Bio

BIO

Dr. David A. Spain is the David L. Gregg, MD Professor and Chief of Acute Care Surgery. His clinical areas of specialty are emergency and elective general surgery, trauma and critical care. His research focus is assessment of clinical care, systems of care and introduction of new technology. He is the current Recorder and Program Chair of the American Association for the Surgery of Trauma and a Governor of the American College of Surgeons. He is the editor of the new textbook Scientific American's Critical Care of the Surgical Patient.

CLINICAL FOCUS

- Critical Care Medicine
- Trauma Surgery
- Splenectomy
- Hernia, Abdominal
- Cholecystectomy, Laparoscopic
- Surgical Critical Care

ACADEMIC APPOINTMENTS

- Professor - Med Center Line, Surgery - General Surgery

ADMINISTRATIVE APPOINTMENTS

- Chief of Trauma and Critical Care Surgery, Stanford University, (2001- present)

HONORS AND AWARDS

- Teaching Award, Stanford/Kaiser Emergency Medicine Residency (2003-04 and 2007-08)
- Collins Teaching Award, General Surgery Residency Program (2004-2005)
- General Surgery Chief Residents’ Award, Stanford (2009-2010)
PROFESSIONAL EDUCATION

- Board Certification: General Surgery, American Board of Surgery (1993)
- Board Certification: Surgical Critical Care, American Board of Surgery (1996)
- Fellowship: University of Louisville Hospital (1994) KY
- Residency: Robert Wood Johnson University Hospital (1992) NJ
- Medical Education: Wayne State University (1986) MI
- MD, Wayne State University, Medicine (1986)
- BS/Honors College, Michigan State University, Biochemistry (1982)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our main areas of interest are clinical research in shock, sepsis, multiple organ failure and ICU pneumonia, as well as organizational characteristics of well functioning trauma centers and systems. We are also developing a program in Health Services Research focused on access to specialized, high acuity care

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Surgical Critical Care Medicine (Fellowship Program)

Publications

PUBLICATIONS

- The trauma ecosystem: The impact and economics of new trauma centers on a mature statewide trauma system. *Journal of trauma and acute care surgery*
  2017; 82 (6): 1014-1022

  Spitzer, S. A., Staudenmayer, K. L., Tennakoon, L., Spain, D. A., Weiser, T. G.
  2017; 107 (5): 770-774

- Population-based estimate of trauma-related deaths for law enforcement personnel: Risks for death are higher and increasing over time. *Journal of trauma and acute care surgery*
  2017

- The American College of Surgeons (ACS) Needs-Based Assessment of Trauma Systems (NBATS): Estimates for the State of California. *Journal of trauma and acute care surgery*
  2017

- International rotations: A valuable source to supplement operative experience for acute care surgery, trauma and surgical critical care fellows. *Journal of trauma and acute care surgery*
  2016; -?

- Trends in open vascular surgery for trauma: Implications for the future of acute care surgery. *Journal of surgical research*
  Forrester, J. D., Weiser, T. G., Maggio, P., Browder, T., Tennakoon, L., Spain, D., Staudenmayer, K.
  2016; 205 (1): 208-212

- Trends in the management of pelvic fractures, 2008-2010 *JOURNAL OF SURGICAL RESEARCH*
  Chu, C. H., Tennakoon, L., Maggio, P. M., Weiser, T. G., Spain, D. A., Staudenmayer, K. L.

Trauma center care is associated with reduced readmissions after injury. *Journal of Trauma and Acute Care Surgery* 2016; 80 (3): 411-418

Uninsured status may be more predictive of outcomes among the severely injured than minority race. *Injury-International Journal of the Care of the Injured* 2016; 47 (1): 197-202


Ground-level Falls Are a Marker of Poor Outcome in the Injured Elderly. *American Surgeon* 2014; 80 (11): 1171-1173

Environmental Sampling for Clostridium difficile on Alcohol-Based Hand Rub Dispensers in an Academic Medical Center. *Surgical Infections* 2014; 15 (5): 581-584

Variations in Pediatric Trauma Transfer Patterns in Northern California Pediatric Trauma Centers (2001-2009). *Academic Emergency Medicine* 2014; 21 (9): 1023-1030

Variations in Pediatric Trauma Transfer Patterns in Northern California Pediatric Trauma Centers (2001-2009). *Academic Emergency Medicine* 2014; 21 (9): 1023-1030

Clostridium ramosum Bacteremia: Case Report and Literature Review. *Surgical Infections* 2014; 15 (3): 343-346

Factors Associated With the Disposition of Severely Injured Patients Initially Seen at Non-Trauma Center Emergency Departments Disparities by Insurance Status. *JAMA Surgery* 2014; 149 (5): 422-430
• Factors associated with the disposition of severely injured patients initially seen at non–trauma center emergency departments: disparities by insurance status. *JAMA surgery*
2014; 149 (5): 422-430

• Variability in California triage from 2005 to 2009: A population-based longitudinal study of severely injured patients. *Journal of trauma and acute care surgery*
Staudenmayer, K., Lin, F., Mackersie, R., Spain, D., Hsia, R.
2014; 76 (4): 1041-1047

• The epidemiology of trauma-related mortality in the United States from 2002 to 2010. *Journal of trauma and acute care surgery*
Sise, R. G., Calvo, R. Y., Spain, D. A., Weiser, T. G., Staudenmayer, K. L.
2014; 76 (4): 913-920

• Cost-effectiveness of helicopter versus ground emergency medical services for trauma scene transport in the United States. *Annals of emergency medicine*
2013; 62 (4): 351-364 e19

• Cost-effectiveness of helicopter versus ground emergency medical services for trauma scene transport in the United States. *Annals of emergency medicine*
2013; 62 (4): 351-364 e19

• Cost-effectiveness of preoperative imaging for appendicitis after indeterminate ultrasonography in the second or third trimester of pregnancy. *Obstetrics and gynecology*
2013; 122 (4): 821-829

• Triage of elderly trauma patients: a population-based perspective. *Journal of the American College of Surgeons*
Staudenmayer, K. L., Hsia, R. Y., Mann, N. C., Spain, D. A., Newgard, C. D.
2013; 217 (4): 569-576

• Logistics of transfusion support for patients with massive hemorrhage *Current Opinion in Anesthesiology*
Goodnough, L. T., Spain, D. A., Maggio, P.
2013; 26 (2): 208-214

• Predictors of emergency department death for patients presenting with ruptured abdominal aortic aneurysms *Journal of Vascular Surgery*
2012; 56 (3): 651-655

• Payer status is associated with the use of prophylactic inferior vena cava filter in high-risk trauma patients *Surgery*
Pickham, D. M., Callcut, R. A., Maggio, P. M., Mell, M. W., Spain, D. A., Bech, F., Staudenmayer, K.
2012; 152 (2): 232-237

• Outcomes of Complex Abdominal Herniorrhaphy Experience With 106 Cases *Annals of Plastic Surgery*
Satterwhite, T. S., Miri, S., Chung, C., Spain, D., Lorenz, H. P., Lee, G. K.
2012; 68 (4): 382-388

• Abdominal wall reconstruction with dual layer cross-linked porcine dermal xenograft: The “Pork Sandwich” herniorrhaphy *Journal of Plastic Reconstructive and Aesthetic Surgery*
Satterwhite, T. S., Miri, S., Chung, C., Spain, D. A., Lorenz, H. P., Lee, G. K.
2012; 65 (3): 333-341

• The forgotten trauma patient: Outcomes for injured patients evaluated by emergency medical services but not transported to the hospital *Journal of Trauma and Acute Care Surgery*
Staudenmayer, K., Hsia, R., Wang, E., Sporer, K., Ghiarducci, D., Spain, D., Mackersie, R., Sherck, J., Kline, R., Newgard, C.
2012; 72 (3): 594-599

• Statins for Everyone Are We There Yet? *Archives of Surgery*
Spain, D. A.
2012; 147 (2): 189-189
• Under-Utilization of Transfer for Ruptured Abdominal Aortic Aneurysm (rAAA) in the Western United States
MOSBY-ELSEVIER.2011: 590–91

• Characteristics of Pediatric Trauma Transfers to a Level I Trauma Center: Implications for Developing a Regionalized Pediatric Trauma System in California
ACADEMIC EMERGENCY MEDICINE
2010; 17 (12): 1364-1373

• Early outcomes of deliberate nonoperative management for blunt thoracic aortic injury in trauma
JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY
Caffarelli, A. D., Mallidi, H. R., Maggio, P. M., Spain, D. A., Miller, D. C., Mitchell, R. S.
2010; 140 (3): 598-605

• Training and Certification in Surgical Critical Care: A Position Paper by the Surgical Critical Care Program Directors Society
JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
2010; 69 (2): 471-474

• Demographic and Financial Analysis of EMTALA Hand Patient Transfers.
Hand (New York, N.Y.)
Melkun, E. T., Ford, C., Brundage, S. I., Spain, D. A., Chang, J.
2010; 5 (1): 72-76

• Emergency Innovation: Implications for the Trauma Surgeon
JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
Pretz, J. L., Magnus, D., Spain, D. A.
2009; 67 (6): 1443-1447

• Massive Transfusion Protocols: The Role of Aggressive Resuscitation Versus Product Ratio in Mortality Reduction
JOURNAL OF THE AMERICAN COLLEGE OF SURGEONS
Riskin, D. J., Tsai, T. C., Riskin, L., Hernandez-Boussard, T., Purtill, M., Maggio, P. M., Spain, D. A., Brundage, S. I.
2009; 209 (2): 198-205

• The impact of hypopituitarism on function and performance in subjects with recent history of traumatic brain injury and aneurysmal subarachnoid haemorrhage.
BRAIN INJURY
2009; 23 (7): 639-648

• Commitment to COT Verification Improves Patient Outcomes and Financial Performance
67th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma/Meeting of the Association-for-Acute-Medicine
Maggio, P. M., Brundage, S. I., Hernandez-Boussard, T., Spain, D. A.
LIPPINCOTT WILLIAMS & WILKINS.2009: 190–95

• An Evaluation of Multidetector Computed Tomography in Detecting Pancreatic Injury: Results of a Multicenter AAST Study
JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
2009; 66 (3): 641-646

• The impact of hypopituitarism on function and performance in subjects with recent history of traumatic brain injury and aneurysmal subarachnoid haemorrhage
BRAIN INJURY
2009; 23 (7-8): 639-648

• Validation of a Prehospital Trauma Triage Tool: A 10-Year Perspective
JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
2008; 65 (6): 1253-1257

• Insulin increases the release of proinflammatory mediators
63rd Annual Meeting of the American-Association-for-the-Surgery-of-Trauma
Brundage, S. I., Kirilcuk, N. N., Lam, J. C., Spain, D. A., Zautke, N. A.
- CT angiography effectively evaluates extremity vascular trauma *American Surgeon*
  Peng, P. D., Spain, D. A., Tatariia, M., Hellinger, J. C., Rubin, G. D., Brundage, S. I.
  2008; 74 (2): 103-107

- County hospital surgical practice: a model for acute care surgery *59th Annual Meeting of the Southwestern-Surgical-Congress*
  EXCeRPTA MEDICA INC-ELSEVIER SCIENCE INC.2007: 758–64

- Pediatric blunt abdominal injury: Age is irrelevant and delayed operation is not detrimental *64th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma*
  LIPPINCOTT WILLIAMS & WILKINS.2007: 608–14

- Venous air embolism and pressure infusion devices *Journal of Trauma-Injury Infection and Critical Care*
  Mendenhall, M. L., Spain, D. A.
  2007; 63 (1): 246-246

- Recruitment strategies for a fall prevention program: If we build it, will they really come? *36th Annual Meeting of the Western-Trauma-Association*
  Shandro, J. R., Spain, D. A., Dicker, R. A.
  LIPPINCOTT WILLIAMS & WILKINS.2007: 142–46

- Requests for 692 transfers to an academic Level I trauma center: Implications of the Emergency Medical Treatment and Active Labor Act *65th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma*
  LIPPINCOTT WILLIAMS & WILKINS.2007: 63–67

- Early enteral nutrition after abdominal trauma: effects on septic morbidity and practicality. *Nutrition in Clinical Practice*
  Weissenfluh, G. M., Brundage, S. I., Spain, D. A.
  2006; 21 (5): 479-484

- Dramatic shift in the primary management of traumatic thoracic aortic rupture *Archives of Surgery*
  Lebl, D. R., Dicker, R. A., Spain, D. A., Brundage, S. I.
  2006; 141 (2): 177-180

- Endovascular management of a gunshot wound to the thoracic aorta *35th Annual Meeting of the Western-Trauma-Association*
  LIPPINCOTT WILLIAMS & WILKINS.2006: 204–8

- Are temporary inferior vena cava filters really temporary? *57th Annual Meeting of the Southwestern-Surgical-Congress*
  EXCERPTA MEDICA INC-ELSEVIER SCIENCE INC.2005: 858–63

- Spontaneous splenic rupture: The masquerade of minor trauma *35th Annual Meeting of the Western-Trauma-Association*
  Tataria, M., Dicker, R. A., Melcher, M., Spain, D. A., Brundage, S. I.
  LIPPINCOTT WILLIAMS & WILKINS.2005: 1228–30

- Education and training of the future trauma surgeon in acute care surgery: trauma, critical care, and emergency surgery *American Journal of Surgery*
  Spain, D. A., Miller, F. B.
  2005; 190 (2): 212-217

- Potential targets to encourage a surgical career *Journal of the American College of Surgeons*
  2005; 200 (6): 946-953

- Acute care surgery: Trauma, critical care, and emergency surgery *Journal of Trauma-Injury Infection and Critical Care*
• Poor validity of residual volumes as a marker for risk of aspiration in critically ill patients. *Critical Care Medicine*
  McClave, S. A., Lukan, J. K., Stefater, J. A., Lowen, C. C., Looney, S. W., Matheson, P. J., Gleeson, K., Spain, D. A.
  2005; 33 (2): 324-330

• Interleukin-6 infusion blunts proinflammatory cytokine production without causing systemic toxicity in a swine model of uncontrolled hemorrhagic shock. *Journal of Trauma-Injury Infection and Critical Care*
  2004; 57 (5): 970-977

• Management of acute complete tracheal transection caused by nonpenetrating trauma: Report of a case and review of the literature. *Journal of Cardithoracic and Vascular Anesthesia*
  Chow, J. L., Coady, M. A., Varner, J., Cannon, W., Spain, D., Brock-Utne, J. G.

• Perioperative risk assessment in elderly and high-risk patients. *International Symposium on World Overview of Important Nutrition Problems and How They are Being Addressed*
  ELSEVIER SCIENCE INC. 2004: 133–46

• Impairment of endothelium-dependent dilation response after resuscitation from hemorrhagic shock involved postreceptor mechanisms. *24th Annual Meeting of the Shock-Society*
  Zakaria, E. R., Garrison, R. N., Spain, D. A., Harris, P. D.
  LIPPINCOTT WILLIAMS & WILKINS. 2004: 175–81

• The continuing challenge of intra-abdominal infection. *American Journal of Surgery*
  Cheadle, W. G., Spain, D. A.
  2003; 186 (5A): 15S-22S

• The continuing challenge of intra-abdominal infection. *27th Annual Surgical Symposium of the Association-of-VA-Surgeons*
  Cheadle, W. G., Spain, D. A.
  EXCERPTA MEDICA INC-ELSEVIER SCIENCE INC. 2003: 15S–22S

• Society of University Surgeons position statement on the volume-outcome relationship for surgical procedures. *Surgery*
  Berger, D. H., Ko, C. Y., Spain, D. A.
  2003; 134 (1): 34-40

• Intraperitoneal resuscitation improves intestinal blood flow following hemorrhagic shock. *114th Annual Meeting of the Southern-Surgical-Association*
  Zakaria, E. R., Garrison, R. N., Spain, D. A., Matheson, P. J., Harris, P. D., Richardson, J. D.
  LIPPINCOTT WILLIAMS & WILKINS. 2003: 704–11

• Immune-enhancing enteral diet increases blood flow and proinflammatory cytokines in the rat ileum. *26th Annual Meeting of the Association-of-VA-Surgeons*
  Matheson, P. J., Hurt, R. T., Mittel, O. F., Wilson, M. A., Spain, D. A., Garrison, R. N.
  ACADEMIC PRESS INC ELSEVIER SCIENCE. 2003: 360–70

• Achievement of steady state optimizes results when performing indirect calorimetry. *Journal of Parenteral and Enteral Nutrition*
  2003; 27 (1): 16-20

• Resuscitation regimens for hemorrhagic shock must contain blood. *Shock*
  Zakaria, E. R., Spain, D. A., Harris, P. D., Garrison, R. N.
  2002; 18 (6): 567-573

• Rates of overtriage & undertriage at a level 1 trauma center. *32nd Critical Care Congress of the Society-of-Critical-Care-Medicine*
  Seiver, A., DiDomenico, P., Spain, D., Gregg, D., Curet, M.
  LIPPINCOTT WILLIAMS & WILKINS. 2002: A58–A58

• When is the seriously ill patient ready to be fed? *JPEN: Journal of parenteral and enteral nutrition*
  Spain, D. A.
• Risk factors for delirium tremens in trauma patients *JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE*
  Lukan, J. K., Reed, D. N., Looney, S. W., Spain, D. A., Blondell, R. D.
  2002; 53 (5): 901-906

• Examination of the role of abdominal computed tomography in the evaluation of victims of trauma with increased aspartate aminotransferase in the era of focused abdominal sonography for trauma *59th Annual Meeting of the Central-Surgical-Association*
  MOSBY-ELSEVIER.2002: 642–46

• Generalized dilation of the visceral microvasculature by peritoneal dialysis solutions *21st Annual Conference on Dialysis*
  Zakaria, E. R., Spain, D. A., Harris, P. D., Garrison, R. N.
  MULTIMED INC.2002: 593–601

• Immune-enhancing enteral diet selectively augments ileal blood flow in the rat *Annual Meeting of the Association-of-VA-Surgeons*
  Rhoden, D., Matheson, P. J., Carricato, N. D., Spain, D. A., Garrison, R. N.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.2002: 25–30

• Abdominal seat belt marks in the era of focused abdominal Sonography for trauma *109th Scientific Session of the Western-Surgical-Association*
  Stassen, N. A., Lukan, J. K., Carrillo, E. H., Spain, D. A., Richardson, J. D.
  AMER MEDICAL ASSOC.2002: 718–22

• Do facial fractures protect the brain or are they a marker for severe head injury? *AMERICAN SURGEON*
  Martin, R. C., Spain, D. A., Richardson, J. D.
  2002; 68 (5): 477-481

• Ventilator-associated pneumonia and surgical patients *CHEST*
  Spain, D. A.
  2002; 121 (5): 1390-1391

• A comparison of alcohol-positive and alcohol-negative trauma patients *JOURNAL OF STUDIES ON ALCOHOL*
  Blondell, R. D., Looney, S. W., Krieg, C. L., Spain, D. A.
  2002; 63 (3): 380-383

• Femoral vessel injuries *SURGICAL CLINICS OF NORTH AMERICA*
  Carrillo, E. H., Spain, D. A., Miller, F. B., Richardson, J. D.
  2002; 82 (1): 49-?

• Handsewn versus stapled anastomosis in penetrating colon injuries requiring resection: A multicenter study *JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE*
  2002; 52 (1): 117-121

• Development and implementation of a clinical pathway for severe traumatic brain injury *JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE*
  Vitaz, T. W., McIlvoy, L., Raque, G. H., Spain, D., Shields, C. B.
  2001; 51 (2): 369-375

• Thermal injury in the elderly: When is comfort care the right choice? *AMERICAN SURGEON*
  Stassen, N. A., Lukan, J. K., Mizuguchi, N. N., Spain, D. A., Carrillo, E. H., Polk, H. C.
  2001; 67 (7): 704-708

• Progressive decrease in constrictor reactivity of the non-absorbing intestine during chronic sepsis *23rd Annual Conference of the Shock-Society*
  Zhao, H. L., Spain, D. A., Matheson, P. J., Harris, P. D., Garrison, R. N.
  LIPPINCOTT WILLIAMS & WILKINS.2001: 40–43

• Development and implementation of a clinical pathway for spinal cord injuries *49th Annual Meeting of the Congress of Neurological Surgeons*
  Vitaz, T. W., McIlvoy, L., Raque, G. H., Spain, D. A., Shields, C. B.
  LIPPINCOTT WILLIAMS & WILKINS.2001: 271–76
• Impact of recent trends of noninvasive trauma evaluation and nonoperative management in surgical resident education.  
  60th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma  
  Lukan, J. K., Carrillo, E. H., Franklin, G. A., Spain, D. A., Miller, F. B., Richardson, J. D.  
  LIPPINCOTT WILLIAMS & WILKINS. 2001: 1015–19

• Penetrating colon injuries requiring resection: Diversion or primary anastomosis? An AAST prospective multicenter study.  
  60th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma  
  LIPPINCOTT WILLIAMS & WILKINS. 2001: 765–74

• Successful incorporation of the Severe Head Injury Guidelines into a phased-outcome clinical pathway. journal of neuroscience nursing  
  2001; 33 (2): 72–?

• A multicenter evaluation of whether gender dimorphism affects survival after trauma. AMERICAN JOURNAL OF SURGERY  
  2001; 181 (4): 297-300

• "Incidental" pericardial effusion during surgeon-performed ultrasonography in patients with blunt torso trauma. JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE  
  Lukan, J. K., Franklin, G. A., Spain, D. A., Carrillo, E. H.  
  2001; 50 (4): 743-745

• Delayed laparoscopy facilitates the management of biliary peritonitis in patients with complex liver injuries. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES  
  Carrillo, E. H., Reed, D. N., Gordon, L., Spain, D. A., Richardson, J. D.  
  2001; 15 (3): 319-322

• Sepsis increases NOS-2 activity and decreases non-NOS-mediated acetylcholine-induced dilation in rat aorta.  
  24th Annual Symposium of the Association-of-Veterans-Administration-Surgeons  
  Beach, P. K., Spain, D. A., Kawabe, T., Harris, P. D., Garrison, R. N.  
  ACADEMIC PRESS INC ELSEVIER SCIENCE. 2001: 17–22

• Does cell-saver blood administration and free hemoglobin load cause renal dysfunction? AMERICAN SURGEON  
  Klodell, C. T., Richardson, J. D., Bergamini, T. M., Spain, D. A.  
  2001; 67 (1): 44-47

• Sustained infection induces 2 distinct microvascular mechanisms in the splanchnic circulation.  
  57th Annual Meeting of the Central-Surgical-Association  
  Zhao, H. L., Spain, D. A., Matheson, P. J., Vaughan, C., Harris, P. D., Garrison, R. N.  
  MOSBY-ELSEVIER. 2000: 513–18

• Lazaroid and pentoxifylline suppress sepsis-induced increases in renal vascular resistance via altered arachidonic acid metabolism. Annual Meeting of the Association-for-Academic-Surgery  
  Krysztopik, R. J., Matheson, P. J., Spain, D. A., Garrison, R. N., Wilson, M. A.  
  ACADEMIC PRESS INC ELSEVIER SCIENCE. 2000: 75–81

• Evolution in the management of hepatic trauma: A 25-year perspective.  
  120th Annual Meeting of the American-Surgical-Association  
  LIPPINCOTT WILLIAMS & WILKINS. 2000: 324–29

• Prehospital hypotension as a valid indicator of trauma team activation.  
  59th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma  
  Franklin, G. A., Boaz, P. W., Spain, D. A., Lukan, J. K., Carrillo, E. H., Richardson, J. D.  
  LIPPINCOTT WILLIAMS & WILKINS. 2000: 1034–37

• Blunt hemopericardium detected by surgeon-performed sonography. JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE  
  2000; 48 (5): 971-974

• Practice management guidelines for prophylactic antibiotic use in tube thoracostomy for traumatic hemopneumothorax: The EAST practice management guidelines work group. JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
Luchette, F. A., Barrie, P. S., Oswanski, M. F., Spain, D. A., Mullins, C. D., Palumbo, F., Pasquale, M. D.  
2000; 48 (4): 753-757

• Should trauma surgeons do general surgery? 59th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma  
Spain, D. A., Richardson, J. D., Carrillo, E. H., Miller, F. B., Wilson, M. A., Polk, H. C.  
LIPPINCOTT WILLIAMS & WILKINS.2000: 433–37

• Routine intragastric feeding following traumatic brain injury is safe and well tolerated 28th Educational and Scientific Symposium of the Society-of-Critical-Care-Medicine  
Klodell, C. T., Carroll, M., Carrillo, E. H., Spain, D. A.  
EXCERPTA MEDICA INC-ELSEVIER SCIENCE INC.2000: 168–71

• Discussion American journal of surgery  
Spain, CROCE, Rodriguez, CROCE, Rodriguez, LIVINGSTON, Spain, Barie, Malangoni, Barie  
2000; 179 (2A): 30-?

• Discussion American journal of surgery  
POLK, Fabian, POLK, Fabian, LIVINGSTON, Rodriguez, Rodriguez, Malangoni, Malangoni, Spain, Boucher, Ceadle, Boucher, CROCE  
2000; 179 (2A): 24-25

• Discussion American journal of surgery  
Barie, Fabian, Barie, Malangoni, Malangoni, Rodriguez, Spain, Rodriguez, Fabian  
2000; 179 (2A): 7-?

• Discussion American journal of surgery  
Barie, CROCE, Spain, POLK, Barie, POLK, LIVINGSTON, CROCE, Spain, Rodriguez, Rodriguez, Boucher, Boucher  
2000; 179 (2A): 39-40

• Empyema and restrictive pleural processes after blunt trauma: An under-recognized cause of respiratory failure AMERICAN SURGEON  
Watkins, J. A., Spain, D. A., Richardson, J. D., Polk, H. C.  
2000; 66 (2): 210-214

• The continuing challenge of Fournier's gangrene in the 1990s 67th Annual Meeting of the Southeastern-Surgical-Congress  
Olsofka, J. N., Carrillo, E. H., Spain, D. A., Polk, H. C.  
SOUTHEASTERN SURGICAL CONGRESS.1999: 1156–59

• Infusion protocol improves delivery of enteral tube feeding in the critical care unit 22nd Clinical Congress of the American-Society-of-Parenteral-and-Enteral-Nutrition  
SAGE PUBLICATIONS INC.1999: 288–92

• Enteral tube feeding in the intensive care unit: Factors impeding adequate delivery CRITICAL CARE MEDICINE  
1999; 27 (7): 1252-1256

• Decreased alpha-adrenergic response in the intestinal microcirculation after "two-hit" hemorrhage resuscitation and bacteremia Annual Meeting of the Association-for-Academic-Surgery  
Spain, D. A., Kawabe, T., Keelan, P. C., Wilson, M. A., Harris, P. D., Garrison, R. N.  
ACADEMIC PRESS INC ELSEVIER SCIENCE.1999: 180–85

• Blunt carotid artery injuries: Difficulties with the diagnosis prior to neurologic event 105th Annual Meeting of the Western-Surgical-Association  
Carrillo, E. H., Osborne, D. L., Spain, D. A., Miller, F. B., Senler, S. O., Richardson, J. D.  
LIPPINCOTT WILLIAMS & WILKINS.1999: 1120–25

• Glucose and glutamine gavage increase portal vein nitric oxide metabolite levels via adenosine A2b activation JOURNAL OF SURGICAL RESEARCH  
Mattheson, P. J., Spain, D. A., Harris, P. D., Garrison, R. N., Wilson, M. A.  
1999; 84 (1): 57-63

• Common and external iliac artery injuries associated with pelvic fractures 13th Annual Meeting of the Orthopaedic-Trauma-Association  
Carrillo, E. H., Wohltmann, C. D., Spain, D. A., Schmieg, R. E., Miller, F. B., Richardson, J. D.  
• Subacute sepsis impairs vascular smooth muscle contractile machinery and alters vasoconstrictor and dilator mechanisms  *Annual Meeting of the Association-for-Academic-Surgery*
  Price, S. A., Spain, D. A., Wilson, M. A., Harris, P. D., Garrison, R. N.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.1999: 75–80

• Preoperative issues in clinical nutrition  *CHEST*
  McClave, S. A., Snider, H. L., Spain, D. A.
  1999; 115 (5): 64S-70S

• Interventional techniques are useful adjuncts in nonoperative management of hepatic injuries  *58th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma/Association-of-Canada*
  Carrillo, E. H., Spain, D. A., Wohltmann, C. D., Schmiegl, R. E., Boaz, P. W., Miller, F. B., Richardson, J. D.
  LIPPINCOTT WILLIAMS & WILKINS.1999: 619–22

• Complement activation mediates intestinal injury after resuscitation from hemorrhagic shock  *58th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma/Association-of-Canada*
  Spain, D. A., Fruchterman, T. M., Matheson, P. J., Wilson, M. A., Martin, A. W., Garrison, R. N.
  LIPPINCOTT WILLIAMS & WILKINS.1999: 224–32

• Altered vasoconstrictor and dilator responses after a "two-hit" model of sequential hemorrhage and bacteremia  *22nd Annual Symposium of the Association-of-Veterans-Administration-Surgeons*
  Price, S. A., Spain, D. A., Wilson, M. A., Harris, P. D., Garrison, R. N.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.1999: 59–64

• Selective microvascular endothelial cell dysfunction in the small intestine following resuscitated hemorrhagic shock  *21st Annual Conference on Shock*
  Fruchterman, T. M., Spain, D. A., Wilson, M. A., Harris, P. D., Garrison, R. N.

• Small intestinal production of nitric oxide is decreased following resuscitated hemorrhage  *JOURNAL OF SURGICAL RESEARCH*
  Fruchterman, T. M., Spain, D. A., Matheson, P. J., Martin, A. W., Wilson, M. A., Harris, P. D., Garrison, R. N.
  1998; 80 (1): 102-109

• Complement inhibition prevents gut ischemia and endothelial cell dysfunction after hemorrhage/resuscitation  *55th Annual Meeting of the Central-Surgical-Association*
  Fruchterman, T. M., Spain, D. A., Wilson, M. A., Harris, P. D., Garrison, R. N.
  MOSBY-ELSEVIER.1998: 782–92

• Effect of a clinical pathway for severe traumatic brain injury on resource utilization  *57th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma*
  Spain, D. A., McIlvoy, L. H., Fix, S. E., Carrillo, E. H., Boaz, P. W., Harpring, J. E., Raque, G. H., Miller, F. B.
  LIPPINCOTT WILLIAMS & WILKINS.1998: 101–4

• Nutritional management in acute and chronic pancreatitis  *GASTROENTEROLOGY CLINICS OF NORTH AMERICA*
  McClave, S. A., Spain, D. A., Snider, H. L.
  1998; 27 (2): 421-7

• Microvascular changes explain the "two-hit" theory of multiple organ failure  *109th Annual Meeting of the Southern-Surgical-Association*
  Garrison, R. N., Spain, D. A., Wilson, M. A., Keelen, P. A., Harris, P. D.

• Comparison of sequential compression devices and foot pumps for prophylaxis of deep venous thrombosis in high-risk trauma patients  *66th Annual Scientific Meeting and Postgraduate Course Program of the Southeastern-Surgical-Congress*
  Spain, D. A., Bergamini, T. M., Hoffmann, J. F., Carrillo, E. H., Richardson, J. D.
  SOUTHEASTERN SURGICAL CONGRESS.1998: 522–26

• Thoracoscopy in the management of posttraumatic persistent pneumothorax  *American-College-of-Surgeons 83rd Annual Clinical Congress*
  Carrillo, E. H., Schmacht, D. C., Gable, D. R., Spain, D. A., Richardson, J. D.
  ELSEVIER SCIENCE INC.1998: 636–39

• Alternatives in the management of penetrating injuries to the iliac vessels  *57th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma*
  Carrillo, E. H., Spain, D. A., Wilson, M. A., Miller, F. B., Richardson, J. D.
Impact of trauma attending surgeon case volume on outcome: Is more better? 57th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma
LIPPINCOTT WILLIAMS & WILKINS.1998: 266–71

Quality assessment of intraoperative blood salvage and autotransfusion 65th Annual Scientific Meeting and Postgraduate Course Program of the Southeastern-Surgical-Congress
Spain, D. A., Miller, F. B., Bergamini, T. M., Montgomery, R. C., Richardson, J. D.

Lazaroid improves intestinal blood flow in the rat during hyperdynamic bacteraemia BRITISH JOURNAL OF SURGERY
Krysztopik, R. J., Bentley, F. R., Spain, D. A., Wilson, M. A., Garrison, R. N.
1997; 84 (12): 1717-1721

Twelfth rib resection - Preferred therapy for subphrenic abscess in selected surgical patients 17th Annual Meeting of the Surgical-Infection-Society
Spain, D. A., Martin, R. C., Carrillo, E. H., Polk, H. C.
AMER MEDICAL ASSOC.1997: 1203–6

Percutaneous dilational tracheostomy for airway control 43rd Annual Meeting of the Society-of-Head-and-Neck-Surgeons
Carrillo, E. H., Spain, D. A., Bumpous, J. M., Schmieg, R. E., Miller, F. B., Richardson, J. D.
EXCERPTA MEDICA INC-ELSEVIER SCIENCE INC.1997: 469–73

Bedside percutaneous endoscopic gastrostomy - A safe alternative for early nutritional support in critically ill trauma patients Annual Scientific Session of the Society-of-American-Gastrointestinal-Endoscopic-Surgeons
Carrillo, E. H., Heniford, B. T., Osborne, D. L., Spain, D. A., Miller, F. B., Richardson, J. D.
SPRINGER-VERLAG.1997: 1068–71

Glucose-induced intestinal hyperemia is mediated by nitric oxide 30th Annual Meeting of the Association-for-Academic-Surgery
Matheson, P. J., Wilson, M. A., Spain, D. A., Harris, P. D., Anderson, G. L., Garrison, R. N.
ACADEMIC PRESS INC ELSEVIER SCIENCE.1997: 146–54

Risk-taking behaviors among adolescent trauma patients 55th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma / 13th Annual Meeting of the Trauma-Association-of-Canada
Spain, D. A., Boaz, P. W., Davidson, D. J., Miller, F. B., Carrillo, E. H., Richardson, J. D.
WILLIAMS & WILKINS.1997: 423–26

Heme oxygenase-dependent carbon monoxide production is a hepatic adaptive response to sepsis JOURNAL OF SURGICAL RESEARCH
Downard, P. J., Wilson, M. A., Spain, D. A., Matheson, P. J., Siow, Y., Garrison, R. N.
1997; 71 (1): 7-12

Intrahepatic vascular clamping in complex hepatic vein injuries JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
Carrillo, E. H., Spain, D. A., Miller, F. B., Richardson, J. D.
1997; 43 (1): 131-133

Lazaroids prevent acute cyclosporine-induced renal vasoconstriction 15th Annual Meeting of the American-Society-of-Transplant-Physicians
Krysztopik, R. J., Bentley, F. R., Spain, D. A., Wilson, M. A., Garrison, R. N.
LIPPINCOTT WILLIAMS & WILKINS.1997: 1215–20

The role of thoracoscopy in the management of retained thoracic collections after trauma 43rd Annual Meeting of the Southern-Thoracic-Surgical-Association
Heniford, B. T., Carrillo, E. H., Spain, D. A., Sosa, J. L., Fulton, R. L., Richardson, J. D.
ELSEVIER SCIENCE INC.1997: 940–43

Blunt popliteal artery trauma: A challenging injury 64th Annual Scientific Meeting and Postgraduate Course Program, Southeastern-Surgical-Congress
Harrell, D. J., Spain, D. A., Bergamini, T. M., Miller, F. B., Richardson, J. D.
SOUTHEASTERN SURGICAL CONGRESS.1997: 228–31

Venous thromboembolism in the high-risk trauma patient: Do risks justify aggressive screening and prophylaxis? 56th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma
Spain, D. A., Richardson, J. D., Polk, H. C., Bergamini, T. M., Wilson, M. A., Miller, F. B.
WILLIAMS & WILKINS.1997: 463–67

• Differential intestinal microvascular dysfunction occurs during bacteremia. Annual Symposium of the Association-of-Veterans-Administration-Surgeons
  Spain, D. A., Wilson, M. A., Krysztopik, R. J., Matheson, P. J., Garrison, R. N.
  ACADEMIC PRESS INC ELSEVIER SCIENCE.1997: 67–71

• Heparan preserves intestinal perfusion after hemorrhage and resuscitation. 29th Annual Meeting of the Association-of-Veterans-Administration-Surgeons
  Watkins, J. M., Spain, D. A., Krysztopik, R. J., Downard, P. J., Wilson, M. A.; Garrison, R. N.
  ACADEMIC PRESS INC JNL-COMP SUBSCRIPTIONS.1996: 154–58

• Operative strategies for management of abdominal aortic gunshot wounds. 53rd Annual Meeting of the Central-Surgical-Association
  MOSBY-ELSEVIER.1996: 667–71

• Free radical scavenging by lazaroids improves renal blood flow during sepsis. 53rd Annual Meeting of the Central-Surgical-Association
  Krysztopik, R. J., Bentley, F. R., Spain, D. A., Wilson, M. A., Garrison, R. N.
  MOSBY-ELSEVIER.1996: 657–62

• Fluid resuscitation attenuates early cytokine mRNA expression after peritonitis. JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
  Wilson, M. A., Chou, M. C., Spain, D. A., Downard, P. J., Qian, Q. H., Cheadle, W. G., Garrison, R. N.
  1996; 41 (4): 622-627

• Complex thoracic injuries. SURGICAL CLINICS OF NORTH AMERICA
  Richardson, J. D., Miller, F. B., Carrillo, E. H., Spain, D. A.
  1996; 76 (4): 725–7

• Vasomotor response to pentoxifylline mediates improved renal blood flow to bacteremia. Journal of surgical research
  Krysztopik, R. J., Bentley, F. R., Wilson, M. A., Spain, D. A., Garrison, R. N.
  1996; 63 (1): 17–22

• Vasomotor response to pentoxifylline mediates improved renal blood flow in bacteremia. Annual Meeting of the Association-for-Academic-Surgery
  Krysztopik, R. J., Bentley, F. R., Spain, D. A., Garrison, R. N.
  ACADEMIC PRESS INC JNL-COMP SUBSCRIPTIONS.1996: 17–22

• Predicting the need to pack early for severe intra-abdominal hemorrhage. 55th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma / 13th
  Annual Meeting of the Trauma-Association-of-Canada
  Garrison, J. R., Richardson, J. D., HILAKOS, A. S., Spain, D. A., Miller, F. B., Fulton, R. L.
  LIPPINCOTT WILLIAMS & WILKINS.1996: 923–27

• Preoperative saline loading improves outcome after elective, noncardiac surgical procedures. 63rd Annual Scientific Meeting and Postgraduate Course
  Program of the Southeastern Surgical Congress
  Garrison, R. N., Wilson, M. A., Matheson, P. J., Spain, D. A.
  SOUTHEASTERN SURGICAL CONGRESS.1996: 223–31

• Nitric oxide: A compensatory mediator of bacteremia-induced visceral microvascular hypoperfusion. 3rd International Congress on the Immune
  Consequences of Trauma, Shock and Sepsis - Mechanisms and Therapeutic Approaches
  Spain, D. A., Wilson, M. A., THEUER, H. H., Garrison, R. N.
  PABST SCIENCE PUBLISHERS.1996: 710–714

• ENDOTHELIN-1 EXPRESSION IN THE SMALL-INTESTINE DURING CHRONIC PERITONITIS. SHOCK

• Transpyloric passage of feeding tubes in patients with head injuries does not decrease complications. JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE
  Spain, D. A., DEWESEE, C., REYNOLDS, M. A., Richardson, J. D.
  1995; 39 (6): 1100-1102

• HAEMOPHILUS PNEUMONIA IS A COMMON-CAUSE OF EARLY PULMONARY DYSFUNCTION FOLLOWING TRAUMA. 15th Annual Meeting
  of the Surgical-Infection-Society
  Spain, D. A., Wilson, M. A., Boaz, P. W., Barnatan, M. F., Garrison, R. N.
• **IS THE TIMING OF FRACTURE FIXATION IMPORTANT FOR THE PATIENT WITH MULTIPLE TRAUMA**  
**115th Annual Meeting of the American-Surgical-Association**  
REYNOLDS, M. A., Richardson, J. D., Spain, D. A., Seligson, D., Wilson, M. A., Miller, F. B.  
LIPPINCOTT WILLIAMS & WILKINS.1995: 470–81

• **ALPHA-ADRENERGIC RECEPTOR ANTAGONISM PREVENTS INTESTINAL VASOCONSTRICTION BUT NOT HYPOPERFUSION FOLLOWING RESUSCITATED HEMORRHAGE**  
**JOURNAL OF SURGICAL RESEARCH**  
THEUER, C. J., Wilson, M. A., Spain, D. A., Edwards, M. J., Garrison, R. N.  
1995; 59 (2): 292-298

• **NITRIC-OXIDE MEDIATES REDISTRIBUTION OF INTRARENAL BLOOD-FLOW DURING BACTEREMIA**  
**54th Annual Meeting of the American-Association-for-the-Surgery-of-Trauma**  
Garrison, R. N., Wilson, M. A., Matheson, P. J., Spain, D. A.  
LIPPINCOTT WILLIAMS & WILKINS.1995: 90–97

• **AN EXPERIMENTAL-STUDY OF ALTERED NITRIC-OXIDE METABOLISM AS A MECHANISM OF CYCLOSPORINE-INDUCED RENAL VASOCONSTRICTION**  
**BRITISH JOURNAL OF SURGERY**  
BLOOM, I. T., Bentley, F. R., Spain, D. A., Garrison, R. N.  
1995; 82 (2): 195-198

• **PLATELET-ACTIVATING-FACTOR AND SEPSIS-INDUCED SMALL-INTESTINAL MICROVASCULAR HYPOPERFUSION**  
**Journal of the Kentucky Medical Association**  
Spain, D. A., Miller, F. B.  
1995; 93 (1): 10-14

• **DIFFERENTIAL MICROVASCULAR RESPONSE TO CYCLOOXYGENASE BLOCKADE IN THE RAT SMALL-INTESTINE DURING ACUTE BACTEREMIA**  
**SHOCK**  
1994; 2 (6): 408-412

• **ANTIBIOTIC OVERKILL OF TRAUMA VICTIMS**  
**AMERICAN JOURNAL OF SURGERY**  
1994; 168 (3): 288-290

• **NITRIC-OXIDE SYNTHASE INHIBITION EXACERBATES SEPSIS-INDUCED RENAL HYPOPERFUSION**  
**55th Annual Meeting of the Society-of-University-Surgeons**  
Spain, D. A., Wilson, M. A., Garrison, R. N.  
MOSBY-ELSEVIER.1994: 322–31

• **ROLE OF NITRIC-OXIDE IN THE SMALL-INTESTINAL MICROCIRCULATION DURING BACTEREMIA**  
**SHOCK**  
Spain, D. A., Wilson, M. A., Barnatan, M. F., Garrison, R. N.  
1994; 2 (1): 41-46

• **RENAL MICROVASCULAR RESPONSES TO SEPSIS ARE DEPENDENT ON NITRIC-OXIDE**  
**Annual Meeting of the Association-for-Academic-Surgery**  
Spain, D. A., Wilson, M. A., BLOOM, I. T., Garrison, R. N.  
ACADEMIC PRESS INC ELSEVIER SCIENCE.1994: 524–29

• **NITRIC-OXIDE SYNTHASE INHIBITION AGGRAVATES INTESTINAL MICROVASCULAR VASOCONSTRICTION AND HYPOPERFUSION OF BACTEREMIA**  
**JOURNAL OF TRAUMA-INJURY INFECTION AND CRITICAL CARE**  
1994; 36 (5): 720-725

• **TRACHEOSTOMY AND PERCUTANEOUS ENDOSCOPIC GASTROSTOMY IN THE MANAGEMENT OF THE HEAD-INJURED TRAUMA PATIENT**  
**61st Annual Scientific Meeting of the Southeastern-Surgical-Congress**  
DAMELIO, L. F., Hammond, J. S., Spain, D. A., Sutyak, J. P.
SOUTHEASTERN SURGICAL CONGRESS. 1994: 180–85

- **OPERATIVE TUBE VERSUS PERCUTANEOUS CHOLECYSTOSTOMY FOR ACUTE CHOLECYSTITIS** *AMERICAN JOURNAL OF SURGERY*
  Spain, D. A., Bibbo, C., ECKER, T., Nosher, J. L., Brolin, R. E.
  1993; 166 (1): 28-31

- **NONOPERATIVE MANAGEMENT OF BILATERAL SHATTERED KIDNEYS FROM BLUNT TRAUMA** *UROLOGY*
  Spain, D. A., Berger, Y., BOYARSKY, A. H., Flancbaum, L. J.
  1993; 41 (6): 579-581

- **PERITONEAL LEUKOCYTE RESPONSE FOLLOWING PLACEMENT OF POLYGLYCOLIC ACID INTESTINAL SLING IN PATIENTS WITH RECTAL-CARCINOMA** *DISEASES OF THE COLON & RECTUM*
  DEVEREUX, D. F., OCONNELL, S. M., Spain, D. A., Robertson, F. M.
  1991; 34 (8): 670-674

- **THE ADEQUACY AND COST-EFFECTIVENESS OF ROUTINE RESUSCITATION-AREA CERVICAL-SPINE RADIOGRAPHS** *ANNALS OF EMERGENCY MEDICINE*
  Spain, D. A., Trooskin, S. Z., Flancbaum, L., BOYARSKY, A. H., Nosher, J. L.
  1990; 19 (3): 276-278

- **Whipple operation revisited.** *New Jersey medicine : the journal of the Medical Society of New Jersey*
  Spain, D. A., Greco, R. S.
  1990; 87 (1): 41-44