**Curriculum Vitae**

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**Place of Birth:** Philadelphia, PA

**Education:**

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Degree | Field of Study | Institution  |
| 1997 | BA | BiologyAsian Studies | Swarthmore College |
| 2002 | MD | Medicine | Columbia University |
| 2010 | MS | Health Services Research | Stanford University |

**Postdoctoral Training:**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Title | Specialty/Discipline | Institution |
| 2002-2003 | Intern | General Surgery | Stanford University Medical Center |
| 2003-2004 | Resident | General Surgery | Stanford University Medical Center |
| 2004-2008 | Resident | Urology | Stanford University Medical Center |
| 2008-2010 | Fellowship | Urologic Oncology | Stanford University Medical Center |

**Academic Appointments:**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Academic Title | Department | Academic Institution |
| 2010-2013 | Instructor | Surgery  | Harvard Medical School |
| 2014-  | Assistant Professor | Surgery  | Harvard Medical School |

**Appointments at Hospitals/Affiliated Institutions**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Position Title | Department | Institution |
| 2008-2010 | Staff Surgeon | Surgery | Department of Veterans Affairs Palo Alto Health Care System |
| 2010-  | Associate Surgeon | Surgery | Brigham and Women’s Hospital |
| 2010-  | Surgical Oncologist | Surgery | Dana-Farber Cancer Institute |

**Committee Service**

|  |  |  |
| --- | --- | --- |
| Years(s) | Positional Title | Institution |
| 2011-2017  | Surgical Credentialing Committee | Brigham and Women’s Hospital |
| 2011-2014 | Operating Room New Products Committee | Brigham and Women’s Faulkner Hospital |
| 2013-2014  | Clinical Competency Committee | Brigham and Women’s Hospital |
| 2015-  | Quality Improvement Committee | Brigham and Women’s Hospital |

**Major Administrative Leadership Positions**

|  |  |  |
| --- | --- | --- |
| Year(s) | Position Title | Institution |
| 2013-  | Associate Program Director, Urologic Oncology Fellowship | Brigham and Women’s/Massachusetts General Hospital |
| 2016-  | Director of Ambulatory Clinical Operations, Division of Urology | Brigham and Women’s Hospital |
| 2016-  | Co-Director of the Kidney Cancer Center | Dana-Farber Cancer Institute |
| 2019-  | Section Chief of Urologic Oncology | Brigham and Women’s Hospital |

**Professional Societies:**

|  |  |
| --- | --- |
| Years of Membership | Society Name |
| 1997- | *Phi Beta Kappa Society* |
| 1997- | *Sigma Xi,* The Scientific Research Society |
| 2004- | American Urological Association |
| 2013- | Society of Urologic Oncology |
| 2013- | American College of Surgeons |
| 2015- | American Society of Clinical Oncology |

**Editorial Activities:**

|  |  |  |
| --- | --- | --- |
| Ad hoc Reviewer | Year | Journal Name |
|  | 2008- | Journal of Urology |
|  | 2008- | Urology |
|  | 2010- | Canada Journal of Urology |
|  | 2010- | International Journal of Urology |
|  | 2010- | Prostate and Prostatic Disease |
|  | 2010- | Journal of Immunotherapy |
|  | 2010- | Urologic Oncology: Seminars and Original Investigations |
|  | 2010- | European Urology |
|  | 2011- | Journal of Surgical Education |
|  | 2011- | UpToDate |
|  | 2014- | JAMA Surgery |

**Honors and Prizes:**

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Name of Honor/Prize | Awarding Organization | Achievement for which awarded |
| 1995 | Summer Research Fellowship | National Institute of Health | Research |
| 1996 | Summer Research Fellowship | National Institute of Health | Research |
| 1997 | *Phi Beta Kappa* Honor Society |  | Research |
| 1997 | *Sigma Xi*, The Scientific Research Society |  | Research |
| 1999 | Medical Student Fellowship in Trauma Surgery | Lehigh Valley Hospital | Clinical Excellence |
| 1999 | Resident Trauma Essay Competition – 2nd Place | American College of Surgeons | Research |
| 2005 | Northern California Resident Research Symposium- 2nd Place |  | Research |
| 2006 | Traveling Resident Scholarship- Bhopal, India | International Volunteers in Urology | Scholarship |
| 2006 | Northern California Resident Research Symposium- 2nd Place |  | Research |
| 2006 | Earl F. Nation Resident Scholarship | Western Section American Urological Association | Scholarship |
| 2006 | Traveling Scholarship | Urologic Diseases in America | Scholarship |
| 2007 | Gerald P. Murphy Award in Prostate Cancer Research | American Urological Association and Threshold Pharmaceuticals | Research |
| 2008 | Resident Achievement Award | The Society of Laparoendoscopic Surgeons | Clinical Excellence |
| 2009 | Ambrose/Reed Socioeconomic Prize Essay Contest | American Urological Association | Research |
| 2009 | Foundation Scholarship | North American Taiwanese Medical Association | Scholarship |
| 2009 | Joseph F. McCarthy Physician Essay Contest – 1st Place | Western Section American Urological Association | Research |
| 2009 | James L. Goebel Grand Poster Prize | Western Section American Urological Association | Research |
| 2010 | Merit Award | ASCO Cancer Foundation | Research |
| 2010 | CapCURE Award | Prostate Cancer Foundation | Research |
| 2012 | Best Poster of Session | American Urological Association | Research |
| 2013 | J.Hartwell Harrison, M.D. Memorial Resident Education Award | Brigham and Women's Hospital, Division of Urology | Teaching |
| 2014 | Max K. Willscher Resident Research Award Competition, 2nd place | New England Section, American Urological Association | Research/Mentorship |
| 2018 | J.Hartwell Harrison, M.D. Memorial Resident Education Award | Brigham and Women's Hospital, Division of Urology | Teaching |

**Report of Funded and Unfunded Projects**

**Funding Information**

**Past Funding**

|  |  |  |
| --- | --- | --- |
| Year(s) | Funding source | Total direct costs |
| 2008-2010 | Clinical & Translational Science Award (CTSA) Post-Doctoral Fellowship in Health Services Research | $120,000 |
|   | Trainee | NIH KL2 RR025743 |   |
|  | The objective of this grant was for post-doctoral training in health services research. |
|  |  |  |
| 2010-2011 | DF/HCC Kidney Cancer Special Program in Research Excellence, Developmental Project Grant | ~$16,000 |
|   | Principal Investigator | 5P50CA101942-07 |   |
|  | *Cost-Effectiveness Analysis of Routine Percutaneous Renal Biopsy in the Management of Small Renal Masses* |
| 2011-2013 | DF/HCC Kidney Cancer Special Program in Research Excellence, Developmental Project Grant | $20,000 |
|   | Co-Investigator |  |   |
|  | *Evaluating Comparative Effectiveness of Open and Minimally Invasive Kidney Surgery: Patient Reported QOL Outcomes and Cost* |
|  |  |  |
| 2011-2013 | DF/HCC Kidney Cancer Special Program in Research Excellence, Career Development Award | $100,000 |
|   | Principal Investigator | 5P50CA101942-09 |   |
|  | *Optimization of Surveillance Strategies Following Localized Kidney Cancer Therapy* |
|  |  |  |
| 2012-2014 | Brigham and Women's Hospital, Department of Surgery, Junior Fellowship Award in Honor of Robert T. Osteen, MD | $30,000 |
|   | Principal Investigator |  |   |
|  | *Comparative Effectiveness of Injectable Anticoagulants for Venous Thromboembolism Prophylaxis in Major Urologic Surgery* |
|  |  |  |

**Current Funding**

|  |  |  |
| --- | --- | --- |
| 2011- | Henry M Jackson Foundation for the Advancement of Military Medicine  | $1,909,656 |
|   | Co-Investigator | HU0001-11-1-0023 |   |
|   | Adil Haider, MD, MPH (PI) |   |
|  | *Comparative Effectiveness and Provider Induced Demand Collaboration: a Clinical and Economic Analysis in Variation in Healthcare* |

|  |  |  |
| --- | --- | --- |
| 2017- | Fox Chase Cancer Center (FCCC)  | $17,389 |
|   | Principal Investigator |  |   |
|  | *A Phase II Study of Sporadic Angiomyolipomas (AMLs) Growth, Size, and Interventions Rates with Everolimus (SAGE)* |

|  |  |  |
| --- | --- | --- |
| 2017- | Ceevra, Inc  | $0 |
|   | Principal Investigator |  |   |
|  | *Virtual Reality Modeling for Surgical Planning and Education* |

**Report of Local Teaching and Training**

**Teaching of Students in Courses**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Course & Audience | Role | Level of Effort |
| 2011- | The Genitourinary ExaminationHarvard Medical School Students | Lecturer | 1 one-hour session per year |
| 2014 | London Society Renal Physiology and Pathophysiology Course (HT110) – Urologic Diseases Harvard Medical School Students | Lecturer | 1 one-hour session per year |
| 2014 | Oncology Interest Group – Mock Tumor Board Harvard Medical School Students | Lecturer | 1 two-hour session per year |
| 2013- | Upper Urinary Tract Pathophysiology and Management Harvard Medical School Students | Lecturer | 3 one-hour sessions per year |

**Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Course & Audience | Role | Level of Effort |
| 2010- | Brigham and Women's Hospital, Urology Grand RoundsUrology Residents & Fellows | Lecturer | 4 one-hour sessions per year |
| 2010-2015 | Laparoscopic and Open Urologic Surgical Simulation - Pig LaboratoryUrology Residents | Course Leader | 1 three-hour session per year |
| 2016- | Urologic Oncology Fellowship Monthly Didactic Sessions  | Course Leader | One-hour per month |

**Clinical Supervisory and Training Responsibilities**

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| --- | --- | --- | --- |
| Year(s) | Course & Audience | Role | Level of Effort |
| 2010- | Brigham and Women's Hospital, Housestaff Mentoring | Mentor | 4 one-hour sessions per year |
| 2010- | Brigham and Women's Hospital, Housestaff Clinical Training | Attending | 16 hours per week |

**Laboratory and Other Research Supervisory and Training Responsibilities**

|  |  |  |  |
| --- | --- | --- | --- |
| Year(s) | Course & Audience | Role | Level of Effort |
| 2013-2014 | Center for Surgery and Public Health, Cabot Fellowship Mentor | Mentor | 2-4 hours per week |
| 2014- | Center for Surgery and Public Health, Post-Doctoral Fellow Mentor | Mentor | 2 hours per week |
| 2013- | Combined Harvard Urologic Oncology Fellowship Program | Director | 6 hours per week |

**Formally Supervised Trainees**

|  |  |  |
| --- | --- | --- |
| Year(s) | Individual & Current Position |  |
| 2012-2013 | Nicole J Look-Hong, MD, MScSurgical Oncologist, University of Toronto*Published one manuscript the explored the cost of competing strategies for the management of gastrointestinal stromal tumors (GIST).* |
| 2012-2014 | Jeffrey J Leow, MBBSUrology Resident, MOH Holdings, Singapore*Published >30 manuscripts on the topic of urology.* |
| 2012-2013 | Stephen W ReeseUrology Resident, Brigham and Women’s Hospital, Boston, MA*Published 2 manuscripts on the topic of urologic oncology.* |
| 2014-2015 | Ilker Tinay, MDAssistant Professor, Marmara University School of Medicine, Istanbul, Turkey*Published 4 manuscripts on the topic of urologic cancer surgery.* |
| 2014- | Ye Wang, PhDPost-Doctoral Fellow, Center for Surgery and Public Health*Published 20 manuscripts on the topic of urology.* |
| 2014-2016 | Christopher B Allard, MD, Urologist, Joseph Brant Memorial Hospital and McMaster University, Ontario, Canada*Published 4 manuscripts on the topic of urologic cancer surgery.* |
| 2014-2016 | Francisco Gelpi-Hammerschimdt, MD, MPHUrologist, Houston Metro Urology, Houston, TX*Published 6 manuscripts on the topic of urologic cancer surgery.* |
| 2015-2017 | Nawar Hanna, MD, Assistant Professor, Université de Montréal, Montréal, Canada*Published 4 manuscripts on the topic of urologic cancer surgery.* |
| 2015-2017 | Ross Erik Krasnow, MD, MPHAssistant Professor of Urology, MedStar Washington Hospital Center Washington, DC *Published 6 manuscripts on the topic of urologic cancer surgery.* |
| 2016-2018 | Matthew Ingham, MDAssistant Professor of Surgery, Brigham and Women’s Hospital, Boston, MA*Published 1 manuscripts on the topic of urologic cancer surgery.* |
| 2016-2018 | Matthew Mossanen, MD, MPHAssistant Professor of Surgery, Brigham and Women’s Hospital, Boston, MA*Published 10 manuscripts on the topic of urologic cancer surgery.* |

**Report of Regional, National and International Invited Teaching and Presentations**

**Local Invited Presentations and Courses**

|  |  |  |
| --- | --- | --- |
| Year | Title of presentation/name of course | Sponsor/Location |
| 2010 | Robotic Partial Nephrectomy*Faulkner Hospital Grand Rounds* | Faulkner HospitalBoston, MA |
| 2011 | Robotic Radical Cystectomy*Faulkner Hospital Grand Rounds* | Faulkner HospitalBoston, MA |
| 2011-2013 | Diagnosis and Management of Small Renal Masses*Internal Medicine Rounds* | Brigham and Women’s HospitalBoston, MA |
| 2011 | Cost-Effectiveness Analysis in Urology*Urology Grand Rounds* | Brigham and Women’s HospitalBoston, MA |
| 2011 | The Economic and Clinical Impact of Chronic Kidney Disease Following Surgical Therapy for Kidney Cancer*Kidney Cancer SPORE* | Dana Farber Cancer InstituteBoston, MA |
| 2012 | Cost-Effectiveness Analysis of Percutaneous Renal Mass Biopsy in the Management of Small Renal Masses*Kidney Cancer SPORE* | Dana Farber Cancer InstituteBoston, MA |
| 2013 | Is Robotic Surgery Worth the Cost?*Second Annual BWH Research Day*  | Brigham and Women's HospitalBoston, MA |
| 2013 | Is Robotic Surgery Worth the Cost?*Second Annual BWH Research Day*  | Brigham and Women's HospitalBoston, MA |
| 2014 | Urology for the General Surgeon*General Surgery Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2014 | The 101, 411, and 911 of Urologic Emergencies and Intraoperative Consults*Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2015 | Management of Advanced Kidney Cancer *Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2016 | Cancer of the Renal Pelvisand Ureter *Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2017 | Minimally Invasive Treatment of Upper Tract TCC*Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2017 | Fundamentals of Laparoscopy and Robotics*Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2018 | Advanced Kidney Cancer*Urology Grand Rounds*  | Brigham and Women's HospitalBoston, MA |
| 2018 | Urologist Perspective on Renal Masses*DFCI Cancer Imaging Program*  | Dana-Farber Cancer InstituteBoston, MA |

**Regional Invited Presentations and Courses**

|  |  |  |
| --- | --- | --- |
| Year | Title of presentation/name of course | Sponsor/Location |
| 2011 | Diagnosis and Management of Small Renal Masses*Grand Rounds* | Leonard Morse Hospital Natick, MA |
| 2012 | Who is an appropriate candidate for partial nephrectomy? *Advances in the Treatment of Genitourinary Cancers* | Dana Farber Cancer InstituteBoston, MA |
| 2012 | Prostate Cancer *Grand Rounds* | South Shore Hospital South Weymouth, MA |
| 2012 | Prostate Cancer  | Health Ministry of Grace ChurchCanton, MA |
| 2012 | Robotic Partial Nephrectomy*New England Robotics Course* | Beth Israel Deaconess Medical CenterBoston, MA |
| 2013 | Robotic Partial Nephrectomy*New England Robotics Course* | Beth Israel Deaconess Medical CenterBoston, MA |
| 2014 | Update in Cystectomy and Nephroureterectomy Options*Advances in the Treatment of Genitourinary Cancers* | Dana Farber Cancer InstituteBoston, MA |
| 2014 | Robotic Partial Nephrectomy*New England Robotics Course* | Beth Israel Deaconess Medical CenterBoston, MA |
| 2015 | Robotic Nephrectomy and Prostatectomy *GI/GU Surgical Nursing Conference* | Brigham and Women’s HospitalBoston, MA |
| 2015 | Kidney Cancer Panel*Advances in the Treatment of Genitourinary Cancers*  | Dana Farber Cancer InstituteBoston, MA |
| 2016 | Patient Selection for Robotic Partial Nephrectomy: Retroperitoneoscopic vs Transperitoneoscopic Approaches*New England Robotics Course*  | Beth Israel Deaconess Medical CenterBoston, MA |
| 2016 | Obstruction Cases session*Homeostasis II* | Harvard Medical SchoolBoston, MA |
| 2017 | Obstruction Cases session*Homeostasis II* | Harvard Medical SchoolBoston, MA |
| 2017 | The 101, 411, and 911 of Robotic Surgery*Lowell General Hospital Grand Rounds* | Lowell General HospitalLowell, MA |
| 2018 | Obstruction Cases session*Homeostasis II* | Harvard Medical SchoolBoston, MA |
|  |  |  |

**National and International Invited Presentations and Courses**

|  |  |  |
| --- | --- | --- |
| Year | Title of presentation/name of course | Sponsor/Location |
| 2010 | Robotic Radical Prostatectomy*15th Annual Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2012 | Laparoscopic Nephrectomy*16th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2012 | Robotic Radical Cystectomy*16th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2014 | Laparoscopic and Robotic Nephrectomy*17th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2014 | Minimally Invasive Treatment of Upper Tract Urothelial Carcinoma*17th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2014 | The proper role of robotic surgery and its future prospect *Grand Rounds* | Koo Foundation Sun-Yat Sun Cancer CenterTaipei, Taiwan |
| 2015 | Surgical Crisis: Does the Robot Help or Hinder? | LSU/Oschner Health SystemNew Orleans, LA |
| 2015 | Beyond Statistics: Cost-Effectiveness Analysis in Urology | LSU/Oschner Health SystemNew Orleans, LA |
| 2015 | Upper Tract Urothelial Carcinoma: The Orphan Disease | LSU/Oschner Health SystemNew Orleans, LA |
| 2015 | Comprehensive Review of Urology: Cancer of Renal Pelvis and Ureter | Oakstone Publishing |
| 2015 | NCCN Kidney Tumor Board Webinar | National Comprehensive Cancer Network |
| 2016 | 2016 NCCN Oncology Fellows Program: New Horizons in Quality Cancer Care | Hollywood, FL |
| 2016 | Laparoscopic and Robotic Nephrectomy*18th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2016 | Minimally Invasive Treatment of Upper Tract Urothelial Carcinoma*18th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2016 | Cost Effectiveness Analyses and Their Implications in the Management of RCC *DF/HCC Kidney Cancer Program Symposium 2016* | Harvard Medical SchoolBoston, MA |
| 2016 | Minimally Invasive Treatment of Upper Tract Urothelial Carcinoma*18th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2017 | Surgical Education in the 21st Century: Combining Traditional Principles with Modern Technologies, *Symposium on Medical Education: How to educate and train health care professionals for the 21st century* | Koo Foundation Sun-Yat Sun Cancer CenterTaipei, Taiwan |
| 2017 | Retroperitoneoscopic Robotic Partial Nephrectomy: Patient Selection and Surgical Technique, *Grand Rounds* | Department of Urology, Taipei Veterans General Hospital, Taiwan |
| 2017 | Adrenal Tumors, *The 39th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2017 | Renal Pelvic and Ureteral Tumors, *The 39th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2017 | Renal Tumors, *The 39th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2017 | Management of Renal Masses and Expanded Use of Minimally Invasive Surgery, *New England American Urological Association, 2017* | Montreal, Canada |
| 2018 | Prehabilitation in Urology, *Taiwan Surgical Association* | Taipei, Taiwan |
| 2018 | Cost-Effectiveness in Urology, *Grand Rounds* | Department of Urology, Taipei Veterans General Hospital, Taiwan |
| 2018 | Adrenal Tumors, *The 40th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2018 | Renal Pelvic and Ureteral Tumors, *The 40th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2018 | Renal Tumors, *The 40th Annual Specialty Reviews in Urology (SRU): Chicago Course* | Naperville, IL |
| 2018 | Advanced Kidney Cancer, *UroFair 2018* | Singapore |
| 2018 | Retroperitoneoscopic Robotic Partial Nephrectomy: Patient Selection and Surgical Technique, *UroFair 2018* | Singapore |
| 2018 | Robotic Radical Cystectomy, *Thailand-UMPC 2018* | Chiang Mai, Thailand |
| 2018 | Advanced Kidney Cancer, *Thailand-UMPC 2018* | Chiang Mai, Thailand |
| 2018 | Cost effectiveness and Laparoscopic and Robotic Radical Nephrectomy,*19th Biennial Urologic Cancer Course* | Harvard Medical SchoolBoston, MA |
| 2018 | Posterior Renal Tumors Debate: Retroperitoneal Approach, *Asian Summit on Robotic Surgery, 2018* | Singapore |
| 2018 | Intraoperative and Postoperative Complications: Troubleshooting and Practical Solutions, *Asian Summit on Robotic Surgery, 2018* | Singapore |
| 2018 | Delivering Cost Effective Robotic Surgery in a Multi-Specialty Hospital, *Asian Summit on Robotic Surgery, 2018* | Singapore |
| 2018 | Cost Implications for Renal Mass Management Choices, *American College of Surgeons, 2018* | Boston, MA |
| 2018 | Laparoscopic versus Robotic Radical Nephrectomy: What are the Costs and Benefits?, *Seventeenth International* *Kidney Cancer Symposium* | Miami, FL |

**Report of Clinical Activities and Innovations**

**Current Licensure and Certification**

|  |  |
| --- | --- |
| Year | Type of License or Certification |
| 2003 | The Medical Board of California (A85309) |
| 2003 | Drug Enforcement Agency (BC8703109) |
| 2006 | California Fluoroscopy X-ray Supervisor and Operator (RHC 164644) |
| 2010 | Board of Registration in Medicine, Commonwealth of Massachusetts (244769) |
| 2012 | American Board of Urology (17063) |

**Practice Activities**

|  |  |  |  |
| --- | --- | --- | --- |
| Type of Activity | Setting of Practice | Name and location of practice | Level of activity |
| Surgery | Hospital practice | Urology, BWH | Two days per week elective cases, plus nonelective cases |
| On-call general Urology | Hospital practice | Urology, BWH | One out of seven weeks |
| Ambulatory care | Outpatient clinic | Urology, BWH | Two days per week |

**Report of Scholarship**

**Publications**

**Peer-Reviewed Publications**

Research Investigations

1. Koo HP, Howard PS, **Chang SL**, Snyder HM, Duckett JW, Macarak EJ. Developmental expression of interstitial collagen genes in fetal bladders. *J Urol.* 1997;Sept;158(3Pt1):954-961. PMID: 9258125.
2. **Chang SL**, Howard PS, Koo HP, Macarak EJ. Role of type III collagen in bladder filling. *Neurourol* *Urodyn*. 1998;17(2):135-145. PMID: 9514146.
3. Koo HP, Macarak EJ, **Chang SL**, Rosenbloom J, Howard PS. Temporal expression of elastic fiber components in bladder development. *Connect Tissue Res.* 1998;37(1-2):1-11. PMID: 9643643.
4. **Chang SL**, Chung JS, Yeung MK, Howard PS, Macarak EJ. Roles of the lamina propria and the detrusor in tension transfer during bladder filling. *Scand J Urol Nephrol Suppl.* 1999;201:38-45. PMID: 10573775.
5. **Chang SL**, Cushman JG, Pasquale MD. The Injured Intoxicated Driver: Analysis of the Conviction Process. *J Trauma*. 2001;51(3):551-556. PMID: 11535909.
6. Hsu TH, **Chang SL**, Hsu S. Laparoscopic calicovesicostomy: a novel surgical procedure. *Urology*. 2006;68(2):413-415. PMID: 16904465.
7. **Chang SL**, Caruso T, Shortliffe LD. MRI-detected Renal Volume Reduction in Refluxing and Nonrefluxing Kidneys. *J Urol*. 2007 Dec;178(6):2550-2554.PMID: 17937957.
8. **Chang SL**, Liao JC, Shinghal R. Decreasing Utilization of LHRH-agonists in the United States is Independent of Reimbursement Changes: a Medicare and Veterans Health Administration Claims Analysis. *J Urol*.2009 July;182(1):255-260. PMID: 19450844.
9. **Chang SL**, Freedland SJ, Terris MK, Aronson WJ, Kane CJ, Amling CL, Presti JC. Freedom From a Detectable Ultrasensitive PSA at Two Years After Radical Prostatectomy Predicts a Favorable Clinical Outcome: Analysis of the SEARCH Database. *Urology*. 2010 Feb;75(2):439-444. PMID: 19819536.
10. Levesque BG, Cipriano LE, **Chang SL**, Lee KK, Owens DK, Garber AM. Cost-Effectiveness of Alternative Imaging Strategies for the Diagnosis of Small-Bowel Crohn's Disease. *Clin Gastroenterol Hepatol.* 2010 Mar;8:261-267. PMID: 19896559.
11. **Chang SL**, Harshman LC, Presti JC. The Impact of Common Medications on Serum Total Prostate-Specific Antigen Levels: Analysis of the National Health and Nutrition Examination Survey. *J Clin Oncol*. 2010 Sep 1;28(25):3951-3957. PMID: 20679596.
12. Hsu M, **Chang SL**, Ferrari M, Nolley R, Presti JC, Brooks JD. Length of Site-Specific Positive Surgical Margins Following Radical Prostatectomy as a Risk Factor for Biochemical Recurrence. *Int J Urol.* Feb 22;18:272-281. PMID: 21342296.
13. **Chang SL**, Cipriano LE, Harshman LC, Garber AM, Chung BI. Cost-effectiveness Analysis of Nephron-sparing Options in the Management of Small Renal Masses. *J Urol.* 2011 May;185(5):1591-1597. PMID: 21419445.
14. Alemozaffar M, **Chang SL**, Kacker R, Sun M, Dewolf WC, Wagner AA. Comparing Costs of Robotic, Laparoscopic, and Open Partial Nephrectomy. *J Endourol.* 2013 May;25(5):560-565.
15. Hong NL, **Chang SL**, Raut CP. The Economic Impact of Cytoreductive Surgery and Tyrosine Kinase Inhibitor Therapy in the Treatment of Recurrent or Metastatic Gastrointestinal Stromal Tumors: a Markov Chain Decision Analysis. *Eur J Cancer*. 2014 Jan;50(2):397-405.
16. Leow JJ, Martin-Doye W, Rajagopal PS, Patel CG, Anderson EM, Rothman AT Cote RJ, Urun Y, **Chang SL**, Choueiri TK, Bellmunt J. Adjuvant Chemotherapy for Invasive Bladder Cancer: a 2013 Updated Systematic Review and Meta-Analysis of Randomized Trials. *Eur Urology*. 2014 Jul;66(1):42-54.
17. Varda BK, Johnson EK, Clark CJ, Chung BI, Nelson CP, **Chang SL**. National trends of perioperative outcomes and cost for open, laparoscopic and robotic pediatric pyeloplasty. *J Urol*. 2014 Apr;191(4):1090-1095.
18. Gandaglia G, Sammon JD, **Chang SL**, Choueiri TK, Hu J, Karakiewicz PI, Kibel AS, Kim SP, Konijeti R, Montorsi F, Nguyen PL, Sukumar S, Menon M, Sun M, Trinh QD. Comparative Effectiveness of Robot-Assisted and Open Radical Prostatectomy in the “Post-Dissemination” Era.*J Clin Oncol*. 2014 May;32(14):1419-1426.
19. Antczak C, Trinh VQ, Sood A, Ravi P, Roghmann F, Trudeau V, **Chang SL**, Karakiewicz PI, Kibel AS, Krishna N, Nguyen PL, Saad F, Sammon JD, Sukumar S, Zorn KC, Sun M, Trinh QD. The health care burden of skeletal-related events in renal cell carcinoma patients with bone metastases.*J Urol*. 2014 Jun;191(6):1678-84.
20. Leow JJ, Reese SW, Jiang W, Lipsitz SR, Bellmunt J, Trinh QD, Chung BI, Kibel AS, **Chang SL**. Propensity-Matched Comparison of Morbidity and Costs of Open and Robot-Assisted Radical Cystectomies: A Contemporary Population-Based Analysis in the United States.*Eur Urol*. 2014 Sep;66(3):569-76.
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**Non-peer Reviewed Publications**

1. **Chang SL**, Shortliffe LD. Pediatric urinary tract infections. *Pediatr Clin North Am*. 2006 Jun; 53(3):379-400.
2. **Chang SL**, Brooks JD. Nutrition, Lifestyle Interventions and Prevention. In: Feneley M, Payne H, editors. *Therapeutic Strategies in* *Prostate Cancer*. Oxford, UK: Clinical Publishing, 2007:2-38.
3. **Chang SL**, Gonzalgo ML. Laparoscopic prostatectomy: learning curve and cancer control. *Nat Rev Urol*. 2009 July;6:361-362.
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5. Raup VT, **Chang SL**, Eswara JR. Post-Renal Acute Kidney Injury: Epidemiology, Presentation, Pathophysiology, Diagnosis, and Management. In press *Core Concepts in Acute Kidney Injury*.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings (past 3 years)

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| 1. Rowe CK, Leow JJ, Wang Y, Chung BI, Trinh QD, Kibel AS, Yu RN, **Chang SL**. Surgical crisis: Is the robot friend or foe? Presented at the 2015 American Urological Association National Meeting, May 2015.
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3. Rowe CK, Hess DS, Hwong JS, Gelpi-Hammerschmidt F, Chung BI, **Chang SL**. NSAIDs for acute urolithiasis: Underutilized analgesics with potential for cost savings. Presented at the 2015 American Urological Association National Meeting, May 2015.
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**Narrative Report**

As a urologic oncologist at Brigham and Women’s Hospital (BWH) and Dana-Farber Cancer Institute (DFCI), I have devoted my career to improving the lives of individuals with cancers of the genitourinary tract, namely kidney cancer, bladder cancer, and prostate cancer. To achieve my goal, my time is spent 1) directly participating in patient care (65%), 2) conducting research evaluating treatment options and identifying strategies that are both effective and cost-effective (15%), 3) educating medical students, residents, and fellows through didactic teaching and mentorship (15%), and 4) providing leadership as Director of Ambulatory Clinical Operations at Brigham and Women’s Hospital, Division of Urology (5%).

As a clinician, my first responsibility is to guide patients, often with a new diagnosis of cancer, through the complex landscape of treatment options. At BWH and DFCI, I have the benefit of working alongside world class medical oncologists and radiation oncologists, which gives me the opportunity to offer patients a personalized and often multi-disciplinary treatment plan. For those who elect to pursue surgical treatment, my goal is to perform surgery in a manner with the least amount of operative trauma, fewest complications, and quickest recovery. Thus, whenever possible, I employ minimally invasive laparoscopic and robotic surgical techniques, and this now represents over 85% of my clinical practice. My efforts have resulted in a robust practice leading to patient referrals regionally, nationally, and internationally as well as recognition as one of the “Top Doctors” in Boston. Beyond lecturing on surgical techniques locally and nationally, I have also had the pleasure of sharing my clinical expertise with colleagues internationally in Taiwan, Thailand, and Singapore where I have collaborated with local surgeons to start, develop, or enhance programs in robotic surgery, respectively.

As an investigator, my aim is to improve the delivery of care of patients with urologic cancers. Since receiving my master’s degree in health services research in 2010, my research has revolved primarily around decision-analytic modeling and the analysis of large national databases as the main tools for investigation. My research has been supported by both institutional and national funding sources and presented at regional, national, and international conferences. Unlike the traditional surgical research evaluating the experience of a single surgeon or institution, I favor using complex modeling techniques that take a comprehensive view of the natural history of disease and population-based research techniques that yield findings applicable to the larger medical community. The ultimate goal is for these investigations to develop clinical guidelines and inform health policy. An example where my research impacted practice was in 2016, when I authored a paper with a study cohort of over 600,000 men undergoing study for prostate cancer, the largest study to date, and the findings of my study directly influenced decisions regarding reimbursement changes for prostate cancer surgery by the Centers for Medicare & Medicaid Services. Furthermore, over the past several years, I have complemented my work in health services research by becoming an active co-investigator with colleagues at BWH and DFCI performing basic science research. I am now participating in promising studies identifying stem cells from the kidney, characterizing epigenetic markers of kidney cancer, and creating of a personalized vaccine for kidney cancer. Despite my primary effort as a clinician, I remain committed to performing research both primarily and through collaborative efforts to improve the treatment of urologic cancers.

Equally as important as discovery through research is teaching and mentorship. I deeply value the opportunity to develop the next generation of urologists and researchers. Since joining the faculty at BWH in 2010, I have actively engaged in teaching Urology residents essentially on a daily basis with interactive discussions formally in Division conferences and informally before and after clinical encounters. Beginning in 2011, my teaching responsibilities expanded to 2nd year medical students at Harvard Medical School with annual lectures on genitourinary physical examination and pathophysiology. And then in 2014, I became the co-program director of the Combined Harvard Urologic Oncology Fellowship Program, which afforded me the chance for specialized instruction to fellows on the management of the most complex clinical conditions faced by urologic oncologists. Among my most gratifying achievements have been recognition of teaching excellence by residents with the *J.Hartwell Harrison, M.D. Memorial Resident Education Award* in 2013 and 2018 as well as a nomination for the American Urological Association Residents Committee Teaching Award in 2017. Perhaps an even greater privilege than teaching, however, is mentorship, which gives me the opportunity to influence the career trajectory of a mentee based on his or her unique goals, personality, and strengths. Now as a senior member of the Division of Urology, I have mentored a diverse pool of talented and creative individuals with various background and at different timepoint in their training. Mentorship of medical students, residents, fellows, and visiting researchers has not only led to numerous collaborations and publications but more importantly professional development. I believe I learn as much from my mentees as they do from me and feel I have succeeded when my mentees achieved their own success.

In my role as Director of Ambulatory Clinical Operations at Brigham and Women’s Hospital, Division of Urology since 2016, I am charged with the responsibility of maintaining and optimizing the outpatient clinics such that patients with all urologic diseases are seen efficiently and in a timely manner by our clinicians. Annually, my colleagues and I see over 20,000 clinic visits in the Division of Urology outpatient clinics, and this volume is expected to continue increasing. Urology is a procedural specialty and there are over 8,000 office procedure each year in our clinics. To accommodate this large volume of patients and procedures, it is necessary to coordinate the efforts of 15-20 medical assistants and licensed practical nurses that work in our clinics across three different campuses. I have spearheaded the recent effort to expand office procedures through the overhaul of our clinic equipment which in turn allows for many office procedures that were formally reserved for the operating room including injection of bladder Botox to treat bladder overactivity and new treatments for enlarged prostate to address male voiding dysfunction.

As an academic urologist at BWH and DFCI, I am perfectly situated within the forward-thinking, multi-disciplinary Harvard community. I look forward to continuing my contributions to urologic oncology through the direct care of patients, the development of evidence-based practice guidelines and healthy policy through research, and my involvement with teaching and mentorship.