 7

Susan Benedict, R.N.
Emergency Nurse
The Dalles, OR
ATAB 6

Merlin Curry, EMT-P
Chair, EMSC Advisory Comm.
Oregon City, OR
ATAB 1

Dilantha Ellegala, M.D.
Neurosurgeon
Portland, OR
ATAB 1

Brian Graunke, EMT-P
Operating Supervisor
Medford, OR
ATAB 5

Andrea Halliday, M.D.
Neurosurgeon
Eugene, OR
ATAB 3

Daniel Hamre, M.D.
Surgeon
La Grande, OR
ATAB 9

Christine Heyen
Representative of the Public
Albany, OR
ATAB 2

Jon Jui, M.D., F.A.C.E.P.
Chair, State EMS Committee
Portland, OR
ATAB 1

Christoph Kaufmann, M.D.
Surgeon
Portland, OR
ATAB 1

Kerry Keeler, M.D.
Anesthesiologist
Portland, OR
ATAB 1

Nathan Kemalyan, M.D.
Burn Center Liason
Portland, OR
ATAB 1

Susan Leathers, R.N., B.S.N.
Border Representative
Dixie, WA
ATAB 9

Paul LeSage, EMT-P
Battalion Chief
Aloha, OR
ATAB 1

Ritu Sahni, M.D.
Emergency Physician
Portland, OR
ATAB 1

Martin Schreiber, M.D.
Surgeon
Portland, OR
ATAB 1

Carla Smith, M.D.
Emergency Physician
Bend, OR
ATAB 7

Richard Urbanski, M.D.
Emergency Physician
Medford, OR
ATAB 5

Kevin Van Syoc, EMT-P
Ambulance Operator
Reedsport, OR
ATAB 3

## CHAIRS OF THE AREA TRAUMA ADVISORY BOARDS

ATAB 1 (Co-Chairs)

Mohamad Daya, M.D.
Emergency Physician
Oregon Heath and Science University
Portland, OR

Ameen Ramzy, M.D.
Trauma Surgeon
Legacy Emanuel Hospital and Health Center
Portland, OR

ATAB 2

Shawn Baird, EMT-P
Woodburn Ambulance Service
Woodburn, OR

ATAB 3

David DeHaas, M.D.
General Surgeon
Sacred Heart Medical Center
Eugene, OR

ATAB 5

Mary Barnum, R.N.
Trauma Coordinator
Rogue Valley Medical Center
Medford, OR

ATAB 6 (Co-chairs)

Jane Burke, R.N.
Emergency Department Manager
Hood River Memorial Hospital
Hood River, OR

Pete Kingsley, EMT-P
EMS Coordinator
Mid-Columbia Medical Center
The Dalles, OR

ATAB 7 (Co-Chairs)

Mathew Eschelbach, D.O.
Emergency Physician
Central Oregon Community Hospital
Redmond, OR

Will Bean, R.N.
Trauma Coordinator
Mountain View Hospital
Madras, OR

ATAB 9

Char Hansen, R.N.
Trauma Coordinator
St. Anthony Hospital
Pendleton, OR

## STATE EMERGENCY MEDICAL SERVICES COMMITTEE

Jon Jui, M.D., F.A.C.E.P., Chairman
Oregon Health & Science University, Portland, OR
ATAB 1

Shawn Baird
*Public Ambulance Operator Advisor*
Woodburn, OR
ATAB 2

Erin Burnham, M.D.
*Physician Advisor*
The Dalles, OR
ATAB 6

Denise Giard, EMT-P
*EMT Advisor*
Albany, OR
ATAB 2

Pat Hart, EMT-P
*EMT Advisor*
Hermiston, OR
ATAB 7

Pete Kingsley
*EMT Advisor*
The Dalles, OR
ATAB 6

John Mack
Community College Rep.
Salem, OR
ATAB 2

Greg Marler
Public Ambulance Operator
Roseburg, OR
ATAB 3

Charles McCart, M. D.
*Physician Advisor*
Roseburg, OR
ATAB 3

Helen Miller, M.D.
*Physician Advisor*
Eugene, OR
ATAB 3

Jennifer Mitchke
*EMT Advisor*
Maupin, OR
ATAB 7

William Porter, RN, EMT-P
*Nurse Advisor*
Bend, OR
ATAB 7

Ameen Ramzy, M.D.
Physician Advisor
Portland, OR
ATAB 1

Suzann Schmele, EMT-P
*EMT-Paramedic Advisor*
Portland, OR
ATAB 1

**EMERGENCY MEDICAL SERVICES FOR CHILDREN**
**ADVISORY COMMITTEE**

Merlin Curry, EMT-P, Chairman
EMS Educator, Oregon City, OR
ATAB 1

Allison Leigh Bass-Avery, R.N., EMT-P
Member at Large
Eugene, OR
ATAB 3

Mary Barnum, R.N.
Trauma Coordinator
Medford, OR
ATAB 5

Pam Bessler, R.N., C.E.N.
*Emergency Department Manager*
Dallas, OR
ATAB 6

Jane Burke, R.N., C.E.N.
*Emergency Department Manager*
Hood River, OR
ATAB 6

Gina Craven, R.N.
*Specialty Transport Nurse*
Portland, OR
ATAB 1

Cynthia Cristofani, M.D.
*Pediatric Critical Care*
Portland, OR
ATAB 1

Sandra Dunbrasky, M.D.
*Pediatrician*
Ontario, OR
ATAB 9

Michael Howell
*Family Advocate*
Salem, OR
ATAB 2

Helen Miller, M.D.
*Pediatrician, State EMS Committee*
Eugene, OR
ATAB 3

Steve Myren, EMT-I
*Under Sheriff Morrow County*
Boardman, OR
ATAB 9

Scott Shepherd
Assistant Chief/EMS
Jefferson, OR
ATAB 2

Sharon Stapleton, R.N.
*Injury Prevention Specialist*
Portland, OR
ATAB 1

Robert Walters, B.S., EMT-P
*Jackson County Fire District #3*
Medford, OR
ATAB 5