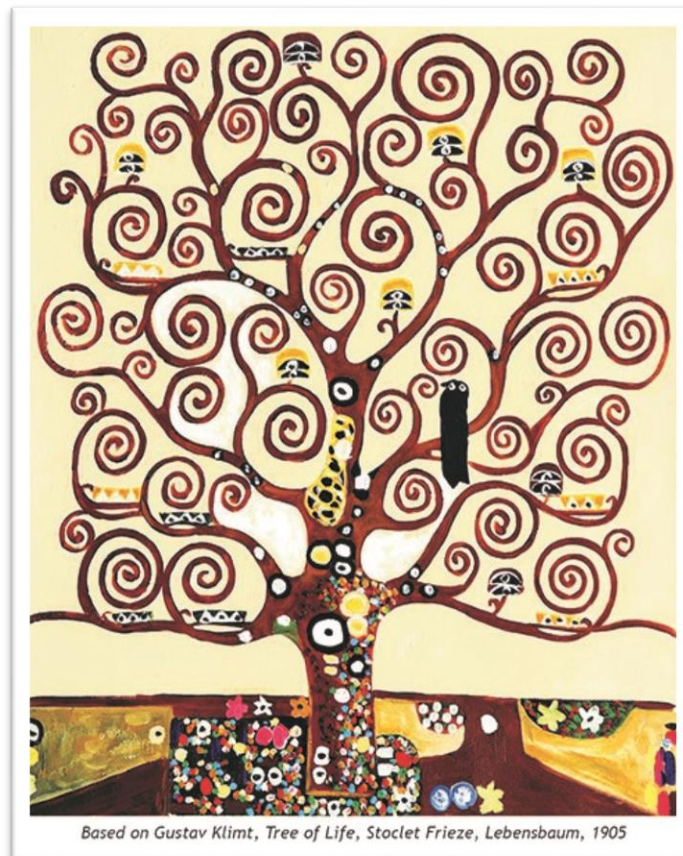




# Hospital at Home: A Model for Acute Care at Home

*Interview with Dr. Bruce Leff*



By Jean Galiana

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**Elder and Long Term Care**

An ACCESS Health International Program Area

## Background

[Hospital at Home](#) is an innovative model of acute care. Patients who enter the emergency room are evaluated to determine whether they can be successfully treated at home rather than admitted to the hospital. Dr. Bruce Leff and his colleagues at the [Johns Hopkins Schools of Medicine and Public Health](#) developed Hospital at Home. The model was [studied and evaluated](#) nationally. Research found that Hospital at Home realized cost savings of almost one third. It also produced better health outcomes. Family members reported less stress. Patients and family members reported higher satisfaction levels.

Hospital at Home has been implemented by eleven Veterans Affairs Medical Centers across the United States. It has also been [successfully implemented](#) by Presbyterian Health Services in Albuquerque, New Mexico. Cedars Sinai Medical Center, in Los Angeles, uses Hospital at Home in its accountable care organization. The Geisinger Health System Cleveland Clinic, the Brigham and Woman's Hospital, and Mount Sinai Hospital in Toronto are in the process of implementation. Twenty one health systems in Australia have adopted the Hospital at Home model. [Research](#) published in the *Medical Journal of Australia* reported that the meta analysis of Hospital at Home found a twenty four percent reduction in readmissions and a twenty percent reduction in mortality. In addition, other countries with single payer systems have Hospital at Home, including the United Kingdom, Italy, and Israel.

The inability to receive reimbursements for the Hospital at Home model under traditional fee for service Medicare has been one of the main barriers to implementation. In this interview, Dr. Leff explains how the shifting reimbursement landscape in the US is making the proliferation of Hospital at Home care a possibility. Dr. Leff explains why Hospital at Home has historically been more attractive to providers who operate under a [managed care](#) reimbursement arrangement. Other barriers to Hospital at Home include a system wide bias toward facility based care, and the need for forward thinking and innovative management.

The [Icahn School of Medicine at Mount Sinai](#) in New York is presently conducting a demonstration project of Hospital at Home. The Icahn School of Medicine was granted nine point eight million dollars by the Centers for Medicare and Medicaid to conduct the demonstration. The [demonstration project](#) is part of the [Center for Medicare and Medicaid Innovation](#) initiative to develop new models of care delivery and reimbursement. The goal of the demonstration project is to test the Hospital at Home clinical model and to gather data that will inform the development of a thirty day [bundled payment](#) for Hospital at Home care. The [John A. Hartford Foundation](#) is funding research and evaluation of the demonstration project.

Dr. Leff and his team have published numerous peer reviewed studies of Hospital at Home and the model has been profiled in publications including the [Harvard](#)

[Business Review](#), the [New York Times](#), [Health Affairs](#), [USA Today](#), the [Wall Street Journal](#), and many [others](#). The Commonwealth Fund [published](#) the results of several of the Hospital at Home Pilot programs. They also published a [case study](#) about the [Presbyterian Healthcare Services](#) implementation.

Johns Hopkins acts as a consulting support for providers wishing to implement the Hospital at Home acute care model. Hospital at Home has a [training](#) team that consults with health systems to facilitate a smooth implementation.

In this interview, Dr. Leff details twenty years of his dedication to the development and dissemination of Hospital at Home.

## About Dr. Bruce Leff



Dr. Bruce Leff is a professor of medicine at the Johns Hopkins University School of Medicine where he directs the Center for Transformative Geriatric Research. He holds a joint appointment in the Department of Health Policy and Management in the Johns Hopkins Bloomberg School of Public Health, as well as in the Department of Community and Public Health at the Johns Hopkins School of Nursing. He has been on the faculty since 1994.

Dr. Leff is an internationally recognized leader and researcher in the development, evaluation, and dissemination of novel models of care for older adults, including the [Hospital at Home](#), [Guided Care](#), geriatric service line models, and medical house call practices. His research is represented in many publications.<sup>1</sup> In addition, his research interests extend to issues related to multi-morbidity, performance measurement, and case mix issues. He has a strong interest in health policy issues. He is a Health and Aging Policy Fellow of the [American Political Science Association](#). Dr. Leff has served on multiple technical expert panels for the Centers for Medicare and Medicaid Services.

An award winning teacher and mentor, Dr. Leff directs the basic Medicine Clerkship in the School of Medicine. He currently serves on the board of directors and was formerly the president of the [American Academy of Home Care Physicians](#). Dr. Leff is a former member of the Board of Regents of the American College of Physicians. He is a member of the Council of the American Board of Internal Medicine and chair of its Geriatric Medicine Specialty Board.

As a medical director of Johns Hopkins Business Development and Strategic Alliances group of Johns Hopkins Medicine, Dr. Leff represents faculty, clinical staff, and researchers at Johns Hopkins and serves as a liaison with the business development team. In this capacity he serves as an advisor to the team for any academic issues and considerations in the development of projects and products.

Dr. Leff received his B.A. from the University of Pennsylvania in 1983 and his M.D. from New York University in 1987. After residency and fellowship training at Johns Hopkins, he served as a medical officer in the US Army in Seoul, Korea, before joining the faculty of the Department of Medicine in 1994.

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<sup>1</sup> Appendix A

***“I see the hospital of the future as one large intensive care unit that provides high tech procedures. All other care should be provided outside of the hospital setting.”***

Bruce Leff

## Interview

**Jean Galiana (JG):** What inspired you to become a geriatrician?

**Dr. Bruce Leff (BL):** Most geriatricians have a grandfather or grandmother story. My grandfather was an influential figure for me. As I was going through medical training, I enjoyed the complexity of geriatrics. I also enjoyed treating patients in their homes and interacting with their families; I think house calls represent the best in patient centered care. Geriatrics is not cookbook medicine. It is not algorithms. Geriatrics requires a lot of judgment and creativity, which I enjoy. I see geriatrics at the nexus of practice and policy and all that that entails. I also had some wonderful geriatric mentors here at Johns Hopkins who had a strong influence on my career choice.

**JG:** Please describe the Hospital at Home Program.

**BL:** Hospital at Home is a model to provide acute hospital level care in the home as a substitute for care that is provided in the hospital. Hospital at Home is a twenty year evidence based project. The Hospital at Home program was inspired by two main clinical observations. First, many older people who become acutely ill do not want to go to the hospital because they have had bad experiences there in the past. Second, when I am in the clinic, and am seeing patients who are acutely ill, sometimes the hardest clinical decision I have to make is whether to send these patients to the hospital or not. If they have pneumonia, I know I can cure their pneumonia by sending them to the hospital. But I also need to consider that the hospital can be a very inhospitable and dangerous environment for them. They would be at risk of functional decline, delirium, or acute confusion due to the hospitalization. I also have to consider that, after resting in bed for a few days in the hospital, they would be at risk of falling and breaking their hip. These factors can make for a difficult decision making process, especially when there are no other viable options.

There is a lot of data supporting the fact that the acute hospital environment is a harmful place for older people. We started to consider the possibility of providing hospital care in the home. We began by looking for other examples of acute care in the home setting. We found no examples in the United States. Through literature searches and site visits we found examples in the United Kingdom, Italy, Israel, Australia, and New Zealand. These countries all have [single payer systems](#) where economic incentives exist for clinicians to keep people out of the hospital. If you are responsible for the total bill of healthcare and you own all the assets of healthcare, as you can provide high quality care, keeping people out of

the hospitals makes good economic sense. We learned valuable lessons from the models we studied. We examined how we could adapt the best examples to the US healthcare system.

We decided to design our model with an illness or condition specific focus. We focused initially on episodes of pneumonia, heart failure, chronic obstructive pulmonary disease, emphysema, and cellulitis or serious skin infections. We developed the criteria for choosing the right patients for the Hospital at Home model. The patient population we wanted for Hospital at Home was people who absolutely needed to be hospitalized. We did not want to provide Hospital at Home care to someone who could leave the doctor's office with a prescription for an oral antibiotic. If a patient can leave with a prescription and spend twenty dollars on an antibiotic, spending a few thousand dollars on Hospital at Home care does not make sense. That scenario would be adding cost to the system. That is waste. Hospital at Home seeks to lower the cost and decrease waste while improving the quality of care. Hospital at Home meets the [Triple Aim](#) of clinical quality, lower costs, and better patient and family satisfaction.

We developed and validated [clinical criteria](#) that can be operationalized in real time in the emergency department or in the ambulatory setting to identify patients who needed to be in the hospital, but who were not sick enough to be in an intensive care unit or who were likely to decompensate clinically during a hospital stay. We also chose people who did not need high tech hospitalization care. Patients who need stress tests, MRIs, and consultations from specialists are not a fit for Hospital at Home. We established clinical criteria to identify the right patients. The criteria, a checklist of sorts, can be used in real time when patients present in the emergency department or the ambulatory setting. The criteria have worked well over the years. We then did studies to determine whether people wanted this model of acute care at home. Our research proved that people, even in their late nineties, would like to stay at home if we could bring services to them.

**JG:** Please describe how the program works.

**BL:** A person arrives to the emergency department; they may be sixty five, seventy five, or eighty years old. They have pneumonia. They meet our eligibility criteria. We send them home. Sometimes they go home in an ambulance. Sometimes a friend or relative drives them home. A physician visits the patient's home each day. They also receive nursing care at home. Initially, they receive an extended nursing visit for a few hours on the first day to make sure they are settling in comfortably. After that, a nurse visits once or twice a day, depending on the patient's medical need. When the patients improve, they are discharged from the acute Hospital at Home episode. Patients who are in the acute phase are treated for three to four days on average. The patient can also receive services such as physical therapy at home, or a nurse aide if they need help with basic living activities.

That is the original model that we developed. In the mid to late nineties, we conducted a pilot project at Johns Hopkins that showed that the model is clinically feasible and patients like it. The model also reduces costs by twenty to thirty percent. We met with the Centers for Medicare and Medicaid Services and shared our findings. We suggested that they give a waiver and provide a payment of Hospital at Home services in Medicare [fee for service](#). Hospital at Home makes no sense for a hospital that is reimbursed in a fee for service model. This is because in a fee for service model the hospital receives a payment from Medicare when a patient is cared for in a traditional hospital bed. No payment is received if that patient is cared for in a Hospital at Home bed.

**JG:** Please share more details as to why Hospital at Home does not make sense for a hospital that is reimbursed by a fee for service arrangement.

**BL:** There is no payment category in Medicare to pay for Hospital at Home. There is no specific payment mechanism or code. Without a payment code, it is not possible to reimburse for a service. If I were to tell a hospital president whose hospital is reimbursed in a fee for service agreement, “I have a great new model of care. It is called Hospital at Home. I am going to take patients who would have gone from your emergency department to your hospital bed. You would have been reimbursed from Medicare for the hospital admission and subsequent care. However, because Medicare will not reimburse for a Hospital at Home admission, we will treat that patient at home. The patient will have better results. They will be more satisfied with the care. The only caveat is that you are not going to be reimbursed for the care you provide at home because Medicare doesn’t recognize this as a service.” The hospital president would not be pleased. In my 2009 [publication](#), *Defining and Disseminating the Hospital at Home Model*, I noted that fee for service reimbursement is one of the major barriers for implementation here in the US. That is changing now.

There is a better argument to be made for Hospital at Home within the managed care arena. Imagine that instead of being reimbursed in a fee for service model, you are operating a Medicare managed care plan like the [Medicare Advantage](#) plan. You are receiving a fixed amount to take care of patients each month or each year. When you need to hospitalize that patient, you should consider the Hospital at Home program. You can realize better clinical outcomes, and it will cost you less. In this case, the Hospital at Home model begins to make economic sense.

In the absence of providing a payment waiver in the late 1990s, the Centers for Medicare and Medicaid Services suggested that we conduct a larger study of Hospital at Home in the Medicare managed care setting. In the beginning of 2001, we conducted a national demonstration study in several Medicare managed care plans; two in Buffalo, New York, and one in Worcester, Massachusetts, and the Veterans Affairs Medical Center, in Portland, Oregon. Hospital at Home makes economic sense within the Veterans Affairs health system because they are



globally budgeted. Each Veterans Affairs Medical Center receives an annual fixed financial allotment.

The national demonstration study showed that we could develop the Hospital at Home model successfully within existing health systems. We found that costs were about twenty to thirty percent lower, depending on the pilot project location. Patient outcomes were better with fewer complications. Patients reported a better experience and higher satisfaction. Families reported better satisfaction. The program worked wonderfully. The [research](#) was published in the Annals of Internal Medicine in 2005. These studies were all conducted before the passage of the [Affordable Care Act](#) in 2010.

**JG:** Is the Hospital at Home model reimbursed now, and if so, how?

**BL:** Hospital at Home is a demonstration project for the Centers for Medicare and Medicaid Services. We are developing the data that will hopefully inform the eventual design of the payment bundle in fee for service Medicare. If the demonstration is successful, in theory, it can be converted to a Medicare payment. We are collecting all the data now to understand what bundled payment is feasible, what to include in the bundle, and what the payment rate should be. All the various bundled payments might lead to better care. Bundled payments have translated to higher quality value based models for interventions such as joint replacements. We are also trying to develop ways to make the Hospital at Home more attractive for Medicare Advantage plans.

**JG:** Why, after twenty years of successful demonstration projects of the Hospital at Home model, is it still not reimbursable?

**BL:** Before the Affordable Care Act, there was no economic argument in fee for service environment to offer Hospital at Home. The argument solely existed in managed care, integrated delivery systems or globally budgeted systems like the Veterans Affairs health system. Even within integrated delivery systems or globally budgeted systems, when a dollar comes into that system, it is not usually viewed as a dollar at the system level. For example, Presbyterian Healthcare Services owns their hospital, their providers, the home health division, and they have their own Medicare Advantage plan for which they are the payer. Within their integrated system, each entity or division has their own profit and loss accounting. For Presbyterian to make Hospital at Home work, the program had to be run out of their home care division. They had to convince the health plan to let them try Hospital at Home. They had to get the program up and running for a year or two to understand what the model costs and how to run it optimally. Only after that did they determine an internal case rate for Hospital at Home care. The divisions worked collaboratively. Eventually they determined that the rate they would reimburse for Hospital at Home was less than they would usually pay for a hospital admission, and enough to keep the program sustainable. That kind of internal collaboration across divisions is not always easy.

**JG:** Please share more about Presbyterian Hospital and their implementation of Hospital at Home.

**BL:** [Presbyterian Healthcare Services](#), in New Mexico, is an integrated healthcare delivery system. They own their own hospitals, and they employ their physicians. They have their own Medicare Advantage plan; so in this situation, Presbyterian pays for and provides the care. They were experiencing bed shortages in their main hospital. They decided to develop Hospital at Home to care for their Medicare Advantage patients. This plan would free more hospital beds for patients whose care was reimbursed by other insurers. We helped them develop [their own Hospital at Home](#) model in 2008. The model has been highly successful. We conducted a year long study of three hundred and twenty three of their patients who were admitted into the Hospital at Home program. These patients all met the criteria of being so ill that they required hospitalization. Most of the patients were older white females. The most common diagnosis was pneumonia. The patients had various health conditions, including reoccurring congestive heart failure, deep vein thrombosis, cellulitis, pulmonary embolism, urinary tract infection, nausea, vomiting, and dehydration.

Physicians visited the patients each day. Nurses would visit once or twice each day depending on the patient's need. They realized a nineteen percent cost reduction for patients treated in the Hospital at Home model when compared to similar patients treated in hospital acute care. The patients treated at home had the same or better clinical outcomes, including shorter hospital stays, fewer lab and diagnostic tests, and slightly lower hospital readmission and mortality rates. Patients also reported ten percent higher satisfaction levels. We published the [results](#) in *Health Affairs* in 2012.

Healthcare has changed a lot in the twenty years since we started Hospital at Home. Insurers are beginning to understand that Hospital at Home is a platform for home and community based care. Because [Presbyterian Healthcare Services](#) is an integrated system, they had the innovative capacity to use the Hospital at Home model as a tool for other programs. They started linking Hospital at Home to their heart failure clinics. When one of their Medicare Advantage heart patients becomes acutely ill, they treat them at home whenever possible. Presbyterian Healthcare Services is now coordinating the Hospital at Home program with their chronic obstructive pulmonary disease clinics and their palliative care program. This is an example of using the Hospital at Home model to create seamless, community based care.

**JG:** Are providers more interested in Hospital at Home since the passage of the Affordable Care Act?

**BL:** Since the passage of the Affordable Care Act, there has been more interest in Hospital at Home. The Centers for Medicare and Medicaid has given out Health Care [Innovation Awards](#). For that award, applicants had to propose an innovative model of care and an innovative payment model to go with it. New York based

[Mount Sinai Health System](#) is a recipient of the innovation award focused on Hospital at Home. The award supports the Hospital at Home demonstration project for Mount Sinai in their hospital and other locations throughout Manhattan. We are consultants for this project. The [John A. Hartford Foundation](#) is funding a research evaluation. The Mount Sinai [model](#) of Hospital at Home was adapted to take care not only of the acute hospital episode, but to also to provide aftercare for thirty days. This will enable Mount Sinai to provide good transitions of care and prevent readmissions and adverse health events after treatment. Mount Sinai is also expanding the Hospital at Home model to a platform for home and community based care.

Mount Sinai launched an [observation unit](#) between the time they submitted for the innovation grant and when they began the Hospital at Home demonstration program. Observation units, sometimes called critical decision units, are a designated area where emergency department patients are observed to determine whether they can be sent home rather than admitted to the hospital. Observation units are not always optimal for patients because patients may not know they have been placed in an observation unit. Observation units are considered an outpatient, not inpatient, service, so the patient will face a high copayment for that service. Many of the observation patients would have been a good fit for Hospital at Home. Mount Sinai adapted this by using the Hospital at Home care platform to provide observation care in the patient's home. If a patient needs to be admitted, we are able to convert him or her to a Hospital at Home admission. We can also provide acute palliative care at home. The home is a better place to have necessary discussions about end of life care and planning.

Mount Sinai is also moving toward providing sub acute rehabilitation at home. There is a shortage of skilled nursing facility beds in Manhattan. There is a need for providers who have the ability to move people out of the hospital and provide sub acute rehabilitation at home. Additionally, patients prefer to receive their sub acute rehabilitation services at home. The Hospital at Home model will eventually be applied to a variety of other patient populations. There are issues in payment and the way payments are siloed that have to be overcome in order to move Hospital at Home into other areas of care. There still is a dominant bias toward facility based care. The bias exists even under the Affordable Care Act, where, in theory, we should be moving care out of the hospital.

Healthcare reform will only work when we reduce the number of hospital beds. I see the hospital of the future as one large intensive care unit that provides high tech procedures. All other care should be provided outside the hospital setting.

**JG:** Are you concerned with the malpractice implications of a patient having an adverse health event or dying while being treated in their home by the Hospital at Home team?

**BL:** Literature suggests that most medical malpractice is driven by poor communication between providers and patients. Doctors in the home, by

necessity and driven by the fact they are treating people in their homes, do a better job of communicating. Risk of liability to date has been extraordinarily low in world literature.

**JG:** Are there any examples where Hospital at Home failed?

**BL:** I am not aware of any Hospital at Home programs that have failed.

**JG:** Other than reimbursements, what are the barriers to implementing Hospital at Home?

**BL:** Hospital at home is not the easiest or least complex model to build, which has remained another barrier for implementation.

**JG:** Have you been involved with other models of geriatric care that have proven more cost effective?

**BL:** There are a number of models in geriatrics that can help health systems cut costs. They are not widely implemented. A few years ago, we conducted a project with colleagues from Mount Sinai that was based on the theory that all the little models were too small to attract the attention of executives. In a [publication](#) for *Health Affairs*, “The Ironic Business Case for Chronic Care in the Acute Care Setting”, we make a case for including multiple evidence based geriatric service models into a geriatric service line or portfolio of care models. We designed what we called the geriatric service line. Providers have oncology or cardiac service lines. The service lines use evidence based models to deliver seamless geriatric care. Our goal in creating the service line that includes Hospital at Home, among other evidence based geriatric models, is to define the best bundle arrangement that creates incentives for more coordinated care.

In one of our *Health Affairs* [publications](#), “Rapid Reengineering of Acute Medical Care for Medicare Beneficiaries: The Medicare Innovations Collaborative,” we detail the service line approach as a portfolio of senior services that facilitate easier bundling for payment purposes. A service line or portfolio is good economically because it is value based. Clinically, a service line or portfolio leads toward more coordinated care. The goal was to help health systems implement and coordinate all the geriatric care models to achieve some economies of scale. We held successful demonstrations of the geriatric service line in six health systems around the country. They are still not implemented widely. Geriatrics is not taken seriously enough.

**JG:** Are other countries implementing the Hospital at Home model?

**BL:** One of my former fellows is the chief of geriatrics at Mount Sinai Hospital in Toronto, Canada. He has been developing their home based primary and palliative care programs. They are considering using the Hospital at Home model. In Ontario, the Ministry of Health and Long Term Care recommends that the Hospital at Home model be implemented throughout the entire province.

Twenty one [organizations](#) in Australia use the Hospital at Home model. They call it Hospital in the Home (HITH). About twenty years ago, the [Health Authority](#) of Australia, announced that they would reimburse Hospital at Home admissions at the same rate that they reimburse hospital admissions. Today they have many successful [Hospital at Home programs](#). The Health Authority developed Hospital at Home [guidelines](#) and a mobile computing [toolkit](#) to help providers with the implementation and operations of the model. Two to four percent of all hospital admissions and all hospital bed days take place at home in Australia. Their Health Authority asserts that if they had not changed reimbursements to encourage acute care at home, they would have had to build another five hundred bed hospital.

**JG:** Are the hospitals in Australia realizing cost savings with the Hospital at Home model?

**BL:** Yes. The Hospital at Home model is also a better return on investment for society. It costs about two million dollars to capitalize a hospital bed. A five hundred bed hospital costs one billion dollars. That is just the building. Hospitals also have fixed costs. The one hospital they did not have to build represents large savings.

**JG:** Where do you see Hospital at Home in the future?

**BL:** I think over time, Hospital at Home will become part of the care delivery landscape. It will take time, but I am convinced it will happen.

**JG:** The [blog](#) that you coauthored for the [American Society on Aging](#) dealt with the challenges of managing multiple chronic conditions. Please share more of your thoughts on that subject?

**BL:** We have a healthcare system that tends to focus on single conditions. Most people who have chronic conditions have more than one. If you follow guidelines for a patient with five or six conditions and manage them by the guidelines written specifically for each condition at the same time, data suggest you will end up killing or nearly killing them. The guidelines for multiple conditions conflict. They do not account for interactions between the treatment for one illness and the treatment for another. They also do not account for the burden of treatment we put on our patients. The more treatment performed, the bigger the treatment burden. Sometimes when clinicians do more, the patient may not be achieving substantial benefit.

The doctor may be ordering a test, procedure, or medication because it is a box they have to check off to receive their value based performance payment. I witness this often. One example is people who should not have prostate specific antigen tests or colonoscopies because they will never live long enough to benefit from the preventive screenings. There is still a lot of that type of waste in the system.

**JG:** Do you consult with other health systems?

**BL:** Yes. Our [geriatrics group](#) here at Johns Hopkins is robust. We have developed expertise in many areas of geriatric medicine. We have a strong advisory capacity. Some clinicians in our division have been working in China. We have been working with large players in the assisted living facility space. Additionally, one of my colleagues, Dr. Sean Leng, is working with Peking Union Medical College ([PUMC](#)).

I am one of several medical directors for the business development group in Johns Hopkins. The group works to grow the consulting arm and give other providers access to the expertise of Johns Hopkins in a variety of areas.

**JG:** Thank you for this educational discussion.

**BL:** Thank you for your interest in my work.

END