

Wright State University Boonshoft School of Medicine
Department Annual Report
January 1, 2008 – December 31, 2008

Department: Emergency Medicine

1) Departmental Statement from the Chair - "Highlights of the Year"

As the Department completes its 28th year, we have had several highlights worthy of mention:

- Medical Students – nearly 15% of the 2008 graduating class went into Emergency Medicine. We matched all of the 13 students interested in EM. Four came to WSU.
 - Residents – we had a uniquely successful Match with over 500 applicants. More than half the entering class came from our top 10 choices in the Match. Half the class was women. Half of the civilian residents are WSU grads
 - Faculty – Drs. Glenn Hamilton and Jonathan Singer were named "Heroes of Emergency Medicine" by the American College of Emergency Physicians.
 - Space rebuilding – areas within the Cox Institute have been reassigned, including the resident area, conference room, and the Simulation Center.
 - Programmatic Successes
 - a. The HELP Center continued its successful grants activity with \$300,000 for BDLS/ADLS, \$1.5 M from the Ohio Department of Health for continuation of the surge capacity (MEMS) Program and a \$1.2 M grant from the Dayton Development Coalition for the continued development of the Calamityville Tactical Laboratory. The business plan for the Calamityville Tactical Laboratory was completed with the support of the School of Medicine and an application was completed for the Ohio Research Scholars Program entitled "The Calamityville Fusion Center". This proposal had a \$29.5 M ask with five scholars involved. \$31 M of cost share was generated from 22 partners in academics, Air Force Research Directorates, and commercial partners.
 - b. The Center for Immersion Medicine Education and Research (CIMER) was established by Dr. TenEyck. Over the course of 2008 nearly 1700 simulations were presented to medical students and primarily emergency medicine residents. Plans for continued expansion of our current new space were developed during 2008 and will be implemented in 2009.
- 2) Clinical Activities: We remain clinically active in each of the 5 ED's in the city (MVH, KMC, GSH, CMC, WPMC). Collectively these sites care for over 300,000 emergency visits. We also remain the major source of physician care in the GMH/ICCU.
- 3) Educational Activities:
- a) Undergraduate and graduate students
Dr. Olson currently has three Masters students working in Neuroscience within his Laboratory.
 - b) Medical students
EMD 891 – Emergency Medicine. Required 4-week clerkship for MS-4 students. The clerkship runs monthly from August through May. In 2007-08 there were 95 students, including 6 visiting students. In 2008-09, there will be approximately 97 students, including 4 visiting students.

EMD 801 – Critical Care 4-week elective. Up to two students a month may participate. In 2007-08 there were 19 students, and in 2008-09 there will be approximately 15 students completing this elective.

EMD 601 – Biennium Elective. In 2007-08 four Yr2 students participated in the October session. In 2008-09 four Yr2 students participated in the October session, and we anticipate four.

SME 801 – Global Health Initiative Swaziland Experience. The 4-week experience under directorship of Roger Pacholka, M.D. has 7 students signed up to participate in June/July 2009. Seven students in 2007-08 and six students in 08-09 completed an emergency medicine elective as visiting students at other institutions. Approximately 3 students initiated their own student elective under the sponsorship of our department from 2008-09.

BIENNIUM I – Cardiovascular, Physical Diagnosis, and Principles of Disease Faculty and residents participated in various capacities in support of the Emergency Medicine Interest Group.

c) Residents

- Orientation – Incoming residents again participated in an orientation month in July. New interns do a reduced number of clinical ED shifts and receive intense didactics on Resuscitation, Airway Management, and the Approach to the ED patient with various chief complaints. In addition, multiple laboratory skills stations are utilized, including: Airway, Venous access (peripheral, central, and ultrasound guided). Not only has this proved to better prepare new residents for their initial clinical month but has enabled a concentrated didactic and lab training continuity, more intense interaction with faculty and peers, and limits interruption in clinical training for these events throughout their 3 year training.
- Curriculum – several aspects of the didactic curriculum were overhauled, including:
 - Didactics are now keyed to the Model of Clinical Practice of Emergency Medicine
 - Ultrasound curriculum –
 - new 2 week ultrasound rotation established at KMC ED
 - Improved ultrasound didactics with the addition of Dr. Dagrossa
 - Simulation – residents now perform simulation quarterly
- Military Match – at the request of the USAF, we accepted an additional resident (6) into this year's (2009) class
- Graduation – successfully graduated 13 residents, 7 of whom stayed locally. We have 295 graduates.

d) Fellows

Sports Medicine – Scott Ahrenholz, MD (2007-2008)
Sports Medicine – Charles Flores, MD (2008-2009)
Faculty Development – Corey Heitz, MD (2008-2009)

- e) CME – Faculty participate in several national programs annually. They also teach in the Ohio Board Review Course through ACEP. We had five Visiting Professorships this year. We held a popular Clinical Anatomy & Procedures Course (nearly 500 pre-hospital care participants) and a Wilderness Medicine Course in since 2006. This now named Adventure Summit integrates our faculty and residents with University efforts where we provide lectures

and break-out group sessions. This event is still the largest of its kind in the Midwest as far as participation.

f) Description of programs/divisions within the department.

1. HELP Homeland Emergency Learning and Preparedness (HELP) Center. This was renamed the national Center for Medical Readiness in October 2008. This recently recognized Center of Excellence in the University has the main focus of the theme of civil medical readiness. This theme is made up of four components: Population Risk Assessment, Human Access Care and Evacuation, Dynamic Medical Systems (surge capacity solutions) and Recovery. Its Director is Mark Gebhart, MD
2. Sports Medicine – we have an active Sports Medicine Fellowship and integration of Sports Medicine into the residency program. Brian Springer, MD is the Sports Medicine Associate Director.
3. Simulation – this is a rapidly growing Division within the department directed by Ray TenEyck MD. Recent additions include Melissa Schloneger in a ½ time role and a simulation technician. The first phase of plans for expansion are completed and more changes are underway.
4. Tactical Emergency Medicine – this a significant division and activity directed by both James Brown, MD and Brian Springer, MD with involvement by a number of EM residents. We have contractual agreements with SWAT teams in Montgomery, Greene and Warren Counties, and the FBI. We actively integrate interested residents into this program.
5. Geriatrics – this area continues to evolve from the relationship of Dr. Ballester and Dr. Lawhorne, Chair of Geriatrics. They are involved in curriculum design for medical students, geriatric trauma with the MVH Trauma Service, Sepsis topics, and others. They have proposals in to the American Geriatric society to expand geriatric training for EM, Surgery/Trauma, and Family Medicine residents in Dayton, are planning for a Geriatric Fellowship, and eventually will submit a proposal for a Center for Geriatric Trauma Study as a Pepper Foundation Grant. Unfortunately Dr. Ballester is leaving July 2009 and the future of these activities is in question.
6. The Emergency Medicine Research Laboratory maintained funding from the American Heart Association for basic science research on brain edema following injury. A collaborative project was initiated with the Wallace Kettering Neuroscience Institute to develop and evaluate injected nanoparticles for enhancement of MRI. Additional active collaborations are underway with colleagues in Tampa, Florida; Staten Island, New York; San Juan, Puerto Rico; and Prague, Czech Republic. Three Master's students worked with Dr. Olson on their thesis projects. Research from the laboratory resulted in one manuscripts published and one submission (currently in revision). In addition, five abstracts were presented at national and international scientific meetings.

4) List of Faculty

a) Clinical interests

All of the items listed below are in addition to the faculty's primary interest in Emergency Medicine.

Dr. Ballester - Geriatrics (joint appointment in Geriatrics)

Dr. Brown - EMS, Tactical Emergency Medicine

Dr. Fieg - Military Emergency Medicine

Dr. Gebhart - Disaster Preparedness and Medical Readiness
Dr. Hamilton - Disaster Preparedness and Medical Readiness, Internal Medicine (joint appointment)
Dr. Janz - Critical Care, Internal Medicine (joint appointment)
Dr. Olson – Traumatic Brain Injury
Dr. Singer - Pediatrics (joint appointment)
Dr. Springer - Sports Medicine, Tactical Emergency Medicine
Dr. TenEyck - Education and Simulation
Dr. Wightman - Military Medicine, Disaster Preparedness, Tactical Emergency Medicine
Dr. Wright - Wilderness Medicine

b) Research interests

Dr. Ballester: Geriatric Trauma/Infectious Diseases in the Emergency Department
Dr. Brown: Back injury in EMS personnel, Pre-hospital 12 lead ECG, C-spine injury
Dr. Fieg: Toxicology, medicolegal aspects of emergency medicine, wilderness medicine and evidence based medicine
Dr. Gebhart: Civil medical readiness, to apply best practices to a resilient community model and to apply scientific principles to an entirely anecdote-based and non-scientific system of emergency disaster preparedness
Dr. Hamilton: Education Methodology, Curriculum Design, Medical Readiness, Epidemiology of Presenting Signs and Symptoms, Cerebral Resuscitation
Dr. Janz: Circulatory Shock; Respiratory Failure; Septic Shock; Pulmonary Embolism, Venous Thromboembolic Disease
Dr. Olson: Mechanisms of brain edema, cellular volume regulation, membrane channel activation during apoptosis, blood-brain barrier water transport
Dr. Singer: Antibiotic therapy for presumed bacteremia in pediatrics, supervising resident's scholarly works.
Dr. Springer: Cervical spine injury in athletes, exertional rhabdomyolysis, athletic injuries in tactical law enforcement operations, and health maintenance for EMS and law enforcement
Dr. TenEyck: Simulation in medical education, Blood substitutes, Human factors in medical errors, cyanide poisoning
Dr. Wightman: Emergency medicine and disaster medicine education for all healthcare providers regardless of specialty or level of training
Dr. Wright: Wilderness Medicine and Disaster Preparedness

Dr. Ballester:

- 6) a) Publications
i) Chapter

“Substance Abuse and Addictions in Emergency Medicine” Emergency Medicine, 2008 for 2009 release.

- i) Grants

Geriatric Specialty Grant awarded from American Geriatric Society. Two year grant in the amount of \$80,000 for geriatric education in emergency medicine.

Dr. Brown:

- 6) a) Publications
 - i) Papers

Critical Casualty Evacuation from Tactical Settings in Tactical Emergency Medicine. John Wightman, Mark E. Gibbons, Mark E. Gebhart, and James E. Brown. Lippincott Williams and Wilkins. 2008

- i) Poster

Success of Endotracheal Intubation by Novice Users: A Comparison of Glidescope, Airtraq and Macintosh Laryngoscopes @ SAEM Midwest region research Symposium.

- b) Lectures:

AFIT/HELP Center CBRNE Conference: Radiological Injuries

BEEM (Best Evidence in Emergency Medicine Conference: Rational Clinical Exam, BEEM Bits: Procedural Sedation

Dr. Gebhart

- 6) a) Publications
 - i) Papers

Tactical Emergency Medicine: Emerging Technologies for the Tactical Medical Provider in Tactical Emergency Medicine. Stephen Blankenship, Mark E. Gebhart and Jason Pickett. Lippincott Williams and Wilkins. 2008

Critical Casualty Evacuation from Tactical Settings in Tactical Emergency Medicine. John Wightman, Mark E. Gibbons, Mark E. Gebhart, and James E. Brown. Lippincott Williams and Wilkins. 2008

- b) Grants

Ohio Department of Health – National Disaster Life Support training program, \$198,000.00 (2008)

Ohio Department of Development – Calamityville Project, \$1,200,000.00 (2008)

Dr. Hamilton:

- a) Publications
 - i) Book Chapters

Hamilton GC and Janz T, Hemostasis; Anemia, Polycythemia and White Cell disorders. Rosen's 7th Ed., Emergency Medicine: Concepts and Clinical Practice, St. Louis, Mosby Co. 2009.

b) Presentations:

“Academic Niche/Making Yourself Invaluable” and “Faculty Development”, CORD Academic Assembly, New Orleans, LA, February, 2008.

“Faculty Development/Bedside Teaching”, Visiting Professor, St. John's Hospital EM Residency, Detroit, MI, October 2008.

c) Grants:

“ACC Emergency Preparedness”, Ohio Department of Health, Grant 667064, \$3,023,466, 2007-2009, Co-investigators: Mark Gebhart, MD, Glenn C. Hamilton, MD

“Calamityville Campus Project”, Ohio Department of Development, Grant 667106, \$1,200,000, 2007-2009, Co-investigators: Mark Gebhart, MD, Glenn C. Hamilton, MD

“ACC Emergency Preparedness” Ohio Department of Health, Grant 667064, \$1,047,560, 2008-2009 Co-investigators: Mark Gebhart, MD, Glenn C. Hamilton, MD

Primary contact for additional sources of funding for Calamityville Project: State of Ohio Capital Budget, 2009, \$3,000,000; Federal: U.S. Department of Defense, 2009, \$3,000,000.

Dr. Olson:

Publications:

6) a) Publications

i) Abstracts

Olson, James E.; Dines, Megan; Caraman, Elena; Aston, Jill; Ballester, Mike; McCarthy, Mary. Early Brain Edema Predicts Poor Outcome In Head Trauma Patients. Academic Emergency Medicine, 15(5) Supplement 1:S55-S56, 2008.

Chen, Shuzhen; Li, Guangze; Zhang, Wenfeng; Sigmund, Curt D.; Olson, James E.; and Chen, Yanfang. Ischemia-induced brain damage is enhanced in human rennin and angiotensinogen double transgenic mice. 62nd High Blood Pressure Research Conference, American Heart Association Council on the Kidney in Cardiovascular Disease. September, 2008, Atlanta, Georgia. Hypertension, October, 2008.

Aston, Jill; Dines, Megan; Caraman, Elena; Ballester, Michael; McCarthy, Mary; and Olson, James E. Brain edema as a predictor of clinical outcome in traumatic brain injury. *Annals of Emergency Medicine*, 2008.

Li, Guangze; Chen, Shuzhen; Zhang, Wenfen; Sigmund, Curt D.; Chen, Yanfeng; and Olson, James E. Increased brain swelling and cell death following in vitro ischemia in human rennin and angiotensinogen double transgenic mice. 2008 Abstract Viewer and Itinerary Planner. Washington DC: Society for Neuroscience, Program No. 749.9, 2008.

Tucker, Brian C. and Olson, James E. The role of glutamate in hippocampal tissue swelling during periods of oxidative stress. 2008 Abstract Viewer and Itinerary Planner. Washington DC: Society for Neuroscience, Program No. 834.6, 2008.

Wenker, Ian W. and Olson, James E. The role of nucleotide signaling in the regulation of ICl_{swell} in human 1321N1 astrocytoma cells. 2008 Abstract Viewer and Itinerary Planner. Washington DC: Society for Neuroscience, Program No. 534.5, 2008.

ii) Papers

Li, Guangze and Olson, James E. Purinergic activation of anion conductance and osmolyte efflux in cultured rat hippocampal neurons. *American Journal of Physiology (Cell Physiology)*, 295(6):C1550-C1560, 2008.

iii) Other

Science Olympiad Competitors Workshop and Clinic; Director. Wright State University, March 8, 2008.

College of Staten Island, CUNY, Institute for Basic Research, Center for Developmental Neuroscience and Developmental Disabilities, Colloquium Series. "Volume Regulation of Brain Cells." April 28, 2008.

Society for Academic Emergency Medicine, Annual Meeting, Workshop on Grantsmanship May, 2008.

Society for Neuroscience, Annual Meeting, Brain Awareness Campaign Event. "Promoting Neuroscience Education through Science Olympiad." October, 2008.

Olson, James E. and Singer, Jonathan. At the time of my need, father returns the favor. *Academic Emergency Medicine*, 15(1):31, 2008.

Olson, James E. and Singer, Jonathan. Thoughts from my visit to Salvatore Vicario. *Academic Emergency Medicine*, 15(7):648, 2008.

iv) Grants

American Heart Association – Ohio Valley Affiliate Grant-in-aid, 7/1/2006 – 6/30/2008 (Principal Investigator) Title: Mechanisms of Neuronal Volume Regulation during Oxidative Stress.

Emergency Medicine Foundation - Medical Student Grant, 7/1/2008 – 6/30/2009
Mechanisms of Regulation of the Neuronal Taurine Transporter.

Wallace Kettering Neuroscience Institute, Development of nanoparticle MRI contrast agents. 7/1/2008 – 6/30/2010.

Dr. Singer

6) a) Publications

i) Papers

Greene , Harris C, Singer J: Gastrointestinal Decontamination of the Poisoned Patient. *Pediatric Emergency Care*. 24:76-186, 2008.

Tews M, Schlicher, N, Singer J: Evidence-Based Management of Children with Febrile Seizures. *Pediatric Emergency Medicine Reports*. 13:1-12, 2008.

Singer J, Henry S: Upper Airway Obstruction as the Presenting Manifestation of Leukemia. *Pediatric Emergency Care*. 24:310-312, 2008.

Eitter, P, Singer J, Rasmussen J: Case Records of Wright State University: Grunting Respirations. *Pediatric Emergency Care*. 24:385-388, 2008.

Singer J, Walsh P, Harris J: Common ENT Infections. *Pediatric Emergency Medicine Reports*. 13:81-92, 2008.

Kabler H, Syska B, Springer B, Singer J: Ependymoma as a Cause of Low Back Pain in a Young Healthy Athlete. *Pediatric Emergency Care*. 24:685-687, 2008.

ii. Chapters

Tews M, Singer J: Balanoposthitis, *Up To Date*, 2008.

Tews M, Singer J: Paraphimosis, *Up To Date*, 2008.

Singer J: Intussusception, *Clinical Practice of Pediatric Emergency Medicine*, edited by Wolfson et al.

Singer J: Limp, *Clinical Practice of Pediatric Emergency Medicine*, edited by Wolfson et al.

iv. Other

The Jewelry of Instruction. *Academic Emergency Medicine*, 15:135, 2008.

At the Time of My Need, Father Returns the Favor. *Academic Emergency Medicine*, 15:31, 2008.

Double Left Click, Right Click, Drag. Academic Emergency Medicine, expected publication 2008.

Continuous or Interrupted Repair. Academic Emergency Medicine, expected publication 2008.

Thoughts on Visit to Salvatore Vicario, submitted.

Section Editor, Pediatric Surgical Emergencies, Up to Date, 2006-present.

Reviewer, Pediatrics, Pediatric Emergency Care, Annals of Emergency Medicine and Archives of Pediatric and Adolescent Medicine, JAMA, Academic Emergency Medicine, Australasia

Dr. Springer

- 6) a) Publications
 - i) Abstracts

Springer B, "Fitness Training for the Tactical Operator: Sorting Through the Options" *The Tactical Edge* 2009 Winter; 27(1):72-74.

- ii) Papers

Kabler H, Syska B, Springer B, Singer J, "Ependymoma as a Cause of Low Back Pain in a Young, Healthy Athlete" *Pediatric Emergency Care* 2008 Oct;24(10):685-687.

Springer B, Ahrenholz S, "Knee and Ankle Injuries in Children and Adolescents" *Pediatric Emergency Medicine Reports* 2009 Feb;14(2):13-28.

- iii) Chapters/Books

Springer B, Kleiner D, Wightman J, "Medical Support of the Tactical Athlete" in Schwartz R, McManus J, Swienton R (Eds.) *Tactical Emergency Medicine*, Lippincott, Williams & Wilkins 2008.

- iv) Other

Emergency Physicians' Monthly Publications: "Sideline Emergencies: Markers for sudden death in athletes" 2008 April

Dr. Ten Eyck:

Publications:

- 6) a) Publications
 - i) Abstracts

Ten Eyck RP, Tews M, Ballester JM. Abstract Improved Student Satisfaction and Test Performance with a Simulation-Based Emergency Medicine Curriculum. *Ann Emerg Med.* 2008 *Ann Emerg Med.* 2008 52(4):S49.

Schlicher NR, Ten Eyck RP. Abstract: Innovation in Emergency Medicine Education: Layered Simulation: A Novel Approach to Medical Malpractice Education. *Acad Emerg Med.* 2008 May; 15 (5) Supp 1: S228.

Schlicher NR, Ten Eyck RP. Abstract: Medical Malpractice: Identifying the Knowledge Gap. *Acad Emerg Med.* 2008 May; 15 (5) Supp 1: S142.

ii) Papers

Schlicher NR, Ten Eyck RP. Medical Malpractice: Utilization of Layered Simulation for Resident Education. *Acad Emerg Med.* 2008 Nov;15:175-180.

Ten Eyck, R: Regional Hospitals' Ability to Meet Projected Avian Flu Pandemic Surge Capacity Requirements. Accepted by *Prehospital and Disaster Medicine*, 2008;23:103-112.

Pneumothorax Post Intubation. SAEM-AAMC MedEd Portal;April 2007

iii) Presentations

Improved Student Satisfaction and Test Performance with a Simulation-Based Emergency Medicine Curriculum, American College of Emergency Medicine Annual Meeting Research Forum Abstract Presentation, October 27, 2008.

Medical Malpractice: Identifying the Knowledge Gap, Society of Academic Emergency Medicine Annual Meeting Abstract Presentation, May 31st, 2008.

Layered Simulation: A Novel Approach to Medical Malpractice Education, Society of Academic Emergency Medicine Annual Meeting Innovation in Emergency Medicine Education, May 29-30th, 2008.

The Dayton Simulation Centers Initiative; Dayton Area Graduate Education Consortium Executive Board. December 9, 2008.

Public Health Law; CMH 734, WSU Center for Global Health Systems, Management and Policy, MPH Program, 2007.

Critical Review of the Public Health Literature; CMH 810, WSU Center for Global Health Systems, Management and Policy, MPH Program, 2006.

Presentations in the Emergency Medicine Resident Conferences:

- MRI Utilization in the Emergency Department
- Seafood Poisoning

- The Public Health Implications of Pandemic Illness
- Iron and Vitamin Toxicity

Dr. Wightman:

- 6) a) Publications
 - i) Chapters

Springer BL, Kleiner DM, Wightman JM: Medical support of the tactical athlete. In Schwartz RB, McManus JG, Swienton RE [eds]: *Tactical Emergency Medicine* (Lippincott, Williams & Wilkins: Philadelphia, PA; 2008), pp 32-43.

Wightman JM, Gibbons ME, Gebhart ME, Brown JB: Critical casualty evacuation from tactical settings. In Schwartz RB, McManus JG, Swienton RE [eds]: *Tactical Emergency Medicine* (Lippincott, Williams & Wilkins: Philadelphia, PA; 2008), pp 109-122.

Wightman JM: Blast injuries. In Farr WD, Fenton LH, Thompson GD [eds]: *Special Operations Forces Medical Handbook* [ed 2] (Center for Total Access: Ft Gordon, GA; 2008), pp 7.22-7.25.

Wright JL, Wightman JM: Red and painful eye. In Marx JA *et al.* [eds]: *Rosen's Emergency Medicine: Concepts and Clinical Practice* [ed 7, vol 1, pt 1, sect II] (Elsevier: Philadelphia, PA; in press).

Wightman JM, Kharod CU: Explosive events. In Koenig KA, Schultz CH [eds]: *Disaster Medicine* (Cambridge University Press: Cambridge, UK: in press).

Wightman JM, Fenno JA, Dice WH: Winter storms. In Koenig KA, Schultz CH [eds]: *Disaster Medicine* (Cambridge University Press: Cambridge, UK: in press).

- b) Presentations

Blast injury research agenda. Air Force Institute of Technology and Wright State University 2nd Annual Chemical, Biological, Radiological, and High-Yield Explosive Symposium: 16 September 2008. NCR Country Club; Kettering, Ohio.

Introduction To Disaster Medicine And The Role Of Internal Medicine.
Internal Medicine Grand Rounds: 23 September 2008. Wright State University;
Dayton, Ohio.

Dr. Wright: Deployed