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Hepatology in a Changing Health Care Landscape: A Call for Health Services Research

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Abstract

With the passage of the Affordable Care Act (ACA) followed by the physician payment reform, there is an urgent need to better understand the complex relationships between structure (including incentives), processes, and outcomes of health care and, based on this understanding, identify interventions that can ensure delivery of high value care to patients with liver disease. As hepatologists, how do we systematically address these issues and ensure that we provide high-value care to our patients? These factors combine in the burgeoning field of health services research. This paper seeks to describe how health services research influences the practice of hepatology, the tools and technologies it utilizes, as well as how interested individuals can seek to acquire knowledge and methodologic training in health services research. Finally, we summarize the current state of health services research in hepatology and liver transplantation.

Keywords

health care delivery research; health outcomes research; health policy research; liver transplantation; liver disease

Introduction

With the passage of the Affordable Care Act (ACA) followed by the physician payment reform, there is an urgent need to better understand the complex relationships between structure (including incentives), processes, and outcomes of health care and, based on this

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understanding, identify interventions that can ensure delivery of *high-value care* to patients with liver disease. *Quality of healthcare* refers to the degree to which health services for individuals and populations increase the likelihood of desired outcomes and is consistent with existing evidence and knowledge. Quality of care can be measured by measuring the structure, process as well as outcomes of care; however, the traditional concept of quality is independent of cost of providing that care. *High-value care* balances quality with costs with the overarching goal of improving patient outcomes.¹ As hepatologists, how do we systematically address and ensure that we not only provide high-quality care, but that we provide high-value care to our patients? These factors combine in the burgeoning field of health services research (HSR). This paper seeks to describe how HSR influences the practice of hepatology, the tools and technologies it utilizes, as well as how interested individuals can seek to acquire knowledge and methodologic training in HSR. Finally, we summarize the current state of HSR in hepatology and liver transplantation.

What is Health Services Research?

HSR, also known as health systems research, is a multidisciplinary field that draws on all the health professions and disciplines including biostatistics, epidemiology, health economics, medicine, nursing, operations research, psychology, and sociology.² The goal of HSR is to study how social factors, financing systems, organizational structures, health technologies, and personal behaviors affect the access to and outcomes (including quality and cost) of care provided by health care systems.² Ultimately, the discoveries of HSR are used to inform and evaluate health policy initiatives, such as changes in government-sponsored health insurance coverage (e.g., Medicare and Medicaid) or policies that address healthcare disparity on a local, regional and national level.³ In contrast to medical research, which focuses on the development and evaluation of clinical treatments, HSR is more concerned with delivery and access to those treatments in routine clinical care. Specifically, HSR examines the effectiveness of care, a different concept than the more familiar idea of efficacy. *Efficacy* describes how well a drug, procedure, or device improves clinical outcomes under ideal conditions. Often addressed by randomized controlled trials, efficacy estimates allow us to determine if a therapy can, for example, suppress hepatitis C virus, relieve ascites, or increase survival under controlled circumstances. Effectiveness describes how the given intervention influences outcomes in day to day practice, accounting for differences in access, tolerability, and compliance to treatments. Unfortunately, there is often a wide chasm between efficacy and effectiveness; HSR addresses the reasons underling this disconnect with the goal of closing the gap between efficacy and effectiveness.

The measures of interest in HSR include more than just hard endpoints like survival, but extend to include the framework of structure, process, and outcome⁴ including cost-effectiveness of care.⁵ The latter represents the concept of *value*, generally defined as “outcomes achieved per dollar spent”¹ and emphasizes the need to balance clinical interventions with cost, broadening the focus from acute disease management to include primary, secondary or tertiary prevention, care coordination, and continuity.⁴ The science of HSR includes the areas of: (1) access, quality and safety, (2) comparative evaluations of models of care delivery, (3) implementation of clinical practice guidelines and best practices in various care settings, (4) comparative effectiveness research (CER) on diagnostic tests and

treatments, and (5) shared decision making and the development of patient-reported outcome measures based on pertinent stakeholder engagement (Table 1).²

Tools for Conducting Health Services Research

Health service interventions are inherently complex and usually involve multiple levels, including patients, providers, health care organizations, and community contexts. Although HSR relies on study designs that are widely used in other disciplines, including experimental (such as randomized controlled trials) and observational (such as retrospective cohort studies) designs, the ability to collect, study, and understand the disparate types of data at a population level requires new tools and a unique set of skills. This process is becoming easier with rapid advances in medical technology, which continue to fundamentally change the way HSR is performed. Tools such as the electronic medical record (EMR), clinical databases, and patient registries are examples of how technology can help address these questions in a quantitative manner. Such advances, however, require a new type of physician scientist, one who can understand and grapple with the complex challenges associated with EMR-based research: fragmented data structure, data standardization, electronic security, data management, and real-time analytics.⁶

Given the breadth of questions that HSR attempts to address, there are numerous areas for methodologic emphasis in HSR (Table 2). Several quantitative approaches in HSR may be familiar to many, including comparative effectiveness design, systemic reviews and meta-analyses. However, numerous questions in HSR cannot be answered based on quantitative data alone. Thus, mixed-methods approaches (e.g., that which combines quantitative and qualitative data collection and analysis) are commonly employed in HSR. Examples might include exploring barriers to hepatitis C treatment in substance users with patient and provider surveys and focus groups, examining why alcohol liver disease patients with cirrhosis do not maintain alcohol abstinence using AUDIT-C questionnaires and direct patient observations, or investigating what factors influence post-transplant medication adherence using population surveys and qualitative interviews of selected survey respondents. Combining quantitative and qualitative data collection and analyses in a mixed-method approach allows researchers in health services to answer complex questions that could not be answered otherwise.

Training & Mentoring in Health Services Research

Effective HSR involves obtaining advanced skills to utilize the tools, resources and study designs unique to this field. A career development training plan in HSR can integrate: (1) Mentored research experience, (2) Didactic coursework and structured training workshops, (3) Experiential training in application of learned methodology, (4) Engagement of institutional resources, and (5) Participation in local and national scientific meetings. As with other disciplines, the identification of appropriate mentors to help oneself navigate the research enterprise process is critical for success in HSR. By its nature, HSR is an interdisciplinary science where collaborations between divisions (general internal medicine and gastroenterology), departments (medicine and surgery), and schools (medical and public health) occur frequently.³ The successful investigator will develop a mentorship team

comprised of experienced and knowledgeable advisors from a variety of fields to create an environment for conducting innovative research. The “translational” component of HSR occurs when such research is applied within the actual delivery systems where medical care is provided. This has increasingly been recognized as essential for understanding how to improve the value of our investments in health care.³

Didactic coursework will focus on understanding systems healthcare, the framework for conducting healthcare-delivery research and may include methodologic training in specific areas of focus (Table 2). Individuals may also choose to pursue formal advanced degrees in the science of health care delivery, biostatistics and epidemiology, public health, clinical investigation, or healthcare quality and patient safety (Table 3). Over 79 institutions across the U.S. offer individual and dual-degree programs in health services research and/or public health (<https://www.nlm.nih.gov/nichsr/hsruniv.html>). These programs prepare physicians and clinical health professionals for careers in academic medicine, and non-clinicians for careers in academia, health systems, and research and policy organizations. Degrees are typically completed in 2 years and programs vary from in-residence to online-only with many offering hybrid models to accommodate the needs of busy practicing clinicians.

Residents and fellows-in-training may also want to investigate institutional-based funding opportunities for career development in HSR (Table 4). The National Clinician Scholars Program, the Veterans Administration’s (VA) National Quality and Safety Fellowship, and the VA Health Services Research and Development Program are three of the most established programs offering training in health policy and delivery system research (Table 4).³ The Agency for Healthcare Research and Quality (AHRQ) also has several mechanisms available for individuals to gain knowledge and experience in health care–delivery research. One of AHRQ’s longstanding funding opportunities, the Institutional Health Services Research Training Program Award (T32), provides advanced training to individuals with career interests in HSR (<http://www.ahrq.gov/funding/training-grants/grants/active/t32/t32.html>). An estimated 75% of protected research time over a 2-year training period is required for these awards and these awards are typically restricted to postgraduate physicians in training.

There are also multiple opportunities available for junior faculty and/or postdoctoral fellows interested in HSR (Table 4). These include institutional awards in comparative effective research (CER) methodologies through the Patient Centered Outcomes Research Institute (PCORI) award (parent K12) and Mentored Clinical Scientist Research Career Development Awards through the National Institutes of Health (parent K01/K08/K23) or VA career development program. These awards typically range between 2 to 5 years in duration, require senior mentorship and the candidate must commit to spending at least 75% of their time engaged in research activities. For more established investigators who are interested in broadening their research portfolio to include the science of HSR, both the NIH (parent K18; available at: <https://www.ahrq.gov/pcor/ahrq-pcor-trust-fund-training-projects/pcortf-tcdpa12115.html>) and VA (available at: <https://www.research.va.gov/funding/cdp.cfm>) offer awards for career enhancement. Finally, mid-to-senior level health professionals can apply in research teams for the Robert Wood Johnson Foundation (RWJF) Clinical Scholars Program (available at: <http://clinicalscholarsnli.org/about/how-it-works/>).

Funding Health Services Research

Unlike the funding of most other areas of health research, the broad relevance of HSR results in funding opportunities through multiple agencies. AHRQ research addresses cross-cutting access, quality, and cost issues that are faced by the entire American health care system. Other funding sources seek to fund HSR in support of their organizational missions. The VA and Department of Defense (DOD) focus on their delivery systems, the Center for Medicare and Medicaid Services (CMS) on financing Medicare and Medicaid, Centers for Disease Control (CDC) on prevention, and NIH on delivery of services for specific diseases. These funding sources are complemented by private sources, including major foundations (e.g., Robert Wood Johnson Foundation, Commonwealth Fund, MacArthur Foundation, Kellogg Foundation, Doris Duke Foundation, Kaiser Family Foundation), professional societies (e.g., American Liver Foundation, American Cancer Society) and private corporations.

Health Services Research in Hepatology and Liver Transplantation: Where are we in 2018?

HSR is a rapidly growing field within the disciplines of hepatology and liver transplantation. Over the past seven years, publication volume in HSR has increased by 50% (Figure 1). Examples include examining the causes for hospital readmission for decompensated cirrhosis^{7,8} assessing the impact of delayed referral for treating hepatocellular carcinoma on survival,⁹ and factors affecting center variation in healthcare utilization after liver transplantation (Table 1).¹⁰ Several innovative collaborations have also been established within and between institutions and in our professional societies with the collective goal of advancing the value of healthcare for patients with liver disease. For example, in 2008 an inter- and transdisciplinary health services and outcomes research team (NUTORC), that leveraged institutional strengths in social science, engineering, and management disciplines, coupled with an internationally recognized transplant program was established at Northwestern University in Chicago, IL to expand HSR beyond secondary data analysis in liver transplantation.¹¹ In 2015, the American Association for the Study of Liver Diseases (AASLD) supported the development of the Public Health/Health Care Delivery Special Interest Group (SIG), “To bring together AASLD members with shared interests in health services research and practice, including: disease prevention and public health, access to care, population-based disease management, improving quality of healthcare delivery, health economics and health policy.” The Public Health/Health Care Delivery SIG now counts over 200 members.¹² Finally, in 2016 the AASLD Practice Metrics Committee, charged with developing quality indicators for clinical practice in Hepatology, was established. At the same time, AASLD funded the multisite Cirrhosis Quality Collaborative (CQC) to initiate a systematic effort in improving quality of cirrhosis care.¹³ The continued changing landscape of our health care system has placed the spotlight on identifying and correcting the deficiencies in the delivery of care to patients with liver disease today. Thus, the need for training and retaining an emerging workforce of health services researchers in hepatology and liver transplantation has never been greater.

Personal Perspectives and Conclusions

Although the field of HSR is relatively new, we have had individual experiences in this area that have been informative. Both of us pursued formal research training through a Master's degree program (clinical investigation [L.V.W.] and HSR [F.K]), in which the tenets of clinical trial design, health systems organization and basic statistical analysis were obtained. This training was then extensively supplemented by training in advanced epidemiology, mixed methods research and implementation science principles providing a framework for translating clinical and epidemiological findings into clinical practice (e.g., *translational epidemiology*, T4→T3) for patients with liver disease. The HSR training was supported by the NIH-level individual (F32, K23) and institutional (KL2) awards for L.V.W. and by the VA Health Services Research and Development Program for F.K. The cornerstone of our success in HSR has been diverse mentorship and multidisciplinary research teams, which importantly have been comprised mainly of individuals outside of the discipline of hepatology. Combined, this has included content experts in internal medicine, cardiology, pediatrics, endocrinology, biostatistics, surgery, and health policy, in addition to methodologic expertise in risk prediction, epidemiology, large data management, qualitative methods, guideline development, systematic reviews, meta-analyses and implementation science.

One challenge in conducting subspecialty HSR is that subspecialty conditions may not be viewed as high impact compared to problems that are applicable to the broader general medicine patient population. One exception to this rule is subspecialty HSR in oncology. In cancer research, HSR investigators have had remarkable success at grant funding and high-impact journal publications.¹⁴ Thus, cancer research may prove to be a useful model for hepatology researchers interested in performing high impact HSR. In fact, the global burden of cirrhosis and highly prevalent chronic liver diseases such as nonalcoholic fatty liver disease (NAFLD), currently meet or exceed the burden of many common cancers (e.g., colorectal cancer). Furthermore, cirrhosis is a pre-cancerous condition, which makes drawing parallels with cancer HSR possible.

HSR relies on the knowledge and understanding of a broad spectrum of research disciplines, and the field is growing as both public and private research funding increases. There is an increasing demand for health services researchers within hepatology and liver transplantation in order to meet the demand. Training in HSR should include the knowledge and skills needed to function effectively as a member of an interdisciplinary team and involve mentorship and experiential training within the health system in which one hopes to enact change. As of 2018, important advances have been made in the evaluation of health care delivery for patients with liver disease though many unanswered questions remain. We encourage you to engage in the AASLD Public Health/Health Care Delivery SIG (aasld.org/sig) and join us in seeking to improve disease prevention and public health, access to care, population-based disease management, quality of healthcare delivery, health economics and health policy for an increasing population of patients with liver disease.

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List of Abbreviations (in order of appearance)

HSR	Health Services Research
ACA	Affordable Care Act
CER	comparative effectiveness research
EMR	electronic medical record
VA	Veteran's Administration
AHRQ	Agency for Healthcare Research and Quality
PCORI	Patient Centered Outcomes Research Institute
NIH	National Institutes of Health
DOD	Department of Defense
CMS	Center for Medicare and Medicaid Services
CDC	Center for Disease Control
AASLD	American Association for the Study of Liver Diseases
SIG	Special Interest Group

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FIGURE 1.
Trends in Health Services Research Publications in the Disciplines of Hepatology and Liver Transplantation, Source: PubMed 2009–2016

TABLE 1

The Science of Health Care Services Research applied to Hepatology

Research Area	Example Question	Example Publications	Selected Gaps in Knowledge
Quality Improvement & Patient Safety	What are the causes for hospital readmission for decompensated cirrhosis?	Volk ML, Tocco RS, Bazick J, et al. Hospital readmissions among patients with decompensated cirrhosis. <i>Am J Gastroenterol</i> 2012;107:247–252.	What are key quality indicators that reduce risk for readmission in cirrhosis?
Quantitative & Qualitative studies that identify gaps/disparities in medical care	What is the impact of delayed referral for treating HCC on survival? What factors impact access to liver transplantation?	Singal AG, Waljee AK, Patel N, et al. Therapeutic delays lead to worse survival among patients with hepatocellular carcinoma. <i>J Natl Compr Canc Netw</i> 2013;11:1101–1108. Barritt AS 4th, Telloni SA, Potter CW, et al. Local access to subspecialty care influences the chance of receiving a liver transplant. <i>Liver Transpl</i> 2013;19: 377–382.	What are the patient, provider and system-level factors that influence referral for HCC treatment? How can primary care doctors be better equipped to recognize cirrhosis and provide timely referral?
Policy implications: Intended and unintended consequences of enacted health policies associated with clinical practice	How have MELD exception policies influenced equipoise in liver allocation?	Northup PG, Intagliata NM, Shah NL, Pelletier SJ, Berg CL, Argo CK. Excess mortality on the liver transplant waiting list: unintended policy consequences and MELD Inflation. <i>Hepatology</i> . 2015 Jan;61(1):285–91	What is the impact of the revised HCC exception policy on equipoise in liver allocation and waitlist mortality? Does the change address previously identified gaps in care?
Evaluations of alternative care delivery models to improve value of care	What is the effect of a chronic disease management model for patients with cirrhosis? What is the effect of a dedicated NAFLD clinic on allocation of liver care resources?	Wigg AJ, McCormick R, Wundke R, Woodman RJ. Efficacy of a chronic disease management model for patients with chronic liver failure. <i>Clin Gastroenterol Hepatol</i> 2013;11:850–858.e1–4. Townsend SA ¹ , Newsome PN. The Role of a Dedicated Non-Alcoholic Fatty Liver Disease Clinic in 2016. <i>Dig Dis</i> . 2017;35(4):371–376.	How can a chronic disease management model for cirrhosis best be delivered? What are patient perceptions of a chronic disease management model for cirrhosis? Does a dedicated NAFLD clinic vs. usual care improve patient outcomes?
Comparative effective research on clinical and economic benefits of novel diagnostic tests and treatments	Do healthcare costs and utilization differ between HCV+ patients with and without SVR?	Manos MM, Darbinian J, Rubin J, et al. The effect of hepatitis C treatment response on medical costs: a longitudinal analysis in an integrated care setting. <i>J Manag Care Pharm</i> 2013;19:438–447.	What health model(s) effectively identify, treat, and manage the diverse individuals infected with HCV?
Implementation Science: Methods for promoting the systematic uptake of clinical research findings and other evidence-based practices	Do institutions utilize recommended strategies to increase adherence to HCV treatment guidelines?	Rogal SS, Yakovchenko V, Waltz TJ, et al. The association between implementation strategy use and the uptake of hepatitis C treatment in a national sample. <i>Implementation Science</i> . 2017;12(1):60.	Do collaborative partnerships between health care systems and local community groups increase HCV testing and linkage to care?

TABLE 2
Examples of Methodologic Emphasis for Health Services Researchers

Qualitative research methodologies and mixed-methods study design.	
	Communication of risk and benefit in the use of evidence-based decision making.
	Training in patient safety and quality improvement.
	Decision science modeling and analysis.
	Cluster-randomized or practical clinical trials of new or existing health care technologies.
	Comparative effectiveness of health care diagnoses, treatment, and services using prospective, longitudinal cohort studies.
	Systematic reviews, meta-analysis and GRADE methodology
	Innovative approaches that account for clinical heterogeneity of treatment effects.
	Training in data mining techniques for registries and large-scale longitudinal data sets.
	Advanced biostatistics, epidemiology and longitudinal modeling.
	Dissemination and implementation science methodology.

Adapted from Talwalker et al. *Gastroenterology* 2014;146(4):878–883

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TABLE 3

Degree Options for Health Services Researchers

Degree	Common Abbreviation	Degree Focus
Master of Science in Health Services Research *	MSHS, MSHSOR, MSPH, MHSf	Examines the cost, quality, and accessibility of health care and plays a crucial role in improving clinical practice, informing health policy, reducing disparities and costs, and shaping the future organization and delivery of healthcare.
Master of Science in Public Health *	MPH	Focuses on population health research and programmatic interventions.
Master of Science in Healthcare Quality and Patient Safety *	MSHQPS	Focuses on quality improvement and patient safety.
Master of Science in Clinical Investigation *	MSCI, MSc	Focuses on the translational investigation of medical treatments and services.
Master of Science in Epidemiology and Biostatistics *	MSEB	Provides graduate biostatistics training for students who intend to plan, direct and execute health research and/or analyze health data.
Master of Public Policy	MPP	Focuses on issues of social justice and social policy that can be applied to health systems.
Master of Science in Community Health Sciences	MS	Emphasizes community or psychosocial research within the general field of public health
Master of Science in Biomedical Informatics	MSHI	Focuses on problem-solving, theory and methodologies underlying the field of biomedical informatics. Biomedical informatics has a key role to play in the transformation to more effective and efficient health care through the use of knowledge and information technology
Master of Science in Global Health Policy and Management	MS	Focuses on health systems strengthening and global health policy.

* Most common degrees for physician-scientists engaged in HSR

For a full list of degree options visit: <https://www.nlm.nih.gov/nichsr/hsruniv.html>

TABLE 4

Research Training Opportunities in Health Services Research

Sponsoring Organization	Brief Description	For More Information
Veterans Administration's (VA) National Quality and Safety Fellowship Program	2-year master's degree graduate-level study with a focus in healthcare quality and patient safety; minimum 80% protected time for conducting research <u>Eligibility:</u> typically, MDs who have completed residency training <u>Institutions:</u> 8 sites in the US and one affiliated site in Toronto, CA. Coordinating center in Houston, TX.	https://www.va.gov/oaa/SpecialFellows/programs/SF_NQSF_default.asp
VA Center for Health Equity Research and Promotion (CHERP) Advanced Fellowship in HSR	2-year master's degree graduate-level study in HSR, implementation science and health system quality improvement; minimum 75% protected time for conducting research <u>Eligibility:</u> postdoctoral health professionals <u>Institutions:</u> Pittsburg and Philadelphia	https://www.cherp.research.va.gov/Fellowships/Advanced_Fellowship_in_Health_Services_Research.asp
AHRQ Institutional Health Services Research Training Program Award (T32)	2-year advanced training for individuals with career interests in HSR <u>Eligibility:</u> both predoctoral and postdoctoral candidates <u>Institutions:</u> Currently, there are 18 institutions with T32 awards	http://www.ahrq.gov/funding/training-grants/grants/active/t32/t32.html
AHRQ Institutional Mentored Career Development Program in PCOR (K12)	Multi-year advanced training for individuals with career interests in CER and PCOR <u>Eligibility:</u> postdoctoral fellows or junior faculty <u>Institutions:</u> Currently, there are 15 institutions with K12 awards	https://www.ahrq.gov/pcor/ahrq-pcor-trust-fund-training-projects/pcortf-tcdhs13008.html
AcademyHealth Delivery System Science Fellowship	1-year professional development opportunity to enhance and apply analytic skills to timely research topics in a delivery system setting <u>Eligibility:</u> Researchers with a doctoral degree in HSR or related field <u>Institutions:</u> Currently, there are 10 sites	http://www.academyhealth.org/dssf
Kaiser Permanente Northern California Delivery Science Fellowship Program	2-year advanced training for individuals with career interests in HSR <u>Eligibility:</u> postdoctoral health professionals or research doctorate degrees in related fields <u>Institutions:</u> Oakland, CA	https://divisionofresearch.kaiserpermanente.org/research/fellowship-program
AHRQ/PCOR and VA Individual Career Development Awards	Multi-year (range 2–5 years) with salary support for 50–75% effort	https://www.ahrq.gov/pcor/ahrq-pcor-trust-fund-training-projects/index.html https://www.hsrd.research.va.gov/cdp/default.cfm

Sponsoring Organization	Brief Description	For More Information
(CDA) (K08, K01, K18, K99/R00, VA CDAs)	<p><u>Eligibility:</u></p> <ul style="list-style-type: none"> Clinicians: AHRQ K08, PCOR K08, PCOR K18 (associate prof. or prof.), VA CD Transition Award (associate prof. or below) Nonclinicians: PCOR K01 Clinicians & Nonclinicians: VA CDA level 1 (instructor) and level 2 (assistant prof. or below), CD enhancement award (prof.) <p><u>Institutions:</u> Individual mentored awards; VA CDAs require at least 5/8th VA appointment</p>	
National Clinician Scholars Program (NCSP)	<p>2-year master's degree graduate-level study (degree varies by institution); minimum 80% protected time for conducting research. This program builds on the former on-site RWJF 2-year Clinical Scholars Program for physicians by adding nurse scientists to address new and emerging inter-professional issues related to healthcare delivery and improving the health of communities. All sites have local community partners, local curriculum, local faculty and a national partnership with the Veterans Administration.</p> <p><u>Eligibility:</u> physicians who have completed residency training and nurses with a doctoral degree. Clinical training for physicians and the doctoral degree for nurses should have been completed within the past 5 years prior to the application process.</p> <p><u>Institutions:</u> Yale University, University of Pennsylvania, University of Michigan and University of California Los Angeles</p>	<p><u>Site-specific information:</u> http://ihpi.umich.edu/csp http://medicine.yale.edu/intmed/nationalcsp/ https://www.med.upenn.edu/nationalcsp/ http://clinicianscholars.med.ucla.edu/ </p>

Sponsoring Organization	Brief Description	For More Information
Robert Wood Johnson Foundation (RWJF) Clinical Scholars Program	3-year program. Participants attend seven in-person, onsite leadership sessions; participate in distance-based learning; and benefit from executive coaching, mentoring, and a high degree of networking with other program participants and the RWJF. <u>Eligibility:</u> clinically active mid-to-senior level health professionals <u>Institutions:</u> Multiple; team members can practice in community, clinical, academic, tribal settings, or a combination of those settings. Training is conducted through intermittent group meetings and distance learning.	http://clinicalscholarsnli.org/about/how-it-works/

Abbreviations: AHRQ, Agency for Healthcare Research & Quality; CDA, career development award; CER, Comparative Effectiveness Research; HSR, Health Services Research; PCOR, Patient Centered Outcomes Research; VA, Veteran's Administration

For a more expansive list visit: <https://www.nlm.nih.gov/hsrinfo/grantsites.html>