Principal Investigator (*Last, first, middle*): Thomas, Stephen H.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed.
Follow this format for each person. Use Continuation pages as needed. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Stephen H Thomas	Associate Medical Director, Boston MedFlight

EDUCATION/TRAINING *(Begin with highest degree.)*

INSTITUTION AND LOCATION	DEGREE (s)	YEAR(s)	FIELD OF STUDY
LSU School of Medicine	MD	1990	
Harvard University	MPH	1999	Quantitative Methods

A. Positions and Honors

Professional positions

- Associate Medical Director and Director of Research — Boston MedFlight
- Associate Professor of Surgery — Harvard Medical School
- Director of Academic Affairs, Dept. of Emergency Services — Massachusetts General Hospital

Journal/Editorial staff positions

- Section Editor, Air Medical Transport — *Prehospital Emergency Care*
- *Ad hoc* reviewer — *NEJM, Chest, Annals EM,* multiple EM/toxicology journals
- Associate Editor — McGrawHill AccessEM Online (Digital EM resource)

Other invited positions and memberships

- Best & Needed Practices Trauma Triage Work Group (2004-07) — Centers for Disease Control
- National First Aid Science Advisory Board (2004-05) — Amer. Heart Assn./Amer. Red Cross
- Member: AMPA, NAEMSP, ACEP, SAEM

Selected honors and invited/appointed positions since 2000

2001-06: Member/chair of SAEM committees/task forces (including Undergraduate Education Committee)
2005: Best Research Paper, National Medical Association (HEMS paper presented by my resident advisee)
2005 (and 2003, 2004): Outstanding Teacher, Harvard Affiliated EM Residency
2005: NAEMSP Board of Directors' Award of Appreciation for Chairing Air Medical Committee (5 years)
2004: (and 2000, 2001): Nominee, Harvard Medical School Award for Excellence in Clinical Teaching
2003 (and 2002): EMS Medical Directors' Advisory Committee, NAEMSP
2003: Board of Directors, Air Medical Congress (Salt Lake City, Utah meeting arranged by Dr. Frank Thomas)
2002: Research Teaching and Mentorship Award, Harvard Affiliated Emergency Medicine Residency
2001: Award for Surgical Procedures Teaching, Harvard Affiliated Emergency Medicine Residency
2000: Best Teacher Award for Off-Service (Non-Internal Medicine) Attending, MGH Dept. Internal Medicine
2000: Research of Distinction Award, American College of Chest Physicians

B. Peer-reviewed publications – listing limited to selected HEMS-related papers published since 2000

Original articles

- Orf J, Thomas SH, Ahmed W, et al. Appropriateness of endotracheal tube size and insertion depth in children undergoing air medical transport. *Pediatr Emerg Care* 2000; 16: 321-327.
- Kociszewski C, Thomas SH, Harrison, Wedel SK. Etomidate versus succinylcholine for intubation in an air medical setting. *Am J Emerg Med* 2000; 18: 757-763.

Principal Investigator (last, first, middle initial): Thomas, Stephen H.

CONTINUATION PAGE: Bibliography Second Page

- Thomas SH, Orf J, Wedel SK, Conn A. Hyperventilation in traumatic brain injury patients: Inconsistency between consensus guidelines and clinical practice. *J Trauma* 2002; 52: 47-53.
- ***Thomas SH, Harrison TH, Buras WR, et al: Helicopter transport and blunt trauma outcome. *J Trauma* 2002; 52: 136-145. ***N.B. This work was funded by FARE**
- Thomas SH, Kociszewski C, Schwamm LH, Wedel SK. The evolving role of HEMS in the transfer of stroke patients to specialized centers. *Prehosp Emerg Care* 2002; 6: 210-214.
- Shapiro NI, Kociszewski C, Harrison T, Chang YC, Wedel SK, Thomas SH. Isolated prehospital hypotension following traumatic injuries: A predictor of mortality? *J Emerg Med* 2003; 25: 175-179.
- Harrison T, Thomas SH, Wedel SK. Success rates of pediatric intubation by a nonphysician-staffed critical care transport service. *Pediatr Emerg Care* 2004; 20: 101-107.
- Winsor G, Thomas SH, Biddinger P, Wedel SK. Inadequate hemodynamic management in patients undergoing interfacility transfer for suspected aortic dissection. *Amer J Emerg Med* 2005; 23: 24-29.
- Thomas SH, Rago O, Harrison T, Biddinger PD, Wedel SK. Fentanyl trauma analgesia use in air medical scene transports. *J Emerg Med* 2005; 29: 179-185.
- Thomas SH, Winsor G, Pang P, Wedel SK, Parry BA. Near-continuous, noninvasive blood pressure monitoring in the out-of-hospital setting. *Prehosp Emerg Care* 2005; 9: 68-72.
- Thomas SH, Kociszewski C, Brennan PJ, Wedel SK. Prehospital EKG and early HEMS dispatch to expedite transfer for percutaneous coronary intervention. *Crit Pathways Cardiol* 2006; 5: 155-159.
- Konstantopolous WM, Pliakis J, Hong C, Chan K, Kim G, Nentwich L, Thomas SH. HEMS and stroke care regionalization. *Am J Emerg Med* 2007 (accepted for publication - in press)
- Fagenholz P, Harris NS, Noble V, Thomas S. Chest ultrasonography for the diagnosis and monitoring of high altitude pulmonary edema. *Chest* 2007 (accepted for publication - in press)

Review articles and editorials

- Thomas SH, Harrison T, Wedel SK, Thomas Dl: Helicopter EMS roles in disaster operations. *Prehosp Emerg Care* 2000; 4: 338-344.
- Thomas SH, Cheema F, Cumming M, Wedel SK, Thomson D. Nontrauma helicopter EMS transport: Annotated review of selected outcomes-related literature. *Prehosp Emerg Care* 2002; 6: 242-255.
- Thomas SH, Cheema F, Wedel SK, Thomson D. Helicopter EMS trauma transport: Annotated review of selected outcomes-related literature. *Prehosp Emerg Care* 2002; 6: 359-371.
- Thomas SH, Biddinger P. Helicopter EMS and trauma outcomes. [solicited editorial] *Current Opinion in Anaesthesiology*; 2003; 16: 153-158.
- Thomas SH. Hyperventilation in patients with traumatic brain injury: Lessons for the acute care provider. [solicited expert columnist] *Salud Ciencia – Journal of the Sociedad Iberoamericana de Información Científica*, 2004; 12: 22-26.
- Thomas SH. Helicopter EMS transport: Annotated review of outcomes-related literature 2000-2003. *Prehosp Emerg Care* 2004; 8: 322-333.
- Thomas SH. Fentanyl in the prehospital setting [editorial]. *Am J Emerg Med* 2007 (accepted - in press)

Position papers

- Thomas SH, Williams KA, Claypool DW. Medical Director for Air Medical Transport Programs. [Position paper for the National Association of EMS Physicians] *Prehosp Emerg Care* 2002; 6: 455-457.
- Thomas SH, Williams KA. Flight Physician Training Program – Core Content. [Position paper for the National Association of EMS Physicians] *Prehosp Emerg Care* 2002; 6: 458-460.
- Thomson D, Thomas SH. Guidelines for air medical dispatch. [Position paper for the National Association of EMS Physicians] *Prehosp Emerg Care* 2003; 7: 265-271.
- Thomas SH. Use of helipads for hospitals utilizing helicopter EMS. [Position paper for the National Association of EMS Physicians] *Prehosp Emerg Care* 2006 (accepted for publication - in press)

Principal Investigator (last, first, middle initial): Thomas, Stephen H.

CONTINUATION PAGE: Bibliography Third Page

C. Research Support.

Ongoing projects funded in past year (none have overlapping funding coverage with the current proposal)

NIH/NINDS Stroke Research (2006 - present)

- Funding agency: National Institutes of Health/NINDS
- Project title: Specialized Program Of Translational Research In Stroke (SPOTRIAS)
- SThomas role: Core Principal Investigator (Access Core); PI for one of the three "cores" of the Harvard (MGH and Brigham & Women's Hospital) SPOTRIAS effort; responsible for arranging and leading efforts to maximize patient accrual and improve efficiency and rapidity of transport of stroke patients from community hospitals to stroke centers where specialized care (*e.g.* intra-arterial catheter-based lysis) can be delivered 24 hours/day.
- Overall direct costs: Approximately $3,000,000 over 5 years to 2010
- Percentage SThomas effort: 5%
- The overarching goal for this project is to improve rapid access to maximally effective stroke care. This is to be achieved by: 1) improving networks for regionalizing stroke care, 2) increasing efficiency of interfacility communications and rapid (HEMS and ground) transport to stroke centers, and 3) advancing stroke care by assessing high-resolution computed tomography perfusion imaging, blood (metalloproteinase) markers of stroke severity, and early (including transport) hyperoxia therapy for stroke.

Fentanyl Analgesia In Rapid Treatment of Orthopedic Pain (FAIRTOP) (2006 - present)

- Funding agency: Harvard Medical School Division of Emergency Medicine (competitive grant process within the multiple Harvard hospitals)
- Project title: FAIRTOP
- SThomas role: Faculty Principal Investigator supervising team of 5 EM residents.
- Overall direct costs: Approximately $10,000 over 1 year
- Percentage SThomas effort: 0%
- The major goal for this project is to conduct a clinical trial to assess whether administration of intraoral buccal fentanyl (Fentora tablets) achieves rapid and effective analgesia. If the initial project proves Fentora's effectiveness, the next trial will be assessment of the transbuccal formulation for prehospital analgesia; HEMS would be a the "test" ground for initial out-of-hospital Fentora assessment with a plan to transition Fentora to non-HEMS ALS if safety is demonstrated in the higher-level HEMS setting.

Enzymatically Assisted Subcutaneous Infusion (EASI Access) (2006 - present)

- Funding agency: Baxter Healthcare
- Project title: EASI Access
- SThomas role: Principal Investigator supervising team of 8 MGH faculty and resident researchers
- Overall direct costs: Approximately $90,000 over 1 year
- Percentage SThomas effort: 5%
- The major goal for this project is to conduct a volunteer trial, during a disaster drill, to assess whether subcutaneous administration of the tissue "loosening" agent recombinant hyaluronidase allows for rapid infusion of large amounts of crystalloids and glucose (assessed with radiolabelling techniques). The technique, if it proves effective, has application in the ED setting (*e.g.* for pediatric patients failing oral rehydration therapy, but who do not require an intravenous line placement except for hydration). EASI Access infusion could also prove valuable in the disaster/mass casualty and out-of-hospital situations where needs for intravascular volume replacement outstrip capabilities/resources of on-scene providers.

Principal Investigator (last, first, middle initial): Thomas, Stephen H.

CONTINUATION PAGE: Bibliography Fourth Page

Prehospital and acute care assessment of intravenous levetiracetam (Keppra) (2006 - present)

- Funding agency: UCB Pharma
- Project title: IV Keppra in prehospital/acute care seizure therapy
- SThomas role: Principal Investigator supervising team of 8 EM and Neurology faculty and residents.
- Overall direct costs: Approximately $120,000 over 2 year
- Percentage SThomas effort: 5%
- The major goal for this project is to the first U.S. clinical trial of the recently approved IV formulation of levetiracetam (Keppra). The study's primary endpoints are safety and improved side effect profile of Keppra, as a "benzodiazepine-sparing" agent that reduces incidence of patients' arriving at the ED with respiratory and/or neurological depression from standard (benzodiazepine) therapy.

Functional Microarray Augmentation of Transdermal Drug Delivery (2006 - present)

- Funding agency: Nanomed Technologies
- Project title: FAST Lidocaine
- SThomas role: Faculty Principal Investigator supervising team of 4 EM residents.
- Overall direct costs: Approximately $50,000 over 1 year
- Percentage SThomas effort: 5%
- The major goal for this project is to conduct a volunteer trial to assess whether application of a (painless) nanotechnology-produced 50-micron needle array facilitates delivery of local anesthetics.

Completed projects in past year(none have overlapping funding coverage with the current proposal)

1) Society of Academic Emergency Medicine medical student question bank development
   I am the PI of this ongoing work, funded by an internal grant from SAEM, has resulted in the development and administration (of many thousands of student-tests) of a free question bank, arranged into approximately 25 tests covering various topics in Emergency Medicine. The work has been presented at SAEM and at AAMC's scientific assembly, and an updated abstract will be presented at this year's SAEM meeting. A manuscript describing the work has been submitted for publication in *Academic Emergency Medicine.*

2) Tonometric blood pressure assessment
   Funding from MedWave, Inc. led to the testing (I was the PI) of the radial artery tonometric methodology for near-continuous monitoring of blood pressure in the prehospital and hospital settings. The work has been presented at SAEM, and published in *Prehospital Emergency Care* and *American Journal of Emergency Medicine.*

3) Acute intracerebral hemorrhage evaluation and clinical trial
   Funding from NovoNordisk provided support for this project's PI, for whose combined-department fellowship in Neurology/Emergency Medicine I was co-faculty advisor. Patient accrual in recombinant Factor VII trial has concluded (data analysis is underway). Using the time support for his study of hemorrhagic stroke, this project's PI prepared a paper (published in *Stroke*; SThomas as co-author) assessing times of coagulopathy reversal for hemorrhagic stroke patients on coumadin therapy. Ongoing work has extended the assessment of rapid coagulopathy reversal to the HEMS setting; we are currently working with Boston hospitals on a protocol for prothrombin complex concentrate use by Boston MedFlight.