



Quality of HIV Care – Closing the Gap

*A report on the findings from the Quality of HIV
Care – Closing the Gap Project*

...quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.¹



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Acknowledgements

This report summarizes the discussions held at the “Quality of HIV Care – Closing the Gap” workshop held on December 4-5, 2003 in Washington, D.C. We are deeply grateful to the co-chairs for this project, Sara Rosenbaum, Bruce Agins, and Jeff Levi, whose vision and leadership inspired the project.

The Forum would like to thank the HIV/AIDS Bureau of the Health Resources and Services Administration of the US Department of Health and Human Services, and specifically Laura Cheever and Joan Holloway for supporting this project with a project-specific grant. The Forum is an independent public/private partnership and receives core operational funding from government agencies and the pharmaceutical industry.

The guidance and insight of the planning committee members was indispensable for the success of this workshop. We thank them for their commitment of time and expertise to this project. Their names are listed in Appendix A. We are also especially grateful for the contribution of the speakers and moderators. Please see the Agenda (Appendix B) for a full list. Finally, the success of the workshop depended on the active participation of each of the participants (Appendix C) – we thank all of them for the contributions of questions, ideas, experience and support.

We thank Shikha Gupta for her expert assistance in providing the background paper “Knowledge, Experience and the Quality of Health Care” for this project. Valuable guidance and critical insight received from Sara Rosenbaum, Jeffrey Levi, Veronica Miller and Bruce Agins.

A special thank you to the project manager for this project, Blaine Parrish and the project coordinator, Houtan Mova. Additional support was provided by Paul Oh and Ipsita Das. Without their expert coordination and support, the project would not have become a reality.



Section I

Report of the December 10-11, 2002 Quality of Care – Closing the Gap Workshop

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Executive Summary

On December 10-11, 2002, the Forum for Collaborative HIV Research, with funding assistance from the HIV/AIDS Bureau of the US Health Resources and Services Administration, sponsored a workshop: *Quality of HIV Care – Closing the Gap*. This paper summarizes and is based on the presentations and discussions at the workshop and a literature review prepared for the meeting.

A review of the literature for HIV and other chronic diseases shows compelling evidence that experienced providers (those who have treated greater numbers of patients with a chronic disease) provide care that leads to better health outcomes. The challenge faced by participants at this meeting was to better define the components of quality care for persons with HIV – including and moving beyond experience of the individual provider and beginning to identify how these components might be brought to low-volume settings of HIV care. This second challenge is of particular interest given the broadening geographic reach of the HIV epidemic and/or the desire of many persons with HIV to be treated in community care settings without special HIV expertise.

Improving the quality of care for persons with HIV is particularly challenging in a context where treatment guidelines are constantly evolving with scientific knowledge; the nuances of care management for HIV are quite complex and individualized; and tremendous disparities exist in access to care and health care needs of the varied populations affected by HIV (variations based on geography, race/ethnicity, gender and the challenge of delivering health care to individuals with multiple co-morbidities such as mental health and substance abuse).²

While this workshop was not a consensus meeting, several key themes emerged that focus on the systems of care and support that need to surround both the individual clinician and the individual person receiving HIV care services. These themes include:

- Access to an experienced provider is a critical component of quality care. Different organizations are developing varied definitions of an experienced provider, but they all center on a minimum caseload and continuing education regarding HIV treatment, particularly regarding provision of anti-retroviral therapy.



- Experienced providers alone do not assure quality care. A multi-disciplinary system of critical support services surrounds an experienced provider and a patient. This system promotes the ability of the individual provider to offer quality care.
- All elements of this system of quality care (the experienced provider and the multi-disciplinary system of care) may not be available in all geographic areas. However, relationships and support systems can be created that bring some of the critical elements of quality to low-volume areas (e.g., through a consulting relationship with an experienced provider, short-term trainings, and/or technological aids such as electronic medical records that can prompt a provider regarding quality standards).

Attendees at this workshop also identified several areas that require further research. These include:

- Transferring quality to low-volume settings. What models already exist for providing quality care in low-volume settings (e.g., at publicly-funded community health centers)? How can they be replicated?
- Technological aids for quality care in both high- and low-volume settings. Can certain information technology-based approaches (such as the US Department of Veterans Affairs' medical records system and registry) be more broadly applied?
- Assuring the supply of experienced HIV providers in the future through training. Significant concern was expressed regarding continued interest in HIV care by medical students and the opportunity to gain HIV-related expertise during medical training now that HIV care is much more focused on the outpatient setting.
- Building a platform for research of quality outcomes in HIV care. The ability to carry out research focusing on health outcomes within populations is hampered by lack of unified and standardized data collection. This is associated not only with the lack of use of IT technology in health care, but also with the lack of standardization in data collection of HIV-relevant parameters across agencies.

This paper will briefly summarize the findings of a literature review related to quality care in chronic conditions; describe the workshop's discussion relating to what assures quality, including a description of the discussion related to credentialing and certification; outline the system of care that should surround the provider and the patient; describe some of the challenges associated with attempts to extend quality care;



outline some interventions or support for less experienced providers; and further describe some of the research questions that remain in this critical area of health services research.

Context: The Literature

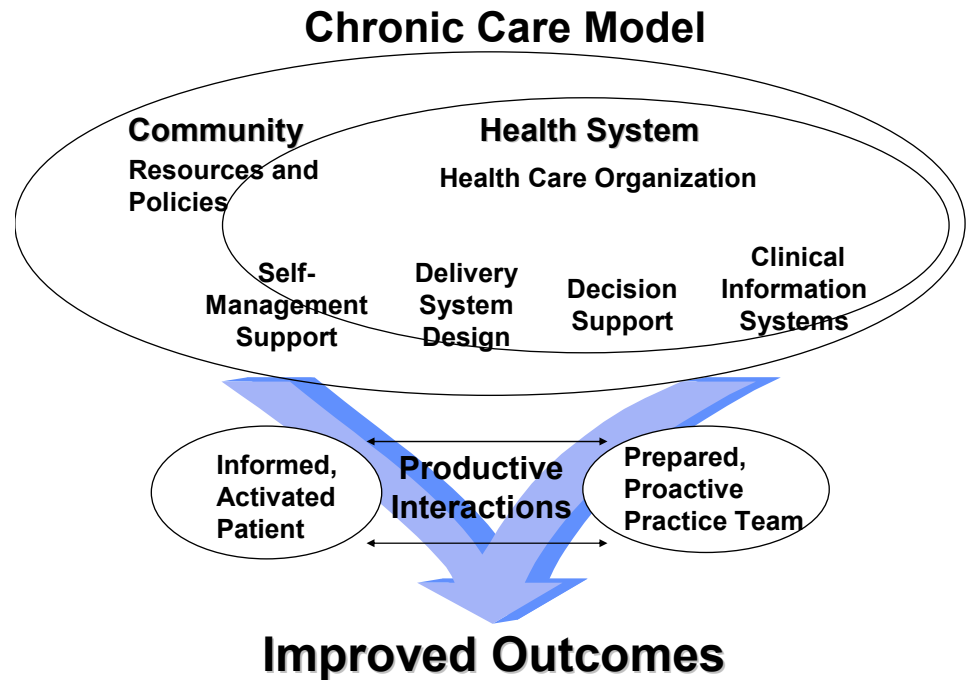
A literature review³ conducted in anticipation of this workshop focused on the knowledge and experience of providers and its relationship to quality care in HIV/AIDS and other diseases that might serve as a comparison. The forum staff and project advisors recognized that quality of care is closely associated with knowledge and experience levels of physicians and the relationship between them is most likely to have been studied and reported on.

While there has been relatively little research in this area, three conclusions that are particularly relevant to this workshop could be drawn from the literature review. These are:

- Physicians with a higher level of knowledge and experience do better at diagnosing, treating, and managing disease.
- Training cannot be occasional or one-time. Continuous and intensive training is needed.
- Training is costly and time-consuming and can be a challenge to access for busy and under-resourced providers in medically underserved communities.

Transitioning HIV Care to a Chronic Disease Model

With the advent of highly active anti-retroviral therapy (HAART) in 1996, HIV care transitioned from postponing death to managing a chronic disease. Several speakers at the workshop promoted the chronic care model of EH Wagner⁴ as an example of how HIV care needs to be structured today.



This model, illustrated above⁵, recognizes the role of a system of care that supports an individual provider and the community resources that support both the patient and the provider. Ultimately, the quality of care provided is the result of an informed, activated patient interacting with a prepared, proactive practice team. This model is consistent with the model of interaction between the HIV community and the health care delivery system throughout the HIV epidemic, translated to the individual interaction between patient and provider. And it is reflected in the breadth of services funded and supported through the Ryan White CARE Act, designed to build around the traditional health care delivery and financing systems (such as Medicaid, Medicare, and private insurance).*

Indeed, the workshop participants generally described this kind of approach as consistent with what is seen among high-volume providers. High-volume providers are likely to work in a multidisciplinary manner with a highly trained team where the

* Services include: Health care services – ambulatory/outpatient medical care; drug reimbursement programs such as the AIDS Drug Assistance Programs; health insurance; home health care; home-based and residential hospice care; mental health services; nutritional counseling; oral health; rehabilitation services; substance abuse services (outpatient/residential); treatment adherence services. Support services – child care; child welfare; buddy/companion; social/medical case management; client advocacy; psychosocial support services; day or respite care; emergency financial assistance; food bank/home delivered meals/nutritional supplements; health education/risk reduction; housing services; legal services; outreach; permanency planning; referral to health care and/or supportive services; transportation; program support; quality management. Full category definitions available online at http://hab.hrsa.gov/grants/2003_t2.htm#section7 (Appendix D on the website).



physician is not seen as the prime provider of services but as an important team member. The team then provides for improved delivery of service by: providing the right information at the right time; making sure the right thing happens every time; providing direct feedback on how the patients are doing (as a group) and checking that progress against the desired outcomes to ensure that doing the right thing leads to the desired results. This process helps to ensure quality. Low-incidence providers usually lack this approach and have a weak system surrounding them.

Context: Evolving Standards and an Evolving Epidemic

With or without a system of care surrounding the provider and the patient, HIV providers face particular challenges that are somewhat different from providers for other chronic diseases. Dr. Bruce Agins, in an overview to the workshop, identified a series of challenges to improving the quality of care for persons with HIV. Leading the challenges is that of converting the changing academic knowledge about HIV treatment into systemic practice in an epidemic that has shifted in terms of demographics as well as management models. Specifically, the challenges include:

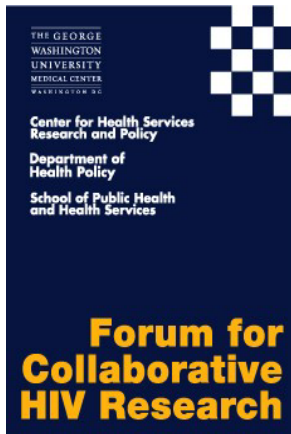
- HIV providers and patients are faced with a constantly evolving standard of care. The HHS “Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents” (http://www.aidsinfo.nih.gov/guidelines/default_db2.asp?id=50) have evolved with far greater speed than seen for most other chronic diseases. Since the approval of the first protease inhibitor in 1995, the beginning of the HAART era, the guidelines have been updated more than 10 times. This reflects the rapid pace at which scientific knowledge about HIV treatment is advancing. To the HIV patient and provider, this poses a particular challenge for assuring treatment is consistent with the most current guidelines. The change is so rapid that, rather than distributing a printed version of the guidelines, they are now updated regularly on an HHS-supported website.
- One critical aspect of the guidelines is the degree to which deference is given to the individual situations of particular patients. A broad context of factors must be considered before choosing among an immense number of treatment options. For example, a triple-combination therapy of currently approved drugs including one protease inhibitor and two nonnucleoside reverse transcriptase inhibitors produces 896 possible combinations of drug choices alone (not considering dosage, etc.). This is challenging for a provider with an HIV-focused practice; it is potentially even more



baffling for a provider trying to manage a small number of HIV cases in a general medicine clinic.

- Not all patients seek or have access to the same level of care. There are tremendous variations based on geography, race/ethnicity, and gender. These variations may be reflected in differences in access to experienced providers and support services, insurance status (and therefore coverage for appropriate care), or timeliness in entry into care. Together or alone, these factors can have a significant impact on quality of care.
- An increasing number of persons with HIV have co-morbidities that add to the complexity of their HIV care and may affect HIV-related outcomes. A growing proportion of persons with HIV also need substance abuse or mental health treatment. In one study, 61.4% of adults in HIV care in the US received mental health and/or substance abuse services.⁶ In addition, co-infection with hepatitis B or C (HCV), which is increasingly common, can complicate underlying HIV treatment. One-quarter of individuals infected with HIV are also estimated to be infected with HCV. Of those, injection drug users (IDUs) are more likely to be co-infected (50-90%) than those who contracted HIV through prenatal or sexual exposure (3-5%). The latter mirrors the general population in regard to HCV infection.⁷

Viewed from a global perspective, the disparities in management of HIV disease are profound. Nevertheless, the issues surrounding quality of HIV/AIDS care are consistent across the globe: provider and provider teams need to have knowledge of practice standards and develop experience in using them. The approach to providing guidelines and standards of practice has varied significantly between resource poor and resource rich nations. The WHO published treatment guidelines for resource poor regions only last year, based on the absolute minimum standard of good care and the use of standardized treatment regimen. The challenges faced in these regions by inadequate financing of care and monitoring of treatment/care, inadequate training and capacity building programs, uneven distribution of resources and expertise compared to prevalence of HIV+ patients (rural vs. urban) and lack of access to journals, continuing medical education programs, the internet and telephones in many areas will significantly restrict capacity development. Facilitating the access of patients to expert care, and extending the reach of expertise to the patients will continue to be many fold more challenging than that experienced in the US. The WHO and numerous academic programs are working to provide standardization and



evaluation of training programs with the view of ensuring basic levels of quality of care.

Even among resource rich nations, the approach toward standardized quality of care vary widely. Australia presents one example of the “linking prescribing privileges to specialized training” model. In the province of Queensland, special accreditation is required for clinicians to be permitted to prescribe anti-retroviral therapy. This accreditation is based on a substantial education, with an annual re-certification process (including education and review of past performance), with a formalized mentoring system and monitoring of prescribing patterns. This is facilitated by a centralized system of drug dispensing.⁸

In the US, the demographics of HIV pose particular challenges to providing access to quality care. HIV disproportionately affects those who are poor, uninsured, and multiply diagnosed. The majority of those with insurance of some kind are dependent on the publicly funded Medicaid program, which has tremendous variability in coverage and eligibility standards on a state-by-state basis.^{9*} The Ryan White CARE Act fills in the gaps in Medicaid programs by providing services to poor people who are not eligible for Medicaid and/or providing additional services to Medicaid beneficiaries that are not covered under that program. Thus the implementation of the CARE Act, while mitigating some of the deficiencies in the Medicaid program, also reinforces the geographic disparities in access to care for people with HIV.¹⁰ Nonetheless, the CARE Act is a unique program: there is no comparable care program for any other disease in the US and it provides an opportunity to standardize quality care at least among the substantial proportion of people with HIV who are reached through CARE Act providers.

What is an experienced provider?

Discussants at the workshop endorsed the view that experience counts. In addition to the Queensland model referred to above, three organizations active in the USA discussed their definitions of an experienced provider. While different in some respects, they all endorse the core view that experience treating a minimum number of HIV patients and ongoing, substantive continuing education regarding anti-retroviral treatment for HIV are critical to a clinician’s ability to provide quality care. Harder to define, but considered equally important by many workshop participants, is the experience and

* The HIV Care and Services Utilization Study (HCSUS) showed that of those in regular care in 1996, 44% had their care financed by Medicaid, 6% by Medicare only (more were dually eligible for Medicaid and Medicare), and 20% were uninsured.⁹



expertise within the system of care that surrounds the primary care clinician (specialists, nurses, nurse practitioners, social workers, etc.).

Definitions of Experienced Providers

| <i>American Academy of HIV Medicine</i> | <i>HIV Medicine Association</i> | <i>New York State AIDS Institute</i> |
|---|---|---|
| 20 HIV patients over the past two years | Continuous and direct medical care to a minimum of 20 HIV+ patients within the preceding 24 months | Minimum of 20 patient years of direct clinical management, specifically ARV management, of person with HIV over the past two years. |
| 30 education hours | Minimum of 30 hours of category 1 CME in diagnosis and treatment of HIV+ patients within 24 months | 10 hours annually of CME that includes information on ARV therapy in the ambulatory care setting |
| Written exam | No exam; option for low volume providers who may have a consultative relationship with someone who meets the definition | No exam |

There was considerable discussion at the workshop how best to apply these relatively comparable definitions. Key points in this discussion were:

- Should care for persons with HIV be limited to those who meet these criteria? (New York State, for example, is moving to assure that the overwhelming majority of its HIV patients are treated by an HIV specialist who meets these criteria.)
- Is certification (in the New York and Academy models) sufficient? Or should there be a sub-specialty related to HIV as proposed by the HIV Medicine Association, which is part of the Infectious Disease Society of America. (The HIVMA has proposed a Certificate of Added Qualifications for HIV medicine, to be administered by one or more of the medical boards that comprise the American Board of Medical Specialties. This certificate would



require an additional year of training and a written examination. Providers could substitute clinical experience for training.)¹¹ Two major concerns raised with this approach are its physician orientation and its requirement for an additional year of training at a time when it is hard to recruit young clinicians into HIV care.

- Should the focus be on physicians (as in the HIVMA model) or should standards and certifications of expertise be applied to all providers (as in the New York and Academy models)? The experience of the system surrounding the individual practitioner is quite important to assuring quality in most chronic disease models. Particularly in medically under-served areas, non-physicians may indeed be the primary care providers for persons with HIV and may be a more cost-effective way of providing access to experienced providers.

Extending the reach of expertise

Workshop attendees and those proposing these approaches to certification of HIV providers recognized the challenge of translating these definitions into practice in low-incidence communities where the volume of HIV patients would not permit a clinician to gain the level of experience needed and for whom HIV is one of many conditions for which CME is needed. Indeed, the HIVMA suggests that in communities or geographic areas where an experienced provider is not available, a consultative relationship should be established between the clinician and an experienced provider. Participants agreed that a number of interventions or supports could be of particular value to the less experienced provider. They include:

- Short-term training in prescription practices (HAART) and HIV care management.
- Warm line consultations to make medical knowledge available to low-incidence providers and others new to HIV care.
- Use of telemedicine to provide direct access between a patient and an experienced provider.
- Availability of in-person consultations (either by supporting experienced HIV providers to travel to low-incidence communities or supporting patient travel on an infrequent basis).
- Technological aids such as electronic medical records systems that could prompt physicians regarding appropriate interventions and



be sent to a central quality facility for review by experienced providers and/or decision support systems (see below).

- Provider “networks” such as developed by the VA (national provider meetings and training workshops, with maintenance via regular communication and updates).

Systems Support: Use of information technology for patient care and outcomes assessment

Workshop participants emphasized repeatedly the importance of a broad definition of a quality care delivery system for persons living with HIV. This is consistent with the models embraced by Ryan White CARE Act providers and has been associated with improved quality of care.^{12, 13, 14, 15} One area of particular interest was the use of technological aids for the clinician that could assist in assuring that appropriate adherence by the clinician to practice standards and in monitoring outcomes at the population level. Workshop discussions underscored the fact that generation of data and data-driven decisions is difficult without the necessary infrastructure in place. In HIV, this is made difficult by the numerous funding streams with incompatible structures and reporting requirements.

The Veterans Health Administration, which is the largest single provider of HIV care in the US, has one of the most integrated and sophisticated electronic medical record systems in use in the US. The Center for Quality Medicine uses quality management techniques and clinical information systems strategically to catalyze innovation and improvement in clinical care. The VA provides the clinician with real-time information as part of the medical record, including prompts related to screening laboratory tests (e.g., for hepatitis), frequency of HIV-related laboratory testing, consideration of HAART, and reminders regarding prophylaxis treatment. As a centralized data system, VA quality managers can review records of providers and sites to assess their adherence to quality standards. This is one part of a data-driven approach to HIV collaboratives in the VA, which is designed to have groups of VA sites work together to identify, share, and improve HIV practice. The integrated VA data system offers the opportunity to link demographic information with health care utilization data. High- and low-volume providers for HIV care can easily be identified, and efforts to support access and care for low-volume sites implemented. A further advantage is the ability to address issues of patient safety, such as tracking emerging toxicities and treatment for adverse effects of drugs. Thus the VA system incorporates both internal and external measures of quality.¹⁶



HRSA has adopted a series of collaboratives related to chronic disease treatment in its community health centers program. In order to eliminate health disparities and “improve functional and clinical outcomes” in organizations providing primary health care, the Bureau of Primary Health Care (BPHC) selected 88 health centers to participate in “Health Disparity Collaboratives.” The goal was to “delay or decrease” complications of diabetes by following the Care Model developed by EH Wagner. This model, as well as a “learning and improvement model” developed at the Institute for Healthcare Improvement (IHI www.ihl.org) “requires knowing which patients have an illness or need preventive service, assures delivery of evidence-based care, and actively helps patients and families to participate in their own care.”^{17*} To-date, over 240 health centers have employed this model for diabetes, asthma, and/or depression. An example was presented at the workshop of the model used for cardiovascular disease at the Fair Haven Community Health Center in New Haven, CT. The clinical information system used provides a wide array of information about each patient, from socio-economic status to health status to language needs and preferences. This tracking system allows for information to be accessible to individual providers of service (physicians, nurses, pharmacists, medical case managers, etc.) to better meet the needs of the patient and to provide a team of health care service providers, rather than relying solely on the physician. A downside of tracking all the information is that it becomes somewhat of a burden for the providers, who must work with long checklists to gather information. When anything abnormal is detected, or more information is needed based on findings from these checklists, the burden of work and the number of individuals needing to be involved grows exponentially. However, this team approach is necessary to train all members of the team to work together to treat the patient.¹⁸

In efforts to derive data-driven definitions of quality, the Substance Abuse and Mental Health Services Administration (SAMHSA) has considered different types of data. These include consumer-oriented report cards documenting access to care, quality of care and outcomes achieved, as well as focusing on the identification of common performance measurements applicable across the mental health and substance abuse fields.

* The mission of the Health Disparities Collaboratives is to achieve excellence in practice through the following goals: (1) to generate and document improved health outcomes for underserved populations; (2) to transform clinical practice through models of care, improvement and learning; (3) to develop infrastructure, expertise and multi-disciplinary leadership to support and drive improved health status; and (4) to build strategic partnerships.¹⁷



These are but three examples illustrating approaches taken by national networks, agencies and individual clinics to use data systems to prompt and monitor quality of care. Workshop participants generally agreed that these approaches can be of value throughout the HIV care delivery system, for both highly-experienced and less-experienced providers. However, many providers lack the resources and/or infrastructure to adopt more technology-driven systems.

Further research

Workshop participants identified a number of areas where additional research or data are needed to inform the discussion of providing quality care, in particular with regard to transferring knowledge and experience to low-incidence communities. Among the suggested avenues for further study were:

- *Identifying models for gaining access to experienced providers or providing quality care in low-volume settings.* A natural experiment is occurring in community health centers across the country that are treating people with HIV disease, even if their providers are not technically meeting the definition of an experienced provider. Much could be learned about the quality of care they are providing, how they access expertise, and whether there are positive models that, with small investments by the government, could be replicated across the country among lower volume providers.
 - A related question is to learn more from low-volume providers about how they like to receive information and what kinds of support systems they think would be most helpful to them.
- *Gaining a better understanding of why some people with HIV do not seek out experienced providers for their care.* While some people with HIV do not have geographic access to experienced providers, others do and still seek care from less-experienced providers. It is hypothesized that this is due to a desire to seek care in their community from culturally-competent providers and/or due to the potential stigmatization associated with seeking care at an HIV clinic. More needs to be known about this phenomenon before solutions can be identified.
- *Maximizing the benefit provided by technological aids.* It appears there are multiple efforts under way to provide technological aids to promote higher quality care. These are occurring within the HIV care delivery system and in the health care system at large as



well. These require stronger coordination, better standardization (and a better understanding of which aspects are most effective), and the infrastructure in the community to implement these technologies.

- *Understanding the potential impact of credentialing requirements on quality of care.* What impact has this had on quality for other, comparable conditions? What impact might this have on the supply of experienced providers? Will a credentialing requirement ultimately limit access? What will be the impact of acknowledgment of expertise requirement and career pathway?
- *Understanding the relative importance of training and experience of providers and other health system members in quality outcomes.* The key components of an effective HIV care team, effectiveness of different team compositions and models of reducing turnover need to be investigated.
- *Addressing the “expertise gap.”* Many workshop participants expressed concern about difficulties in attracting new physicians into HIV care as well as the diminished opportunity to train medical students in HIV care, since the US medical training system is hospital based and less and less HIV care is being provided in that setting. A survey of medical students regarding their attitudes toward HIV care and practice as well as training programs for HIV in medical schools might be informative to this discussion and might help identify new approaches to training and recruiting young clinicians into providing HIV care.
- *Building a platform for research of quality outcomes in HIV care.* Much of the focus in quality improvement has centered on internal measures (e.g. operational, process standardization). The ability to carry out research focusing on external measures (health outcomes within populations) is hampered by lack of unified and standardized data collection. This is associated not only with the lack of use of IT technology in health care, but also with the lack of standardization in data collection of HIV relevant parameters across agencies.

Next steps

The workshop presented many opportunities for discussion of the issues surrounding quality of care and collaborative approaches to overcome barriers. In keeping with the Forum’s mission, we have identified the gaps in research infrastructure that underlie the gaps in knowledge as the most pressing and the most encompassing research



need. Many parallels between this project and the Forum’s accompanying program on HIV treatment and care training programs in resource poor settings (<http://www.hivforum.org/projects/collab-networks.html>) have already been identified. Facilitating “moving the field forward” will necessitate multilateral and multidisciplinary discussions involving government agencies, academia, industry and patient advocacy and the prioritization of this on national and international agendas by engagement of the leadership of all sectors.



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Section II

Knowledge, Experience, and the Quality of Healthcare:

A Review and Synthesis

A Literature Review

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KNOWLEDGE, EXPERIENCE, AND THE QUALITY OF HEALTHCARE: A REVIEW & SYNTHESIS

INTRODUCTION

Achieving accessible, quality healthcare for persons with HIV and AIDS is a critical need for patients living in the United States and worldwide. The Forum for Collaborative HIV Research represents all stakeholders interested in HIV issues, with the goal to facilitate and stimulate research and other activities in areas at the forefront of HIV research that require a multiconstituency approach.* In keeping with this mission, the Forum has initiated a project: Quality of HIV Care—Closing the Gap.

This background paper synthesizes findings from health services research into the relationship between healthcare quality and health outcomes on the one hand and knowledge and experience among health professionals and programs on the other. As the focus on improving healthcare quality has intensified among developed nations, initiatives aimed at improving physician training, education, experience, and patient knowledge and understanding has evolved into a key reform. Donald M. Berwick wrote¹: *“Nothing about medical school prepares a physician to take a leadership role with regard to changes in the system of care. Physicians are taught to do their very best within the system and to perfect themselves as individual professionals by advancing their skills and knowledge everyday.”*

* The Forum for Collaborative HIV Research is a public–private partnership funded by US government agencies and pharmaceutical industries. Its mission is to: (1) survey and synthesize current knowledge, practice patterns, ongoing studies, and information in all areas affecting HIV disease, including the basic, clinical and social sciences, public health, and health services research; (2) identify gaps in the current HIV/AIDS knowledge base in any of these areas, which, if filled, would answer critical questions; (3) make recommendations on how to fill those gaps; (4) actively catalyze appropriate stakeholders to develop and implement new studies or initiate new activities to fill those gaps; and (5) facilitate the development of a strategy and propose new mechanisms to conduct the needed studies should existing sources prove inadequate to do so. A project related to the current one is “Establishing Collaborative Networks Amongst HIV-Training Programs in Africa.”



Indeed, quality of care depends on the system in which the care is provided as well as on the skills of the individual providers.

At the same time, advances in knowledge and training can be expected to have little impact if the results of these improvements fail to reach the populations who most need them. Patients with lower incomes and less education are diagnosed with HIV late in the course of infection and, following diagnosis, receive care later than their counterparts.² Studies have also acknowledged a significant increase in rural HIV infection rates.³⁻⁶ As the rural HIV trend grows, the historic problem of inadequate rural access to specialized healthcare from experienced health professionals grows more urgent. Rural US residents experience systemic healthcare shortages related to physician shortages, underdeveloped social and homecare support systems, and long travel distances to care facilities.⁷ Because HIV/AIDS requires intensive case management and prolonged, frequent care,⁸ these barriers to effective healthcare create serious quality-of-care obstacles for patients with HIV/AIDS. To that end, the Forum has launched a multifaceted project to:

- help policymakers and program administrators identify, lessen, and ultimately remove barriers to quality healthcare; and,
- ensure that improvements in physician training and experience in the care and management of persons with HIV are felt in seriously medically underserved urban and rural communities that, today, are disproportionately the source of new HIV infection.

As part of this initiative, Forum staff and project advisors concluded that deliberations over the most effective intervention would be aided by a synthesis of what is known about knowledge and experience in



the context of healthcare quality. This paper was commissioned to summarize and succinctly present the evidence drawn from a wide body of health services research regarding knowledge and health quality. The studies examined and summarized here range across populations and diseases.

Together, the research presents a strikingly vivid picture of the importance of ensuring early, rapid, and appropriate access to health professionals who are knowledgeable and trained in recognizing, diagnosing, treating, and managing chronic illness and conditions. However, this review highlights the relative scarcity of research on the issue of the role of knowledge and experience in improving healthcare quality. The absence of a large body of quality research in part may reflect the difficulty of defining and measuring *quality* healthcare that may be a barrier to the development of protocols for research studies of quality in healthcare and methods for tracking improvements in its delivery. The limited number of studies also can be attributed to the practical and ethical limitations that arise whenever studies designed to measure the relative effectiveness of certain clinical interventions are attempted.

SYNTHESIS OF FINDINGS

Approach to Synthesis

Various studies have researched and attempted to describe the type of knowledge that will help physicians achieve better patient outcomes at every stage of a medical disease. A study conducted by Edward H. Wagner⁹ has divided a typical chronic-care disease-management program into three levels, based on the type and frequency of required treatment:



- Level 1. The disease is under reasonable control and primary care is usually adequate for effective management. Primary care for a patient involves preliminary tests, detection and diagnosis of a disease, and focuses on performing preventive care measures.
- Level 2. Patients have poorly controlled conditions and require a higher treatment level. For chronic diseases, this stage usually requires a managed therapy program that can be highly complex. Physicians at this stage require considerable expertise in handling the disease.
- Level 3. This stage comprises patients with multidiagnoses, high-use patients, or both. They receive case management services through registered nurses or medical social workers within the primary care team. Because patients have multiple diagnoses, Level 3 case management is not disease-specific.

This literature review particularly focuses on the first two levels of illness identified by Wagner. Although case management for patients at level 3 of HIV/AIDS is being promoted, there is not much literature available on its effectiveness. A study by Katz and colleagues¹⁰ has linked case management in HIV/AIDS to a decreased level of unmet needs and higher use of HIV medication. The authors have also stressed the need for additional studies to determine the benefits of case management models in HIV/AIDS treatment.

Methodology

English language articles were identified through MEDLINE (1966-present); Cochrane Library; CINAHL (Ebsco); Health Source,



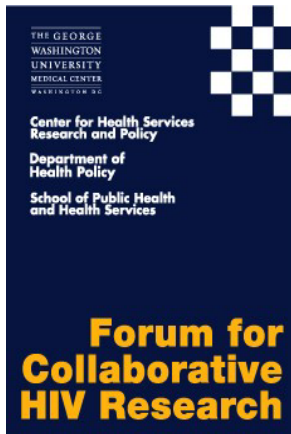
Academic/Nursing Edition; Health Source, Consumer Edition; and PsycArticles using keywords such as specialist, specialization, AIDS expert, HIV care, quality of care, patient outcomes, generalist, specialty, accessibility, AIDS experience, continuing medical education, physician knowledge, and medical stages. Articles from the bibliographies found in these citations were also reviewed. Only those studies involving a chronic and complex disease condition were reviewed because they provided an appropriate platform from which to draw analogies between quality of care in other medical fields and in HIV/AIDS. No limitations on chronic disease areas were imposed.

RESULTS

Early Access to Diagnosis and Treatment

Primary care offers the first-contact care and acts as a base from which other accommodations—specialists and other caregivers—are arranged.¹¹ Even a specialty-centered system such as US healthcare relies heavily on primary care physicians. A study¹² conducted in Massachusetts found that almost 87% of the people with a regular personal physician relied on a primary care physician. Through this model, also called *comanagement*, people seek care from both their personal physician and a primary care practitioner. In a survey¹¹ of patients enrolled in California physician groups, 94% valued having a primary care physician who knew about all their medical problems. Most preferred to seek initial care for common problems from their primary care physicians.

The magnitude of reliance on primary care physicians makes these professionals the first line of contact for chronic conditions and disease. Research¹³ has demonstrated that care improves when specialist physicians assume primary care duties for patients with the

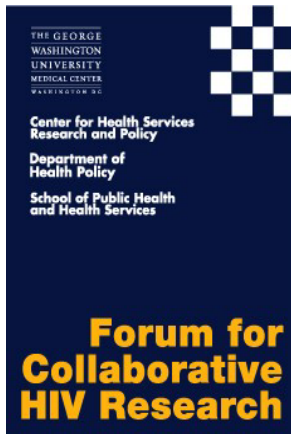


more complicated medical conditions such as acute myocardial infarction, stroke, AIDS, and other conditions, suggesting the importance of knowledge and experience at the threshold point of healthcare access.

A series of studies have compared the quality of care delivered by specialists and primary care generalists across a range of conditions; these studies yield important findings regarding the importance of knowledge at the point of entry into care.

Early access to care. Shao and colleagues¹⁴ conducted a study to compare the knowledge and attitudes of physicians in treating depression. The authors concluded that a higher level of training and experience was instrumental in the diagnosis of depression. Increased experience and higher levels of psychosocial training were associated with more favorable attitudes even among the primary care practitioners. Friedmann and colleagues¹⁵ assessed physician knowledge using case simulations of 3 patients with typical heart conditions. They found that cardiologists more accurately estimated baseline cardiovascular risk and risk reduction relating to the respective interventions, as compared to family physicians and internists that lacked adequate knowledge. Early identification and treatment of HIV infection have been widely accepted as being very important for directing a treatment that can reduce morbidity and mortality. Paauw and colleagues¹⁶ conducted a study showing that primary care physicians frequently missed important physical findings relative to HIV infection during initial patient examinations.

Access to appropriate prescribed treatment. Gallo and colleagues¹⁷ examined the primary care quality standards for management of depression by 91 family physicians, 194 internists, and 76 psychiatrists after they were compared for their knowledge levels. Researchers



observed that the patients treated by psychiatrists or physicians considered to be adequately trained and experienced were more likely to receive prescriptions for antidepressant medications and counseling. They even had a better chance of being correctly diagnosed for depression. Callahan and colleagues¹⁸ found that even when primary care providers were given diagnostic scales and treatment algorithms, fewer than half the patients they identified with depression actually received treatment. Ayanian and colleagues¹⁹ and Jolis and colleagues²⁰ surveyed cardiologists and primary care physicians regarding the treatment of acute myocardial infarction. Their results showed that cardiologists more often knew which medications have been proven to reduce mortality in acute myocardial infarction and were more likely to use them than the primary care practitioners. In measuring the ability of generalists to provide primary care to HIV-infected patients, Curtis and colleagues²¹ found that only a minority of generalist physicians recommended standard primary care screening tests and vaccinations. Less than one third of these physicians asked the patients about their sexual history for determining their HIV risk or counseled the patient for effective treatment.

Katon²² analyzed several studies that were done on patients with major depression and concluded that lack of physician training in mental health interviewing and treatment skills led to ineffective care. Despite the high prevalence of major depression, studies showed that primary care physicians accurately detect only 50% of the cases. An earlier study²³ by the same author evaluated the effect of an intervention program to improve the management of depression in primary care. The intervention, which included a structured depression treatment program and individual counseling, resulted in significantly favorable depression outcomes among patients with major depression in primary care. In a study by Markson and colleagues,²⁴ HIV specialist clinics



were shown to be more accessible to the HIV-infected patients through longer clinic hours, physicians on call, and accepting unscheduled appointments.

Managing Treatment

Various studies have provided reviews on continuing medical education and other strategies intended to improve physician performance, quality of care, and patient outcomes. Most of the studies have acknowledged that higher knowledge and training levels are more important in the more complicated disease management programs.

Conditions that are common in general practice and for which the treatments are not very complicated or rapidly evolving (like back pain)²⁵ can be effectively taken care of by generalists. But for complicated medical conditions such as acute myocardial infarction, HIV/AIDS, psychiatric diseases, and so forth, specialty care is associated with much greater patient outcomes. Various studies²⁶⁻²⁸ that compared the quality of care offered by a generalist and a specialist for HIV/AIDS have associated a better quality of care with specialist treatment.

In measuring the quality of care for disease management, most of the articles analyzed data using measures such as patient outcome, physician knowledge and confidence, patient satisfaction, and treatment costs.

Physician knowledge and confidence. In a study of patients with asthma in 2 large managed care organizations in the United States, Diette and colleagues²⁹ found that care was more likely to be consistent with specified national guidelines when asthma specialists



were the usual source of care. Chin and colleagues³⁰ examined the relationship between physician knowledge and the use of angiotensin converting enzyme (ACE) inhibitors for patients with congestive heart failure. The results showed that physicians who were inadequately trained underutilized ACE inhibitors. ACE inhibitors have been seen to decrease mortality and the progression of symptoms significantly, and their use has been highly recommended for patients hospitalized with congestive heart failure. However, the lack of up-to-date knowledge among practitioners also leads to their underutilization in many cases.

Stone and colleagues³¹ examined the relationship between choice of appropriate antiretroviral therapy (ART) and physician knowledge and HIV/AIDS experience. They concluded that guideline-recommended ART is significantly less likely to be chosen by generalists and physicians with less HIV/AIDS experience.

Joel E. Gallant³² noted that an underlying problem in the management of antiretroviral therapy in HIV disease is the potential for development of drug resistance and associated treatment failure, and the significant roles played by patients' adherence to prescribed regimens. Thus, it is not only the recognition of which drugs to use when, but also the management of the complicated treatment regimen over time that determines health quality. These issues are endemic to any chronic disease that must be managed for a protracted time.

In measuring the confidence levels of physicians, a study by Gerbert and colleagues³³ showed that generalists lacked confidence in decision-making in areas associated with high risk or uncertainty while treating AIDS. Specifically, they lacked confidence in practicing in areas where published research was yet to provide clear guidance and



where the needed expertise was either outside their own or traditionally followed by specialists.

Patient Outcomes. Jollis and colleagues²⁰ determined that elderly patients with myocardial infarction admitted to cardiologists were 12% less likely to die within 1 year than those admitted to generalists. Mitchell and colleagues³⁴ determined that the patients of neurologists had significantly lower 90-day mortality rates than patients of generalists. The results of a study conducted by Kitahata and colleagues³⁵ demonstrated that the experience of primary care physicians in the management of HIV/AIDS is significantly associated with high survival rates among their patients. Gardner and colleagues³⁶ evaluated the impact of HIV-specialist care in HIV-infected women and concluded that specialist care increased the likelihood of women receiving recommended therapies. A change in physician behavior along with the knowledge level also leads to better patient health outcomes. A study conducted by Mann and colleagues³⁷ linked the lowering of LDL and cholesterol levels in patients to an educational intervention that was designed to increase physician cholesterol-lowering practices. The authors concluded that the variability of individual physicians' motivation is more powerful than the effect of systematic educational intervention. Ayanian and colleagues³⁸ evaluated the relation between ambulatory care and mortality among elderly patients after myocardial infarction. Their results demonstrated that visits to cardiologists were associated with greater use of cardiac procedures and decreased mortality after myocardial infarction. A further reduction in mortality was noted among patients treated by both cardiologists and family practitioners, indicating that effective collaboration between cardiologists and general physicians has the potential to improve long-term outcomes after myocardial infarction.



Patient Satisfaction. Most of the studies have largely associated much higher patient satisfaction with the treatment provided by trained and specialist physicians. Carey and colleagues²⁵ noted that even though charges were higher when specialists provided the medical care, patient satisfaction was significantly greater. Diette and colleagues²⁹ found in their study of asthmatic children that parents relied more on specialists than on generalists and had greater satisfaction with services provided by a specialist. Donohoe,¹³ in his literature review, also concluded that patients express more confidence in specialists for treatment of complicated diseases such as myocardial infarction and depression. Beedham and colleagues³⁹ researched consumers' views on needs and services for HIV care and found that most of the patients were keen on retaining specialist clinics and wards to sustain the level of expertise they appreciated and to protect their confidentiality.

Cost of Treatment. Zarling and colleagues⁴⁰ compared patients admitted to hospitals with acute diverticulitis under the care of family practitioners and gastroenterologists. They found that the gastroenterologists' patients had shorter hospital stays and approximately a 50% lower 30-day readmission rate. Nyman and colleagues⁴¹ investigated whether timely referral to specialists (orthopedic surgeons) can reduce the cost of healthcare. The results demonstrated that timely referrals to specialists might lead to lower costs for patients even though fees may be higher, or the surgeons may order more tests. The study by Carey and colleagues²⁵ showed that the care given by generalists to patients with lower back pain was less expensive than that given by specialists. Most of the literature reviews⁴²⁻⁴⁴ mentioned that specialist care is more expensive, and there are not enough specialists or financial resources for every patient to be treated by a specialist. At the same time, the authors recognized that there is a tendency to report only the most severe cases to specialists.⁴¹



Studies have also associated decreased costs with expert care. Stephen Becker⁴⁵ explored the economics of HIV-experienced physicians in his study. He concluded that HIV-expert physicians led to a significant drop in the length of hospital stays required for HIV-infected patients.

Studies⁴⁶ on HIV care have suggested that combination antiretroviral therapy is more cost-effective compared with other medical treatments that are commonly accepted as worthwhile. Other interventions like *Pneumocystis carinii* pneumonia (PCP) prophylaxis are also cost-effective.⁴⁷ Since providers with more HIV expertise may use these medical treatments more often for patients with appropriate indications, it is possible that care by providers with more expertise also has its advantages in cost effectiveness.

The Role of Professional Training in Improving Healthcare Quality

Many of the studies cited above consider the role of specialists, but a number find a positive relationship between measures of health quality and access to physicians with training and experience, even if formal subspecialty certification through the graduate medical education system is lacking. Given the enormous difficulty of ensuring access to specialists in underserved areas, training and knowledge take on a particularly important aspect.

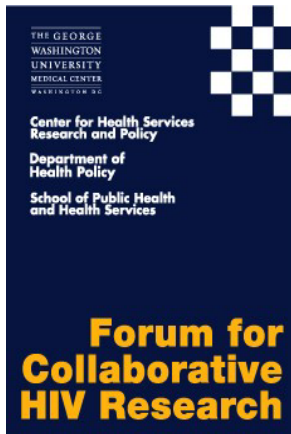
Edward H. Wagner⁹ has proposed a chronic care model as a guide to higher-quality chronic illness management within primary care. One of the important components of this model is providing efficient decision support to physicians in the form of periodic educational sessions and easy access to specialist expertise.



Research designed to identify the most effective form of continuing medical education (CME) for physicians engaged in chronic condition management therapies has found that ongoing education can have a positive impact. A study conducted by Davis and colleagues⁴⁸ concluded that repeated, interactive CME sessions could effect change in both the quality of professional practice and healthcare outcomes. However, occasional instructive sessions did not appear to change physician performance. Another study⁴⁹ made similar conclusions in stating that widely used CME methods such as conferences yield little direct impact on improving professional practice. The authors found that CME providers seldom used more effective methods, such as systematic-practice-based interventions.

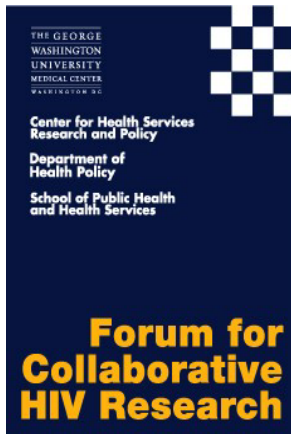
Studies have attempted to evaluate various models of CME. For instance, a study⁵⁰ testing a CME model for congestive heart failure fell short of expectations when the physicians were found unwilling to spend the required amount of time, and were also found to be less computer literate than expected. Another study conducted by Kim and colleagues⁵¹ sought to determine whether tailored education interventions could improve the quality of care and patient outcomes. The authors concluded that the physician-targeted approach of education that was used had very modest and limited effects on patient satisfaction and outcomes.

The success of CME offered in the form of periodic conventional lectures and conferences seems limited, with most of the researchers stressing the need to engage physicians in more interactive, ongoing studies. Computer-aided instruction on patient-related problems, reading materials, and visits to practice sites from healthcare professionals trained to improve physician performance have been found to produce positive results.⁵²



Many studies have also concluded that there is a need to supplement CME programs with greater experience in treatment of a particular disease. For example, Keitz and colleagues⁵³ measured the impact of a teaching intervention on generalists caring for HIV patients and compared it with the care offered by experienced infectious disease specialists. The results demonstrated that targeted education (covering topics on appropriate care for HIV-infected patients) achieved similar results for generalists, but the use of healthcare services was higher for this group. The authors thus concluded that even trained physicians need to become experienced clinicians before they can efficiently manage scarce resources in the current, cost-conscious healthcare environment.

A study by Lewis and colleagues⁵⁴ showed that brief HIV training benefited only those trainees who already had expertise and substantial interest in HIV infection. It did not change the expertise of the less interested. The authors concluded that hands-on training in clinical settings may be more successful, but may have to be intensive and prolonged to qualify as “specialty training” in HIV. On the other hand, there is evidence of effective models. In searching for an effective model of primary healthcare for HIV-positive patients, Smith and colleagues⁵⁵ suggested comanagement or telemedicine consulting between rural (or other general) clinicians and HIV experts. In these types of arrangements, general practitioners were given access to consultant physicians skilled in HIV medicine. The results showed that the average length of hospital inpatient stay was halved for patients participating in the 2-year project. Patients and physicians both believed that the standard of healthcare provided had improved.



Finally, there is evidence that knowledge is transmitted best when it is sought. A review article by Laine and colleagues⁵⁶ concludes that physicians learn best when they have an acute need to know something. Thus, physicians tend to learn most effectively when they are actually involved in the implementation of the learning. Therefore, regular and interactive training as a form of continuing medical education will be better at enhancing their knowledge base than intermittent conventional classroom training. Furthermore, compared to training alone, experience with the treatment of a disease is considered the better form of enhancing knowledge. This is, perhaps, because experience provides an impetus for clinicians to upgrade their knowledge of new medications and evolving treatments.⁵⁷

CONCLUSION

The studies examined in this synthesis are limited by the types of constraints that typically affect health services research, including the lack of randomized controlled trials, small numbers, and the various types of biases that develop when an intervention is attempted in a real-world environment not rigidly structured to support research. Nonetheless, when taken together, these findings suggest several conclusions with important implications for quality-of-care efforts aimed at underserved populations and communities.

First, physicians with a higher level of knowledge and experience consistently show better results in diagnosing, treating, and managing disease. Many of the knowledge and experience studies examine interventions by health professionals who are board-certified as specialists. However, other studies that focused on results achieved by physicians with advanced training and experience suggest that advanced, improved training and knowledge among practitioners translates into improved health quality.



Second, the measures of quality improvement are numerous, spanning physician confidence, patient satisfaction, and cost-effectiveness. The latter measure is one that is important to consider in the context of the level of risk exhibited by patients. Specialty care may at first appear more expensive until the higher risk of patients referred to specialists is considered.

Third, training cannot be occasional or one-shot. The health professional going through the training must be oriented toward improvement, and the training intervention must be experience-based, continuous, and intensive. Training works best when it is both experiential and based on the physician's conclusion about its importance.

Finally, because training is costly and time-consuming, there may be a limit to how much the quality of care can be raised in primary-care settings through even high-quality training. This is especially true in medically underserved communities where physicians practice under great constraints and may possess only limited time and incentive to undertake advanced, disease-specific training programs.

Quality of healthcare is a topic that has received much attention in recent years, both in the United States and worldwide.⁵⁸ As this attention has grown, certain states such as California[§] and New York have begun to use classic public policy interventions such as accreditation and payment incentives to improve the quality of healthcare.⁵⁹ However, as this review of the literature on experience and health quality suggests, the process of quality improvement is slow, and most quality improvement efforts are proceeding on a

[§] Under standing referral law AB 2168 managed-care companies in California are required to provide HIV patients with access to HIV medical specialists.



relatively limited—but promising— research base. Studies have been mainly limited to the disease areas of depression, cardiology, and HIV disease. This may be an indication of the difficulty of defining and measuring quality, problems in capturing the results of research through reliable records systems, and the inherent complexities associated with the design and management of quality-of-care improvement studies that yield reliable research findings.

A final limitation of this review is its focus on the role of the physician in quality healthcare improvement. It does not address the role of other health professionals such as nurses, nurse practitioners, case managers, pharmacists, counselors, and so forth. It also does not address the role of patients’ knowledge and their access to knowledge in the quality of their treatment.

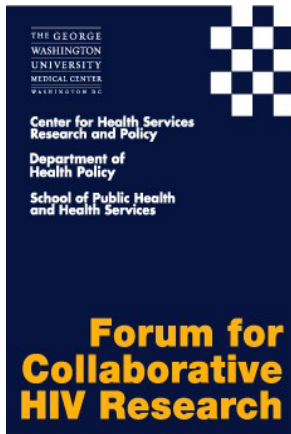


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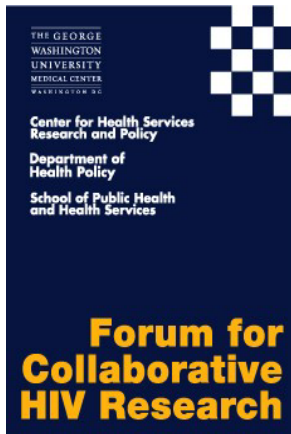
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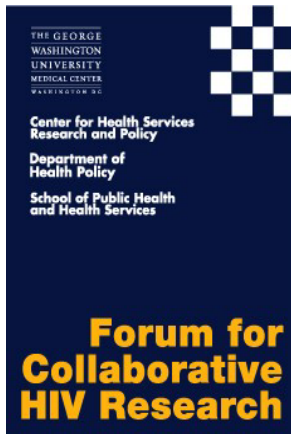
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KNOWLEDGE, EXPERIENCE, AND THE QUALITY OF HEALTHCARE: A LITERATURE REVIEW

(includes all published articles cited in Part I)

1. This paper was published as part of a series aimed at describing a new knowledge base that will help physicians participate effectively in redesigning the healthcare system. The series also intended to raise the curiosity of physicians about the skills they will need to become more active and influential citizens of the healthcare community in accomplishing improvements.

Donald M. Berwick primarily described a model for improvement of healthcare delivery. The model encompassed four elements that are essential for continuous improvement in organizational and individual performance. The 4 components are:

- *Aim*. Knowing what needs to be accomplished.
- *Measurement*. Tracking the change and evaluating whether it is actually leading to improvement.
- *Good ideas for change*. Having ways to identify plausible alternatives to the status quo.
- *Testing*. Testing real changes on a small scale, and adjusting actions according to the lessons learned from the tests.

The author acknowledged that the 4 elements of the model for improvement are necessary, but insufficient for improvement to occur. Some step of deployment or implementation is also needed.

Berwick DM. Physicians as leaders in improving healthcare. Ann Intern Med 1998;128:289-292.



2. Milberg and colleagues examined the factors associated with delayed entry into primary care for HIV in a predominantly rural and economically poor area of Arkansas.

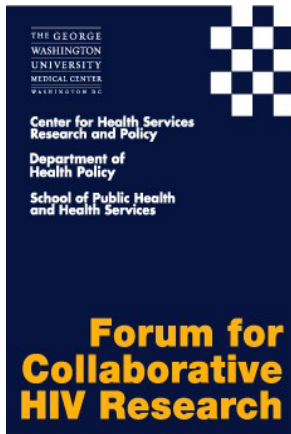
They collected demographic and clinical information for a study population of 162 patients that tested positive within 8 selected counties. The study population was 75% African American and male, and 70% lacked health insurance and nearly one fourth referred from prison. At diagnosis, two thirds of the population had CD4 counts below 500 cells/ μ L.

The results showed that the median time from HIV diagnosis to entry into care was 1 month. However, this time diminished from a median of 178 days in 1994 to 24 days in 1998. The CD4 counts at HIV diagnosis also declined during this period, from a median of 427 in 1995 to 208 cells/ μ L in 1998; therefore the more recent year is associated with the shorter delay in seeking care.

Further investigations revealed that the HIV-positive individuals who were medically uninsured sought medical care significantly later than the insured. Male patients took significantly longer than females to seek medical help; patients with lower incomes and less education also reported later. The study also showed that patients were diagnosed with HIV late in the course of infection and often at the onset of AIDS.

This study identified specific groups in a high-incidence area of Arkansas that might benefit from more aggressive outreach measures to draw them earlier into medical care.

Milberg J, Sharma R, Scott F, Conviser R, Marconi K, Parham D. Factors associated with delays in accessing HIV primary care in rural Arkansas. AIDS patient care STDS 2001;15:527-532.



3. Steinberg and colleagues examined where people with AIDS lived in the United States and the degree to which AIDS presents in rural areas.

AIDS cases reported to the Centers for Disease Control and Prevention (CDC) in 1996 were categorized by metropolitan statistical area (MSA) size and compared to the general population. Data were analyzed by region, race and ethnicity, and risk exposure; AIDS incidence rates were compared over time by MSA size.

The results showed that relative to the US population, AIDS cases were disproportionately African American (43% vs 11%), male (80% vs 48%), and from the Northeast (32% vs 20%). In all regions, a greater proportion of AIDS cases resided in large MSAs compared with the general population. Risk exposures differed little by MSA size, except in the Northeast. The proportion of people with AIDS who resided in large MSAs exceeded the proportion of the population in those areas, especially when race and ethnicity were considered.

The authors concluded that AIDS rates had increased in non-MSAs relative to large MSAs, yet did not indicate that the epidemic was increasing rapidly in rural areas. Fewer AIDS cases were reported from smaller communities, yet these required medical and social services that could burden the rural healthcare system.

Steinberg S, Fleming P. The geographic distribution of AIDS in the United States: is there a rural epidemic? J Rural Health 2000;16:11-19 (Adapted from the published abstract)

4. Lam and Liu used a national county database to examine the hypothesis of the increasing spread of AIDS in rural America.



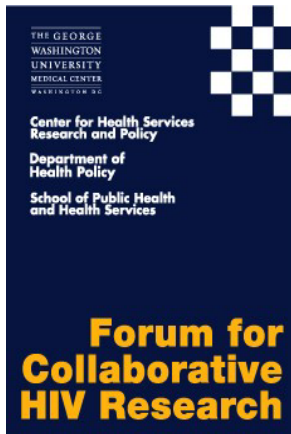
The authors obtained data for county-level AIDS caseloads for 1982 to 1990 by contacting state health officials of individual states, and then converting the yearly and cumulative AIDS cases by county or health district to rates using 1986 population figures. The data were grouped into 3-year periods: 1982 to 1984, 1985 to 1987, and 1988 to 1990, and analyzed. The study identified and analyzed the 25 counties with the highest increase rates, derived their average population sizes, and using Pearson's correlation, computed coefficients between the rates of AIDS increase and county populations.

The results from this analysis clearly pointed to a national increasing spread in rural counties. Between 1982 and 1984, highly populated counties had the highest rates of increase in the number of cases of AIDS, with the populations of the 25 counties averaging 1.1 million. Between 1988 and 1990, the 25 counties with the highest rates of increase were mostly rural counties with an average population of 73,000.

It is clear from this study that in addition to facing a much larger population base infected with HIV, the United States was also facing an epidemic that had entered a dangerous phase of spreading to rural America where healthcare facilities are far less adequate than in urban areas.

Lam NS, Liu KB. Spread of AIDS in rural America. J Acquir Immune Defic Syndr 1994;7:485-490. (Adapted from the published abstract)

5. Gardner and colleagues studied whether the HIV epidemic was spreading into locations that were previously characterized by a low HIV antibody prevalence.

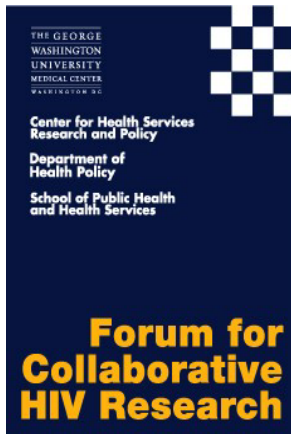


Studying the question of the geographic spread of the HIV-infection epidemic (rather than the AIDS epidemic) has been and continues to be difficult largely because most serial seroprevalence data have been gathered from cohorts of high-risk individuals (e.g., homosexual and bisexual cohorts) in New York City, San Francisco, and other geographically circumscribed areas. In this report, the authors used US military applicant HIV-screening data to examine rates and 24-month temporal trends in geographic areas characterized by their HIV endemicities. The data examined the 7 most populous states and 4 hyperendemic metropolitan areas located within those states (New York City, NY; Miami, FL; Houston, TX; and San Francisco, CA).

The results showed that in the nonepidemic regions, seroprevalence rates increased among African American and White applicants. In the 4 epidemic urban areas, only young African American applicants had higher HIV seroprevalence rates during the second 12-month period. Of the 7 nonepidemic regions, 6 had positive HIV seroprevalence trends, and these trends were significant in Florida, California, Texas, Illinois, and Ohio. The increases in these regions were greater for young African Americans (30% excess for year 2 vs year 1) compared to young Whites (12% excess for year 2 vs year 1).

These data provided evidence of birth-year specific increases in seroprevalence over time occurring in presumed low HIV-prevalence areas. These increases could be caused by, but were observed in spite of, biases associated with increasing self-selection over time.

Gardner LI, Jr. Brundage JF, Burke DS, McNeil JG, Visintine R, Miller RN. Evidence of spread of the human immunodeficiency virus epidemic into low prevalence areas of the United States. JAIDS 1989;2:521-532. (Adapted from the published abstract)



6. Cohen and colleagues described the population of HIV-infected adults receiving care in rural areas of the United States and compares HIV care in rural and urban areas.

Interviews were conducted with a representative sample of 367 HIV-infected adults in rural areas and 2806 HIV-infected adults in urban areas.

The results showed that patients living in rural areas were more likely than patients living in urban areas to receive care from providers seeing few (<10) HIV-infected patients (38% vs 3%). Rural care patients were less likely than urban care patients to have taken highly active antiretroviral agents (57% vs 73%).

The authors thus concluded that few American adults received HIV care in rural areas of the United States.

Cohn SE, Berk ML, Berry SH, Duan N, Frankel MR, Klein JD, McKinney MM, Rastegar A, Smith S, Shapiro MF, Bozzette SA. The care of HIV-infected adults in rural areas of the United States. JAIDS 2001;28:385-392

7. Graham and colleagues conducted an integrated research review to address the epidemiology of HIV/AIDS and the organization, financing, and delivery of health services for rural persons living with HIV or AIDS (PLWHIVs, PLWAs).

The authors searched several abstracting services, indexing services, and bibliographies, and drew several conclusions from their review. Epidemiological evidence indicated that there had been a dramatic increase in the relative proportion of rural HIV/AIDS incident cases over the previous 5 years. Explanations for the rural increase focus on injection drug use, heterosexual transmission, and sexually transmitted



disease levels. Dramatically elevated rates of infection in rural African American women were indicated. Rural areas experience important levels of in-migration of HIV/AIDS-infected individuals. The health services literature suggested that rural providers and institutions have limited resources and little experience with PLWHIVs or PLWAs.

Graham RP, Forrester ML, Wysong JA, Rosenthal TC, James PA. HIV/AIDS in the rural United States: epidemiology and health services delivery. Med Care Res Rev 1995;52:435-452.

8. Hecht and colleagues addressed the issues on optimizing HIV care through the review of current evidence from medical literature.

The paper reviewed evidence on (1) the relation between experience and type of training and patient outcomes, (2) the relation between the components of primary care and patient outcomes, and (3) the primary care physicians' basic HIV knowledge and skills in screening and prevention. Most of the reviewed studies indicated that greater experience in HIV care led to improved patient outcomes. The relation between outcomes and type of training (subspecialist or generalist) was less clear, and the studies did not distinguish between the type of training and experience.

The authors concluded that less-experienced physicians may be able to provide high-quality care if appropriate consultation from expert physicians is available. Components of primary care, including accessibility, continuity, coordination, and comprehensiveness, were observed to be associated with better patient outcomes. Optimal care of HIV infection therefore requires a combination of disease-specific expertise and primary care skills and organization.



Criteria for expertise in HIV management should focus on actual patient-care experience and HIV expertise rather than on subspecialty training. The management of HIV has become sufficiently complex so that primary care physicians cannot be routinely expected to have extensive specialized knowledge in this area. However, many primary care physicians have weaknesses in the basic HIV-related skills that are needed in most settings, including HIV test counseling and recognition of important HIV-related symptom complexes. Primary care physicians need to strengthen these basic HIV-related medical skills.

Hecht FM, Wilson IB, Wu AW, Cook RL, Turner BJ. Optimizing care for persons with HIV infection. Society of General Internal Medicine AIDS Task Force. Ann Intern Med 1999;131:136-143.

9. Bodenheimer and colleagues reviewed research evidence showing to what extent the chronic-care model can improve the management of chronic conditions (using diabetes as an example) and still reduce healthcare costs.

The chronic care model is a guide to higher-quality chronic illness management within primary care. The model predicts that improvement in its 6 interrelated components—self-management support, clinical information systems, delivery system redesign, decision support, healthcare organization, and community resources—can produce system reforms in which informed, activated patients interact with prepared, proactive practice teams.

Of the 39 reviewed studies, 32 studies found that interventions based on chronic-care model components improved at least 1 process or outcome measure for diabetic patients. Regarding the question of whether chronic-care model interventions reduce costs, 18 of 27



studies (covering congestive heart failure, asthma, and diabetes) demonstrated reduced healthcare costs or lower use of healthcare services.

The authors concluded that even though the chronic-care model has the potential to improve care and reduce costs, several obstacles hinder its widespread adoption.

Bodenheimer T, Wagner EH, Grumbach K . Improving primary care for patients with chronic illness. JAMA 2002;288:1775-1779

10. Katz and colleagues assessed the effect of case managers on unmet needs for supportive services and use of medical care and medications among HIV-infected persons.

Baseline and follow-up interviews of a national probability sample were carried out to collect data for research. Most of the inpatient and outpatient medical facilities in the United States were used as the sample setting. The participants included 2437 HIV-infected adults representing 217,081 patients receiving medical care. Outcomes measured at follow-up were unmet need for supportive services, medical care utilization (ambulatory visits, emergency department visits, and hospitalizations), and use of HIV medication (receipt of antiretroviral therapy and prophylaxis against *Pneumocystis carinii* pneumonia [PCP] and toxoplasmosis).

The results showed that at baseline, 56.5% of the sample had had contact with a case manager in the previous 6 months. The study associated contact with a case manager with a decreased unmet need for support services. Case managers seemed to improve the well-being of HIV-infected persons by linking clients with income assistance, health insurance, home healthcare, and emotional counseling.



However, increased use of medication was also associated with having a case manager. The authors attributed this observation to the fact that case managers help patients overcome their fears about treatment and even ensure that patients adhere to their medical regimens.

The study concluded that case managers might be particularly useful allies to clinicians and their patients.

Katz MH, Cunningham WE, Fleishman JA, Andersen RM, Kellogg T, Bozzette SA, Shapiro MF Effect of case management on unmet needs and utilization of medical care and medications among HIV-infected persons. Ann Intern Med 2001;135:557-565.

11. Grumbach and Bodenheimer outlined the importance of a primary care home and the challenges faced by primary care today.

The authors described several essential functions of a primary care home. Apart from offering first-contact care, a primary care home serves as a base from which other accommodations (specialists and other caregivers) can be arranged.

The article emphasized the fact that all health systems need a sturdy primary care home. The authors also listed the difficulties facing the primary healthcare system: physician stress, inadequate performance in managing chronic illness, and inability to provide prompt access and reliable continuity of care. They believe that managed care has led to administrative hassles, challenges to clinical autonomy, and income reductions that lead to apprehension among patients about receiving the right treatments and referrals from their primary care physicians.

Grumbach and Bodenheimer concluded that fundamental redesign is needed to improve access to and the quality of care while easing



physicians' workloads without causing major increases in healthcare costs.

Grumbach K, Bodenheimer T. A primary care home for Americans. JAMA 2002;288:889-893

12. Safran and colleagues examined the data quality and measurement performance of the Primary Care Assessment Survey (PCAS), a patient-completed questionnaire that operationalizes formal definitions of primary care.

The PCAS has been described as a survey that measures 7 domains of care through the following summary scales: organizational and financial accessibility, continuity, comprehensiveness, integration, clinical interaction, interpersonal treatment, and trust. The key measurement properties of the PCAS scale were evaluated using data from a study of Massachusetts state employees ($n = 6094$).

The results showed that the PCAS scales demonstrated consistently strong measurements across all subgroups of this population. The analysis showed that PCAS satisfied all the necessary scaling assumptions; the scales offered complete data and excellent correlation with the hypothesized scale.

The study concluded that the PCAS has excellent measurement properties, and performs consistently well across varied segments of the adult population. Widespread application of an assessment methodology, such as the PCAS, will afford an empiric basis through which to measure, monitor, and continuously improve primary care.

Safran DG, Kosinski M, Tarlov AR, Rogers WH, Taira DH, Lieberman N, Ware JE . The primary care assessment survey: tests of data quality and measurement performance. Med Care 1998;36:728-739.



13. Martin T. Donohoe evaluated the amount and quality of care provided by generalists and specialists.

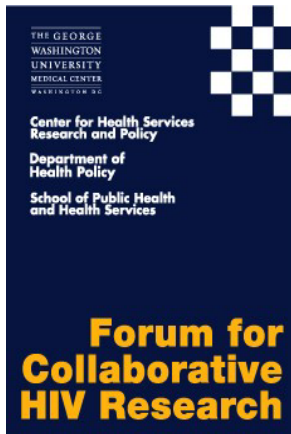
This study reviewed weaknesses in the knowledge of practicing physicians and described investigations attempting to compare generalist and specialty care for various conditions; he evaluated studies in cardiac disease, mental health disorders, HIV/AIDS, rheumatic and musculoskeletal diseases, and various other conditions and practices.

Dr. Donohoe concluded that deficiencies have been found in the care provided by the generalists. However, these are correctable deficiencies and, because there are not enough financial resources to permit specialist care for every individual, generalists and specialists have to work together in medical practice to improve quality, efficiency, and cost-effectiveness.

Donohoe MT. Comparing generalist and specialty care. Arch Intern Med 1998;15:1596-1608.

14. Shao and colleagues examined the barriers to managing depression by comparing knowledge and attitudes about depression among physicians, internists, obstetrician-gynecologists, and a reference group of psychiatrists.

The authors hypothesized that generalist physicians would have more favorable attitudes and greater knowledge about depression than non-generalists. They sent survey questionnaires to 375 resident and faculty physicians of 2 university-affiliated medical centers. The questionnaire assessed knowledge and 3 attitudinal dimensions: (1) physicians' confidence in managing depression, (2) physicians' psychosocial orientation, and (3) physicians' descriptions of their



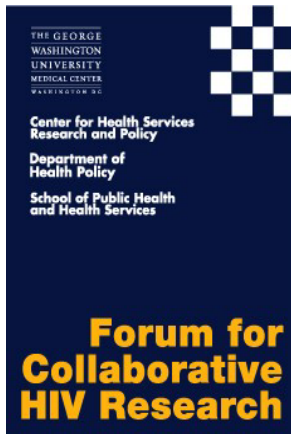
patients' attitudes. The physicians were classified as non-generalists (medicine subspecialists, transitional-year interns, and obstetrician-gynecologists), generalists (general internists and family physicians), and psychiatrists. The authors used multivariable regression to identify physician characteristics among non-generalists and generalists associated with higher knowledge and attitudinal scores.

Of the 82% of the study group that responded, 60% were male, 63% were resident physicians, and 14% had advanced psychosocial training. Non-generalists and generalists had similar demographic characteristics, but psychiatrists were significantly more experienced. Psychiatrists had the most favorable attitudes, followed by generalists and non-generalists. Compared with non-generalists, generalists were more confident in prescribing antidepressants (62% vs 25%), more likely to report that treating depression is rewarding (71% vs 39%), and less likely to refer to a psychiatrist (58% vs 79%). Scores for knowledge were significantly higher for psychiatrists than for non-generalists and generalists.

Thus, the authors concluded that misperceptions about treatment efficacy, and attitudinal barriers, particularly among non-generalists, may compromise physicians' abilities to diagnose and manage depression.

Shao WA, Williams JW Jr, Lee S, Badgett RG, Aaronson B, Cornell J. Knowledge and attitudes about depression. J Fam Pract 1997;44:161-168.

15. Friedman and colleagues compared generalists' and cardiologists' estimates of baseline cardiovascular risk and the outcomes of preventive therapy through a cross-sectional mail survey.



The participants included a sample of 599 practicing family physicians, general internists, and cardiologists selected from the American Medical Association (AMA) master file. Measurements included estimates of risk at baseline and after therapy, and whether therapy generally would be recommended.

The results showed that generalists and family physicians overestimated baseline cardiovascular risk and the benefit of risk modifying therapy to a greater extent than did cardiologists. Cardiologists provided lower, more accurate estimates of both measures. The range of the generalists' estimates was extremely wide. The authors attributed cardiologists' greater accuracy to their narrower knowledge base, which helps them to learn and retain more details from cardiovascular literature.

However, despite the lower expectations of the cardiologists from the efficacy of the preventive therapy, they were as inclined as generalists to recommend such a therapy. Cardiologists appeared more inclined to "treat for small benefits" and thus provide greater intensity of care than generalists. The study therefore concluded that cardiologists are able to provide more accurate information about the probability of disease and the magnitude of benefit from a recommended intervention, which thus assists patients to better assess the risks and benefits of an intervention.

Friedmann PD, Brett AS, Mayo-Smith MF. Differences in generalists and cardiologists perceptions of cardiovascular risk and the outcomes of preventive therapy in cardiovascular disease. Ann Intern Med 1996:124-130.

16. Paauw and colleagues used standardized patients (SPs) to assess the ability of primary care physicians to identify 3 common physical



findings associated with HIV infection: Kaposi's sarcoma (KS), oral hairy leukoplakia (OHL), and diffuse lymphadenopathy.

The authors selected 134 general practitioners after stratifying by year of medical school graduation, specialty, and experience caring for patients with HIV infection.

The results demonstrated that despite being directed by presenting histories to sites of prominent physical abnormalities, only 23 (25.8%) of the 89 physicians evaluating a patient with KS and 22 (22.7%) of the 97 physicians evaluating a patient with OHL detected and correctly diagnosed abnormalities. Twenty-three (17%) of the 133 physicians who saw a patient complaining of fatigue, fever and arthralgias detected diffuse lymphadenopathy. Physicians with the most experience treating HIV patients more frequently identified OHL, though HIV experience did not much influence identification of KS or lymphadenopathy.

Therefore, the authors concluded that primary care physicians could frequently miss important findings related to HIV infection during patient examinations.

Paauw DS, Wenrich MD, Curtis JR, Carline JD, Ramsey PG. Ability of primary care physicians to recognize physical findings associated with HIV infection. JAMA 1995;274:1380-1382.

17. Gallo and colleagues proposed to assess the relationship of primary care specialty training to self-assessed skill, knowledge, attitudes, and behavior toward depression recognition and management.

A baseline self-report questionnaire was administered to 184 internists and 138 family physicians participating in a multisite depression intervention study. The results showed no marked differences in the



knowledge of internists and family physicians regarding depression, in attitudes about the effectiveness of specific therapies, or in barriers to providing optimum treatment for depression. However, compared to internists, family physicians rated themselves as more skilled in the management of depression. When considering management of patients with moderate to severe depression, family physicians were more likely to report that they prescribed a selective serotonin reuptake inhibitor (SSRI), but were less likely to refer to a specialist in mental health than were internists. Additional potentially influential characteristics did not wholly account for the reported differences in practice according to specialty. Physicians of both specialties expressed considerable uncertainty in their knowledge of psychotherapy and in their evaluation of the effectiveness of other strategies for preventing the recurrence of depression.

The authors concluded that strategies to improve mental healthcare probably account for the orientation of primary care physicians to mental health issues.

Gallo JJ, Meredith LS, Gonzales J, Cooper LA, Nutting P, Ford DE, Rubenstein L, Rost K, Wells KB. Do family physicians and internists differ in knowledge, attitudes, and self-reported approaches for depression? Int J Psychiatry Med 2002;32:1-20.

18. Callahan and colleagues aimed at clarifying how primary care physicians made treatment decisions for individual patients, identifying apparent barriers to treatment, and evaluating the impact of the intervention in overcoming these barriers.

They collected data regarding physicians' clinical assessments and the volume and content of patients' ambulatory visits. These data were drawn from a randomized clinical trial of a physician-targeted



intervention to improve the treatment of late-life depression. The participants were 111 primary care physicians who had completed a structured questionnaire describing their clinical assessments following their evaluations of 222 elderly patients with depression symptoms. The intervention physicians were provided with their patients' scores on the Hamilton Depression rating scale (HAM-D) and patient-specific treatment recommendations before completing the questionnaire regarding their clinical assessment. The authors hypothesized that physicians who were provided patients' scores on the HAM-D would be more likely to rate their patients as depressed.

However, the results showed that those physicians that were not provided HAM-D scores were just as likely to rate their patients as depressed. A physician's clinical rating of likely depression did not consistently result in the formulation of treatment intentions or actions. Barriers to treatment appeared to include both physician and patient doubts about treatment benefits.

Thus, the authors concluded that lack of recognition of depressive symptoms did not appear to be the primary barrier to treatment. Recognition of symptoms and access to treatment algorithms did not consistently result in progression to subsequent stages in treatment of depression.

Callahan CM, Dittus RS, Tierney WM. Primary care physicians' medical decision making for late-life depression. J Gen Intern Med 1996;11:218-225.

19. Ayanian and colleagues investigated the outcomes of care provided by cardiologists and generalists to the patients of acute myocardial infarction (AMI).



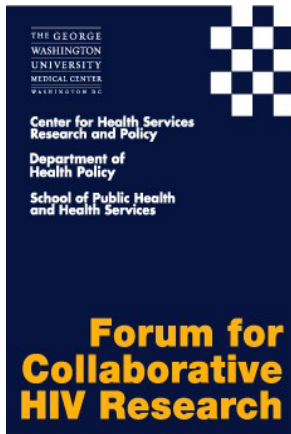
They reviewed the clinical and administrative records of 1620 Medicare beneficiaries, 65 to 79 years old, at 285 hospitals in Texas. The records were especially examined for patient and physician characteristics, medical procedures, drugs, and mortality.

The results showed that cardiologists were much more likely to practice in hospitals with advanced cardiac services and a greater number of elderly patients with AMI. The patients treated by cardiologists were younger, had prior congestive heart failure less frequently, and were initially treated in hospitals offering coronary angioplasty or bypass surgery more often than patients treated by attending generalist physicians. Cardiologists were more likely than generalist physicians to prescribe thrombolytic therapy and aspirin but not β -adrenergic blocking agents (beta-blockers). Cardiologists used coronary angiography and angioplasty more often, but not echocardiography or exercise testing.

The authors concluded that compared with generalist physicians, cardiologists used some, but not all, effective drugs more frequently, as well as coronary angiography and angioplasty. Although these differences were not associated with lower mortality among cardiologists' patients, cardiologists were more likely to treat patients in hospitals with better outcomes.

Ayanian JZ, Guadagnoli E, McNeil BJ, Cleary PD. Treatment and outcomes of acute myocardial infarction among patients of cardiologists and generalist physicians. Arch Intern Med 1997;157:2570-2576.

20. Jollis and colleagues studied the relation between the outcomes of patients with myocardial infarction and the type of physicians (primary care or specialist) who provide their care.



The study included a detailed analysis of clinical data from the Cooperative Cardiovascular Project (CCP), which surveyed 8241 Medicare patients hospitalized for AMI between June and December 1992.

The results showed that after adjustment for characteristics of the patients and hospitals, patients who were admitted to the hospital by a cardiologist were 12% less likely to die within 1 year than those admitted by a primary care physician. Cardiologists also had the highest rate of use of diagnostic and therapeutic cardiac procedures and medications, including medications (such as thrombolytic agents and beta-blockers) that are associated with improved survival. Cardiologist patients also had longer hospital stays, and received more medications to treat ischemic heart disease than patients treated by generalist physicians.

The authors concluded that healthcare strategies that shift the care of elderly patients with myocardial infarction from cardiologists to primary care physicians may cause decreased survival of elderly patients with AMI.

Jollis JG, DeLong ER, Peterson ED, Muhlbaier LH, Fortin DF, Califf RM, Mark DB. Outcome of acute myocardial infarction according to the specialty of the admitting physician. N Engl J Med 1996;335:1880-1887

21. Curtis and colleagues assessed the ability of primary care physicians to provide initial care for a patient with recently diagnosed HIV infection.

The authors developed 17 SP (standardized patient) cases to assess the ambulatory care skills of primary care physicians. Each SP was trained

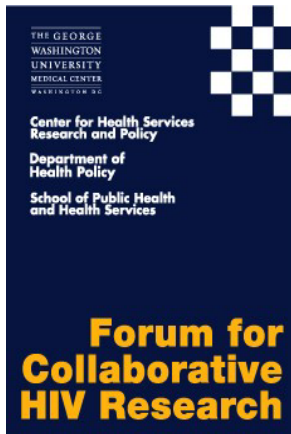


to portray an asymptomatic person with HIV infection seeking a primary care physician. SPs were also trained to evaluate physicians' skills in history taking, physical examination, and counseling, and to complete a checklist after each interaction with a physician, documenting physician performance. Physicians took the medical history and counseled the SP. Their performances were assessed by the SP and by a brief, written examination submitted to the authors. In addition, the physicians also distributed questionnaires to HIV-infected patients in their practices to assess actual performance. The study participants comprised 121 primary care physicians.

The results showed that only a minority of physicians recommended standard primary care screening tests and vaccinations. Although most of the physicians (87%) indicated that they would obtain CD4 cell counts, only 50% indicated that they would start appropriate PCP prophylaxis (a recommended primary care task for HIV).

The SP was asked to present documentation of a positive tuberculin skin test and no prior therapy for tuberculosis. Despite this, only 53% of the physicians recommended prophylactic isoniazid (recommended for positive tuberculin). Whereas 75% of the physicians asked the SP about his HIV risk (sex with men), less than one third asked about condom use, number of sexual partners, or previous contact with sexual partners.

Physicians with the most HIV experience were more likely to recommend HIV primary care tasks and were associated with a better performance of these tasks. Questionnaires distributed to the HIV-infected patients of these physicians generally confirmed these findings.



Nevertheless, the authors concluded that many primary care physicians might not adequately perform basic HIV preventive and primary care.

Curtis JR, Paauw DS, Wenrich MD, Carline JD, Ramsey PG..

Physicians' ability to provide initial primary care to an HIV-infected patient. Arch Intern Med 1995;155:1613-1618.

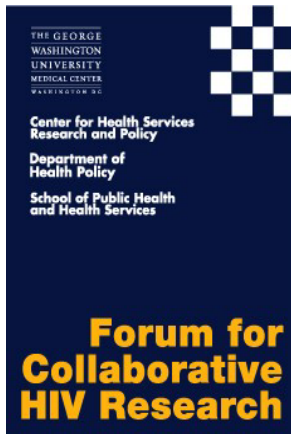
22. Wayne Katon reviewed various studies that had been undertaken to investigate the quality of care given to primary care patients with major depression.

The studies indicated that despite the high prevalence of major depression, primary care physicians accurately detected the disease in only 50% to 60% of their cases. The studies also discussed the complex reasons for these inaccurate diagnoses, including stigma about mental illness, lack of close follow-up, and the lack of physician training in mental health interviewing and in diagnostic and treatment skills.

The author also cited a study undertaken in 1997 by a research group at WHO, Seattle that indicated the need to adopt a collaborative model of care that had been associated with increased adherence to antidepressant medication, increased satisfaction with care of depression, and improved patient outcomes regarding their depressive symptoms.

Katon W. Improving antidepressant treatment of patients with major depression in primary care. WPA Bulletin on Depression ; Vol.4, No 26, 1998. Washington, USA.

23. Katon and colleagues conducted this research to evaluate the effectiveness of a multifaceted intervention program to improve the management of depression in primary care.



A randomized control trial was conducted on 153 primary care patients with current depression. Intervention patients were given a structured depression treatment program in a primary care setting that included both behavioral treatment to increase use of adaptive coping strategies and counseling to improve medication adherence. Control patients, on the other hand, received the “usual” care by their primary care physicians. In this study, the authors measured adherence to antidepressant medication, satisfaction with the care of depression and with the antidepressant treatment, and the reduction of depressive symptoms over time.

The results at a 4-month follow-up indicated that significantly more intervention patients with major and minor depression than usual-care patients adhered to antidepressant medication and rated the quality of care they received for depression as good to excellent. Intervention patients with major depression demonstrated a significantly greater decrease in depression severity compared with usual-care patients on all 4 outcome analyses. Intervention patients with minor depression were found to have a significant decrease over time in depression severity on only 1 of 4 study outcome analyses compared with usual-care patients.

From these observations, the authors concluded that multifaceted primary care interventions improved adherence to antidepressant regimens and satisfaction with care in patients with major and minor depression. They also concluded that the intervention consistently resulted in more favorable depression outcomes among patients with major depression, whereas outcomes were ambiguous among patients with minor depression.



Katon W, Robinson P, Von Korff M, Lin E, Bush T, Ludman E, Simon G, Walker E. A multifaceted intervention to improve treatment of depression in primary care. Arch Gen Psychiatry 1996;53:924-932

24. Markson and colleagues profiled characteristics of clinics caring for persons with advanced HIV infection by examining the services offered by 179 clinics managing the care of New York State Medicaid-enrolled patients.

The authors examined 6184 newly diagnosed, Medicaid-enrolled AIDS patients managed by 62 HIV specialties, 53 hospital-based general medicine clinics, 36 community-based clinics, and 28 other clinics in New York State.

The results of the survey demonstrated that community-based clinics were significantly more likely to have longer hours and a physician on call. They were also more likely to accommodate unscheduled care than were hospital-based general medicine/primary care or other types of clinics. Compared with HIV specialty clinics, general clinics were less likely to have HIV-specific care attributes such as a director of HIV care (98% vs 72%), multidisciplinary conferences on HIV care (83% vs 32%), or a standard initial HIV workup (90% vs 70%). General medicine clinics were less likely than community-based clinics to have case managers on their payrolls (21% vs 81%).

The authors thus concluded that hospital-based general clinics managing AIDS patients appeared to have more limited hours and availability of specific services than HIV-specialty or community-based clinics.



Markson LE, Turner BJ, Cocroft J, Houchens R, Fanning TR. Clinic services for patients with AIDS: experience in a high-prevalence state. *J Gen Intern Med* 1997;12:141-149.

25. Carey and colleagues examined the differences in the outcomes and costs of care among primary care practitioners, chiropractors, and orthopedic surgeons.

The authors selected 208 practitioners in North Carolina for the study. These physicians primarily belonged to 6 strata: (1) urban primary care physicians, (2) rural primary care physicians, (3) urban chiropractors, (4) rural chiropractors, (5) orthopedic surgeons, and (6) primary care providers at a health maintenance organization (HMO). The practitioners enrolled consecutive patients with acute low back pain. The authors periodically contacted the patients by telephone for up to 24 weeks to assess functional status, work status, use of healthcare services, and satisfaction with the care received. The status at 6 months was ascertained for the 1555 patients enrolled in the study. The study found that the times to functional recovery, return to work, and complete recovery from low back pain were similar among patients seen by all 6 groups of practitioners, but there were marked differences in the use of healthcare services. The authors also found that the mean total estimated outpatient costs were highest for the patients seen by orthopedic surgeons and chiropractors and were lowest for the patients seen by HMO and primary care providers. Meanwhile, satisfaction was greatest among the patients who went to the chiropractors.

From these observations, the authors concluded that among patients with acute low back pain, the outcomes were similar whether they received care from primary care practitioners, chiropractors, or



orthopedic surgeons. Primary care practitioners provided the least expensive care for acute low back pain.

Carey TS, Garrett J, Jackman A, McLaughlin C, Fryer J, Smucker DR
The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. N Engl J Med 1995;333:913-917.

26. Claire E. Lewis addressed the controversy about the qualifications of the physicians providing care to patients diagnosed with HIV/AIDS.

The author described several studies that had been undertaken on this issue, and acknowledged the fact that most of the studies indicated the need for having an HIV specialist care for people with HIV/AIDS; barriers such as geography and economics need not limit access to these specialists.

This study offered various suggestions to overcome these and similar problems. The recommendations included training primary care physicians into specialists and establishing a collaborative model of care that encourages cooperation between specialists and primary care physicians.

Lewis CE. Management of patients with HIV/AIDS: who should care? JAMA 1997;278:1133-1134

27. Zuger and colleagues discussed the controversy on whether the care of persons infected with HIV should be part of general practice or specialty care.

The authors cited studies of the time that suggested that the vision of AIDS as a primary care disease should be formally reexamined. The reasons for this approach included (1) advances in the understanding



of HIV infection pathogenesis, (2) new appreciation of the potential and limitations of antiretroviral therapy, and (3) the increasing penetration of managed care into clinical medicine.

The authors believe that HMOs tend to envision consultants providing only “treatment,” whereas primary practitioners provide continuous “care.” But, for patients with complicated chronic diseases, including AIDS, both treatment and ongoing care are necessary. Because of these needs, HIV infection does not fit well into categories of either “general care” or “specialty care.”

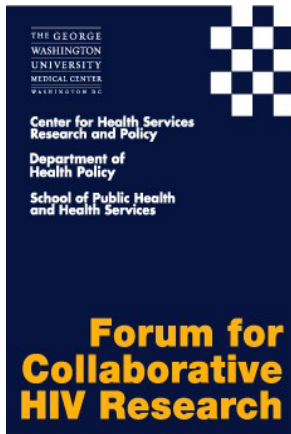
The study suggested that the treatment of AIDS requires suitably qualified physicians that are allowed and encouraged to provide all necessary facets of medical care.

Zuger A, Sharp VL ‘HIV specialists’: the time has come. JAMA 1997;278:1131-1132.

28. William M. Valenti discussed HIV expert providers and the importance of experience and training to the delivery of the high-quality HIV care needed to improve outcomes.

He described the present scenario in HIV care, where highly active antiretroviral therapy (HAART) has raised the standards of HIV care significantly-by improving patient outcomes. However, as patient outcomes improve, increasing efforts are needed to develop the infrastructure required for providing high-quality HIV care. Standards of care and treatment guidelines need to be updated regularly in an effort to keep up with the rapidly evolving understanding of HIV medicine.

The author discussed the roles of the US Health Resources and Services Administration (HRSA) and the American Academy of HIV



Medicine (AAHIVM)—the two professional organizations that have been formed in the past several years to address the needs of HIV care providers and patients. Dr. Valenti observed that even though a slight difference exists between the two groups in their definitions of an HIV expert, both discuss HIV specialists in terms of clinical experience and continuing education. In addition, the two organizations recognize that HIV care providers are a diverse group committed to managing this critical and constantly evolving epidemic.

This paper lists the initiatives taken by several states to address the importance of healthcare quality and outcomes for people with HIV/AIDS, with New York and California leading the way.

Valenti WM. The HIV specialist improves quality of care and outcomes. AIDS Read 2002;12:202-205.

29. Diette and colleagues examined whether care for children was more consistent with national asthma guidelines when asthma care was provided by specialists rather than generalists.

The authors surveyed 260 parents of children with asthma in 2 large HMOs in the United States. Eleven indicators of asthma care in 4 domains were assessed: (1) patient education, (2) control of factors contributing to asthma symptoms, (3) periodic physiologic assessment and monitoring, and (4) proper use of medication.

The results showed that in all domains, care was more likely to be consistent with guidelines when specialists were the source of care. Greater differences for specialist versus generalist management occurred in patient education on preventive measures and signs of asthma triggers.



The authors concluded that in the HMOs surveyed, asthma care for children was more likely to be consistent with national guidelines when specialists provided the primary care. Greater use of specialists or enhancing generalist physicians' care through training may improve the degree to which the care of children with asthma is consistent with national guidelines.

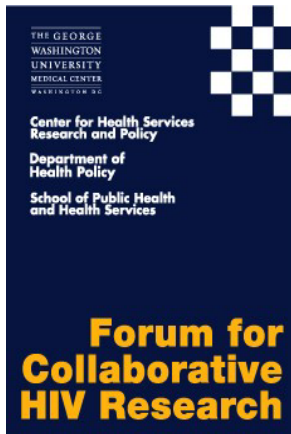
Diette GB, Skinner EA, Nguyen TT, Markson L, Clark BD, Wu AW. Comparison of quality of care by specialist and generalist physicians as usual source of asthma care for children. Pediatrics 2001;108:432-437.

30. Chin and colleagues surveyed physicians about their knowledge of angiotensin-converting enzyme (ACE) inhibitors for patients with congestive heart failure.

This survey explored whether these medications are underused, especially regarding physician specialty. The authors examined a national sample of physicians comprising 500 family practitioners, 500 general internists, and 500 cardiologists. Physicians' choice of medication was determined for 4 hypothetical patients with left ventricular systolic dysfunction.

The results showed that almost 90% of the physicians that returned the survey used ACE inhibitors for patients with chronic heart failure. However, the authors observed that family practitioners and general internists chose ACE inhibitors less frequently than cardiologists. Compared with generalists, cardiologists were more likely to increase ACE inhibitors to a target dosage (45% vs 26%).

The authors concluded that compared with the cardiologists, family practitioners and general internists probably underuse ACE inhibitors,



even though randomized controlled trials have demonstrated that ACE inhibitors decrease mortality or the progression of symptoms in congestive heart failure.

Chin MH, Friedmann PD, Cassel CK, Lang RM. Differences in generalist and specialist physicians' knowledge and use of angiotensin-converting enzyme inhibitors for congestive heart failure. J Gen Intern Med 1997;12:523-550

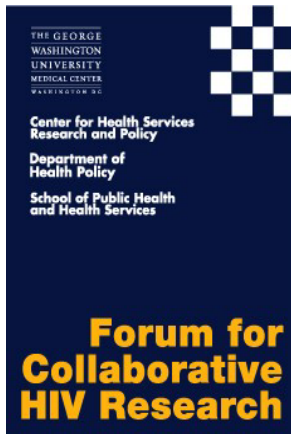
31. Stone and colleagues examined the relationship between the choice of ART and the physician's specialty and AIDS experience.

The authors studied a random sample of 2478 internal medicine and infectious disease physicians. These physicians were presented with 2 patients with HIV disease, differing only in CD4 counts and HIV RNA load. The physicians had to respond on the need and category of the ART regimen they thought was best for the patients. Respondents' HIV/AIDS experience was categorized as *moderate to high* or *none to low*. The physicians were also categorized according to their specialty.

The results showed physicians with a moderate-to-high level of experience were more likely to select recommended ART.

Recommended ART was also more likely to be chosen by infectious disease physicians (88.2%) than by internal medicine physicians (57.1%).

The authors thus concluded that guideline-recommended ART appears to be less likely to be chosen by generalists and physicians with less HIV/AIDS experience, although many of these physicians report that they would refer these patients to other physicians for management of HIV disease. The results, therefore, lend support to recommendations



for routine expert consultant input in the management of those with HIV/AIDS.

Stone VE, Mansourati FF, Poses RM, Mayer KH. Relation of physician specialty and HIV/AIDS experience to choice of guideline-recommended antiretroviral therapy. J Gen Intern Med 2001;16:360-368.

32. For this article, Joel Gallant created a hypothetical, but common case of an HIV/AIDS patient to illustrate strategies for success in antiretroviral therapy.

The illustration enabled the author to exemplify the potential problems associated with ART that can lead to drug resistance and drug failure.

Using the hypothetical patient as an example, the author concluded:

- HIV infection differs from other chronic diseases because early treatment decisions can irrevocably alter the patient's response to future therapy.
- The complexity of antiretroviral therapy makes it essential that the clinicians prescribing it should have considerable expertise.
- Treatment should be deferred until the patient has been educated about the importance of strict adherence and has demonstrated willingness and motivation to begin therapy.
- Drug regimens should be chosen that the patient can tolerate and adhere to, and the consequences of resistance should be considered before therapy begins.
- Drug resistance and treatment failure are not random events, but are the result of factors over which clinicians and their patients have some control. The treatment of



drug-resistant patients is challenging; the best way to deal with resistance is to prevent it.

Gallant JE. Strategies for long-term success in the treatment of HIV infection. JAMA 2000;283:1329-1334.

33. Gerbert and colleagues examined the views of HIV-experienced physicians about HIV medical care.

The authors surveyed physicians attending continuing medical education (CME) programs for HIV in 4 urban areas with high incidences of HIV infection (New York, NY; San Francisco, CA; Chicago, IL; and Los Angeles, CA) and AIDS. They examined the relationship between (a) experience (number of HIV-infected patients treated) and expertise (physicians' perceptions of their own HIV-expertise status), and (b) self-reported confidence in providing essential aspects of HIV medical care. The relationship between confidence in aspects of care and medical specialty were also studied. Three areas—*infectious disease (ID), internal medicine (IM), and family practice or general medicine (FP/GM)*—predominated in the survey. The survey evaluated 18 aspects of HIV medical care and the physicians' levels of confidence in delivering them. These aspects ranged from diagnosing the disease to the prescription and care.

The results demonstrated that out of the 359 physicians surveyed, 55% considered themselves HIV experts, whereas the balance of participants were either unsure (17%) or denied expertise (28%); 73% of the ID physicians considered themselves to be experts, but 50% of the IM physicians and 40% of FP/GM physicians thought themselves expert. Self-perceived expertise and confidence also increased with HIV experience and significant correlations were seen on 85% of the examined items.



The authors concluded that even the most experienced HIV physicians in the United States continue to benefit from more experience. Dedicated HIV physicians are needed to better define and formalize the ever-changing and complex area of HIV medical care.

Gerbert B, Moe JC, Saag MS, Benson CA, Jacobsen DM, Feraios A, Hill ME, Bronstone A, Caspers N, Volberding PA. Toward a definition of HIV expertise: a survey of experienced HIV physicians. AIDS patient care STDS 2001;15:321-330.

34. Mitchell and colleagues compared the costs and outcomes for acute stroke patients treated by neurologists or physicians from other specialties.

The study investigated sample records of 38,612 Medicare patients, aged 65 years and older, with cerebral infarction. The authors investigated the records for these patients for physician specialty, outcomes, treatment specifications, costs, days of hospital stay, and so forth.

The results showed that neurologists treating stroke patients were substantially more expensive than other physicians, but obtained better outcomes. The 90-day mortality rates for patients treated by neurologists were significantly lower than those for other specialists. Compared with other attending physicians, neurologists were far more likely to order diagnostic cerebrovascular tests (especially brain MRI scans), more likely to prescribe warfarin, and more likely to discharge patients to inpatient rehabilitation facilities.

The study concluded that specialists may have been better able to identify the mechanism of stroke and the treatment necessary to reduce mortality among stroke patients.



Mitchell JB, Ballard DJ, Whisnant JP, Ammering CJ, Samsa GP, Matchar DB. What role do neurologists play in determining the costs and outcomes of stroke patients? Stroke 1996;27:1937-1943

35. Kitahata and colleagues examined the relationship between physicians' experience with treating AIDS and the survival of their patients with AIDS.

They studied 403 adult male patients enrolled in a staff model HMO whose first AIDS-defining illnesses were diagnosed from 1984 to mid-1994. The investigators defined 3 levels of experience for the patients' 125 primary care physicians according to (1) their experience with AIDS during residency training and (2) the cumulative number of AIDS patients they had cared for in their practices. The median survival of the patients of physicians with the *least* experience in the management of AIDS was *14 months*, compared with *26 months* for patients of physicians with the most experience.

Controlling for the severity of illness and the year of diagnosis, the authors found that the patients cared for by physicians with the most experience had a 31% lower risk of death than patients cared for by physicians with the least experience. Among 244 patients with an AIDS-defining illness diagnosed from 1989 through 1994, and after adjusting for the CD4+ cell count and the severity of illness, the risk of death was 43% lower for patients of the most experienced physicians than for patients of the least experienced.

The investigators concluded that the experience of primary care physicians in the management of AIDS is significantly associated with the survival of their patients.



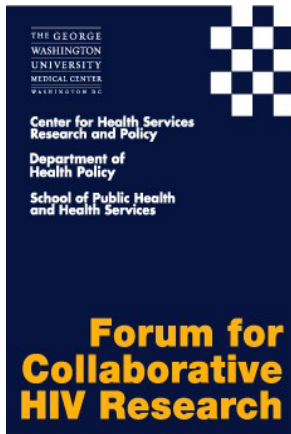
Kitahata MM, Koepsell TD, Deyo RA, Maxwell CL, Dodge WT, Wagner EH. Physicians' experience with the Acquired Immunodeficiency Syndrome as a factor in patients' survival. N Eng J Med 1996;334:701-706

36. Gardner and colleagues evaluated the factors related to the use of HIV specialists by women and whether HIV care can be associated with a higher use of recommended ART in women.

Data on 273 HIV-infected women from the HIV Epidemiology Research Study (HERS) conducted in 1998 were analyzed to calculate predictors of the use of HIV specialists. Variables included study site, age, education, insurance status, income, substance abuse, depression, AIDS diagnosis, CD4+ lymphocyte count, and HIV-1 viral load. In addition, the authors assessed medical indications for therapy and medical advice to begin antiretroviral therapy.

The results showed that of the 273 women, 222 (81%) used HIV specialists and 51 (19%) did not. Women were more likely to use HIV specialist care when they had health insurance, were not injection drug users, and were depressed. The rate of HAART use was significantly higher in women using HIV specialists (27%) compared with those not using HIV specialists (7.8%). Women using HIV specialists received significantly more advice to begin antiretroviral therapy (ART) compared with those without specialists.

The authors concluded that having health insurance, not injecting drugs, and being free of depression increased the likelihood of women receiving HIV specialty care, which, in turn, increased the likelihood of receiving recommended therapies. Despite comparable medical indications, fewer women obtaining care from providers other than HIV specialists received HAART.



Gardner LI, Holmberg SD, Moore J, Arnsten JH, Mayer KH, Rompalo A, Schuman P. Smith DK, Use of highly active antiretroviral therapy in HIV-infected women: impact of HIV specialist care. JAIDS 2002;29:69-75.

37. Mann and colleagues tested a multifaceted educational intervention designed to increase physician cholesterol-lowering practices.

The methodology consisted of conducting a randomized controlled trial involving 51 family physicians. Seventeen group I and 19 group II physicians attended a training workshop addressing the management of elevated serum cholesterol. Supporting print materials were provided for physicians and patients; access to consultants was available throughout the study. Group II physicians also used a “cuing” intervention to facilitate identification of eligible patients. Fifteen control group physicians received no intervention.

Physician management practice was measured by medical record audit and dietary counseling practice by patient telephone interview. Patient serum cholesterol levels were measured on 3 occasions: baseline, 6 weeks, and 6 months. Although physician patient management scores on a chart audit were similar across study groups, physician dietary counseling scores were significantly higher for both intervention groups than for the control. Patient serum cholesterol levels were not very different across study groups. However, in the intervention groups, patients’ low-density lipoprotein levels decreased significantly from baseline to second follow-up when compared with increases in the control group. This intervention produced a change in physician dietary counseling associated with lowered patient low-density lipoprotein levels.



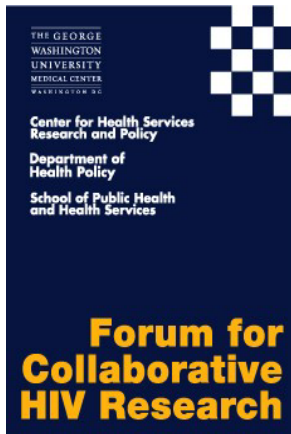
The study concluded that physician behavior change, leading to small changes in cardiovascular risk, could contribute to improved patient health outcomes.

Mann KV, Lindsay EA, Putnam RW, David DA. Increasing physician involvement in cholesterol lowering practices. JCEPH 2000;16:225-240.

38. Ayanian and colleagues evaluated the relation between the specialty of the ambulatory-care physician and mortality among elderly patients after myocardial infarction.

The authors studied the Medicare claims of 35,520 patients aged 65 and older who were hospitalized for myocardial infarction in 7 states during 1994 and 1995 and who survived for at least 3 months after discharge. The data were primarily analyzed for patient characteristics and outcomes, and physician specialty.

The results showed that when compared with patients who saw only an internist or a family practitioner in the 3 months after discharge, patients who saw a cardiologist were younger, were more likely to be white and male, had fewer coexisting conditions, and were more likely to have undergone invasive cardiac procedures while hospitalized. Patients who saw a cardiologist were also more likely to undergo cardiac procedures and rehabilitation after discharge. The results also showed that patients under a cardiologist's care had a lower 2-year mortality rate than matched patients who saw only an internist or a family practitioner (14.6% vs 18.3%). Patients who saw both a cardiologist and an internist or family practitioner had lower mortality rates than patients who saw only a cardiologist (11.1% vs 12.1%). The authors reasoned that such patients might have been receiving better care for common coexisting conditions, such as diabetes mellitus.



The authors concluded that ambulatory visits to cardiologists were associated with greater use of cardiac procedures and decreased mortality after myocardial infarction; concurrent care by an internist or family practitioner further reduced mortality.

Ayanian JZ, Landrum MB, Guadagnoli E, Gaccione P. Specialty of ambulatory care physicians and mortality among elderly patients after myocardial infarction. N Eng J Med 2002;347:1678-1686.

39. Beedham and Wilson-Barnett examined the extent to which HIV healthcare services met consumer needs in HIV/AIDS care. The data (85 patients) for the study were drawn from a specialist clinic.

The respondents were interviewed for their views on the extent to which they thought that the care given to them was adequate. The authors then compared their responses with those of the service providers.

The results showed a general expression of appreciation and satisfaction. However, in some cases of financial and social deprivation, it appeared that the established specialty service was unable to compensate. The study also identified and emphasized the need for better housing and confidentiality of records. The major contrast between consumers' and service providers' views focused on whether separate and specialist provision was required. Providers were aware that future care would need to be integrated with other generalist services to cope with the scale of need, whereas consumers were keen to retain specialist clinics and wards to protect their confidentiality and to sustain the level of expertise they appreciated.

Beedham H, Wilson-Barnett J. HIV and AIDS care: consumers' views on needs and services. J Adv Nurs 1995;25:677-686.



40. Zarling and colleagues investigated the efficiency of medical care provided by FPs, IMs, and gastroenterologists (GIs) for acute diverticulitis. The aim was to facilitate the determination of the role played by the different physician groups in the treatment of acute diverticulitis. The study analyzed data in Illinois on all Medicare hospitalizations caused by acute diverticulitis from 1990 to 1993, with FPs, IMs, or GIs as the primary attending physician.

The results showed that the primary attending physician was an FP in 1019 cases, an IM in 2535 cases, and a GI in 163 cases. The length of stay was significantly shorter for patients treated by GIs than for FPs or IMs. Readmissions were significantly lower for GIs (4.5%) than for FPs (7.7%) or IMs (10.0%). No significant differences were noted in complications or mortality.

Based on these observations, the authors concluded that patients with diverticulitis treated by GIs have shorter hospital stays and lower risks for readmission than patients treated by FPs or IMs.

Zarling EJ, Piontek F, Klemka-Walden L, Inczauskis D. The effect of gastroenterology training on the efficiency and cost of care provided to patients with diverticulitis. Gastroenterology 1997;112:1859-1862.

41. Nyman and colleagues investigated whether timely referral to specialists, in this case, orthopedic surgeons, would lead to healthcare cost reduction.

The authors identified 5 frequently used musculoskeletal diagnoses (shoulder joint problems, fractures of the forearm, knee cartilage injury, knee sprains, and ankle sprains) that could be treated either by



orthopedists or generalists. The diagnostic and treatment history of approximately 2500 persons with these 5 diagnoses was traced to make a comparison between the treatment costs of those who were referred later in the treatment and those who were referred earlier.

The study found that average treatment costs for those who were referred earlier to an orthopedist were lower than for those referred later.

The authors concluded that there are diagnoses for which the early referral of patients to an orthopedist is associated with reduced costs of diagnosis and treatment. For the diagnosis types chosen for investigation, early referral almost always was associated with lower costs. This was true despite evidence that patients referred earlier to an orthopedist had more severe diagnoses and, thus, more costly treatment. Although the study methodology would have favored the opposite conclusion, the results imply that timely referral to a specialist can be cost-effective.

Nyman JA, Manning WG, Samuels S, Morrey BF. Can specialists reduce costs? The case of referrals to orthopedic surgeons. Clin Orthop 1998;350:257-267.

42. In this literature review, Cram and Ettinger compared the medical care between specialists and generalists for 4 parameters: (1) medical knowledge, (2) practice patterns, (3) patient satisfaction and treatment outcomes, and (4) cost of care and resource utilization. The authors grouped the available medical literature (21 articles) covering these points and examined the evidence.

The authors concluded that specialists are more skilled at treating acutely ill, unusual patients, and complex patients than generalists.



However, effective and efficient primary care will still require broad knowledge. Thus, physicians—generalists and specialists—will need to work together to create a system of care that improves outcomes, quality, and efficiency.

Cram P, Ettinger WH Jr . Generalists or specialists—who does it better? Physician Executive 1998;24:40-45.

43. In this editorial, Stephan Fihn commented on the trend toward increasing specialization, particularly during the past two decades at that time, which resulted in two thirds of the practicing physicians in the United States being specialists. However, as a result of this trend, medical expenditures have grown uncontrollably, fueled by explosive growth in specialized and expensive technologies. Managed care has thus taken a very important role in controlling these costs.

The author criticized HMOs for restricting access to specialists who, because they tend to perform more tests and procedures than generalists, increase care costs. Dr. Fihn emphasized the importance of conducting careful observational studies of different approaches in medical care to reach an optimum service level. Experimental investigations of more discrete interventions should also be conducted. Without both types of studies, many of the remarkable permutations transforming the healthcare system will go unevaluated, making it impossible to understand the consequences of these changes for the patients.

Fihn, SD. Physician specialty, systems of healthcare, and patient outcomes. JAMA 1995;274:1473-1474.

44. In this editorial, William Herman examined the differences between the quality of care offered by a generalist and a specialist by



commenting on various observational studies done in this regard. The author stated that in most studies available at that date, the differences in quality of care between generalists and specialists had not been as striking as the deficiencies common to both types of providers.

Dr. Herman particularly examined the studies done on diabetic patients and concluded that the processes and outcomes of diabetes care must be understood within a larger context that accounts for provider, patient, and health system-related variables. Deficiencies in any one of these 3 domains can affect quality of care.

Herman W. More than provider specialty. Med Care 2000;38:128-130.

45. In this interview, Stephen Becker explained the economics of HIV-experienced physicians. *Bed days per thousand* (BDT) is a standard HMO industry measure that indicates the efficiency and effectiveness of management of inpatient bed days. The lower the number of bed days per thousand—or BDT—the lower the rate of medical inflation through a decrease in facility costs.

In 1994, the BDT for HIV patients in the Brown and Toland (San Francisco, CA) HIV-treatment program was 2000/1000 enrollees, and the physicians were beginning to do more treatment out of the hospital. In 1996, there was a big decrease in hospitalization and the BDT dropped to 1200. In 1997, the figure came down even further, to about 600 to 700 bed days per thousand.

When these data were broken down by physician experience, analysts found that the BDT changed very little for the less-experienced physicians. The huge fall in the bed days actually came from the HIV-expert physicians who accounted for about two thirds of the drop.



They had 591 BDT compared with 1500 BDT for the non-HIV-expert physicians.

HMO and quality of care for HIV—interview with Stephen Becker. AIDS Treatment News. (Issue 280). Mar 1997

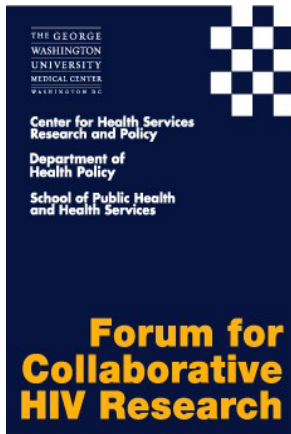
46. This is a conference abstract and not a published article

Moore R. Healthcare costs for 1995-1998 in AIDS [abstract]. 6th Conference on Retrovirus and Opportunistic Infections. 1999, Chicago Illinois.

47. This study investigated the clinical impact, cost, and cost-effectiveness of strategies for preventing opportunistic infections in patients with HIV disease.

The authors explained their study's value in addressing the availability of various options for prophylaxis of opportunistic infections related to AIDS and their differences in incidence as well as drug efficacy, toxicity, and costs. They developed a Markov simulation model to compare various strategies for prophylaxis of PCP, toxoplasmosis, *Mycobacterium avium* complex (MAC) infection, fungal infections, and cytomegalovirus (CMV) disease in HIV-infected patients. Data for the model were derived from the Multicenter AIDS Cohort Study (MACS), randomized controlled trials, and the national AIDS Cost and Services Utilization Survey (ACSUS). The simulations measured projected life expectancy, quality-adjusted life expectancy, total lifetime direct medical costs, and cost-effectiveness in dollars per quality-adjusted life-year (QALY) saved.

For patients with CD4 cell counts of 200 to 300/ μ L who did not receive prophylaxis, the authors projected a quality-adjusted life



expectancy of 39.08 months and average total lifetime costs of US\$40,288. Prophylaxis for PCP and toxoplasmosis with trimethoprim-sulfamethoxazole for patients with CD4 cell counts of 200/ μ L or less increased quality-adjusted life expectancy to 42.56 months, implying an incremental cost of US\$16,000/QALY saved. Prophylaxis for MAC for patients with CD4 cell counts of 50/ μ L or less produced smaller gains in quality-adjusted life expectancy; incremental cost-effectiveness ratios were US\$35,000/QALY saved for azithromycin and US\$74,000/QALY saved for rifabutin. Oral ganciclovir for the prevention of CMV infection was the least cost-effective prophylaxis (US\$314,000/QALY saved).

The authors found that the results were most sensitive to the risk of developing an opportunistic infection, the impact of opportunistic infection history on long-term survival, and the cost of prophylaxis.

The main conclusions derived from this work were that the cost-effectiveness of prophylaxis against HIV-related opportunistic infections varies widely, but prophylaxis against PCP or toxoplasmosis and against MAC delivers the greatest comparative value. The authors also suggest that in an era of limited resources, these results could be used to set priorities and explore new alternatives for improving HIV patient care.

Freedberg KA, Scharfstein JA, Seage GR 3rd, Losina E, Weinstein MC, Craven DE, Paltiel AD. The cost effectiveness of preventing AIDS-related opportunistic infections. JAMA 1998;279:130-136. (Adapted from the published abstract).

48. In this review, Davis and colleagues examined the effect of formal CME interventions on physician performance and healthcare outcomes.



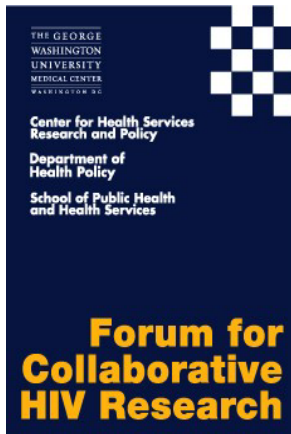
Sources included searches of the complete Research and Development Resource Base in CME (RDRB/CME) and the Cochrane Effective Practice and Organization of Care Group (EPOC). Studies included in the analyses were randomized controlled trials of formal didactic/CME interventions in which at least 50% of the participants were practicing physicians.

The data showed that interactive CME sessions that enhance participant activity and provide the opportunity to practice the skills could effect change in professional practice and, on occasions, healthcare outcomes. Based on a small number of well-conducted trials, didactic sessions did not appear to be effective in changing physician performance.

Davis D, O'Brien MA, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education. JAMA 1999, 282:867-874.(Adapted from the published abstract)

49. This study reviewed the literature relating to the effectiveness of education strategies designed to change physician performance and healthcare outcomes.

In the study, MEDLINE, ERIC, NTIS, RDRB/CME, and other relevant data sources from 1975 to 1994 were searched using continuing medical education and related terms as keywords. Only studies meeting the following 2 criteria were considered: (1) randomized controlled trials of education strategies or (2) interventions that objectively assessed physician performance and/or healthcare outcomes. These intervention strategies included—alone and in combination—educational materials, formal CME activities, outreach visits such as academic detailing, opinion leaders, patient-mediated strategies, audit with feedback, and reminders. Studies were



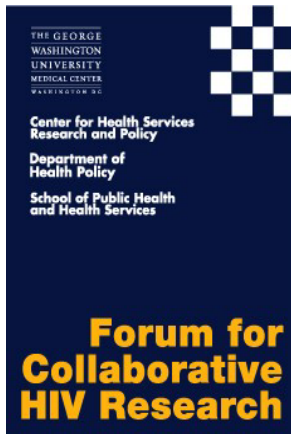
selected only if more than 50% of the subjects were either practicing physicians or medical residents. The authors extracted the specialties of the physicians by targeting the interventions, the clinical domains, and the settings of the trials. They also determined the details of the educational intervention, the extent to which needs or barriers to change had been ascertained before the intervention, and the main outcome measure(s).

Almost two thirds of the interventions (101 of 160) displayed improvement in at least 1 major outcome measure: 70% demonstrated a change in physician performance, and 48% of the interventions aimed at healthcare outcomes produced a positive change. Effective change strategies included reminders, patient-mediated interventions, outreach visits, opinion leaders, and multifaceted activities. Audit with feedback and educational materials were less effective, and formal CME conferences or activities, without enabling or practice-reinforcing strategies, had relatively little impact.

With these findings, the authors concluded that the widely used CME delivery methods such as conferences have little direct impact on improving professional practice, and that CME providers seldom used the more effective methods such as systematic practice-based interventions and outreach visits.

Davis DA, Thomson MA, Oxman AD, Haynes RB. Changing physician performance: systematic review of the effect of continuing medical education strategies. JAMA 1995;274:700-705. (Adapted from the published abstract)

50. Francis and colleagues evaluated whether cardiologists provided more recommended therapies to elderly patients with AMI and, if so,



then whether variations in processes of care account for differences in patient outcome.

All the nonfederal, acute care hospitals in California were surveyed for this cohort study using medical chart data and administrative data files. The authors examined data for 7663 Medicare beneficiaries aged 65 years and older.

The results showed that during hospitalization, good candidates for aspirin were more likely to receive aspirin if they were treated by a cardiologist rather than by a family practitioner or a general intern. Cardiologists were also more likely to treat good candidates with thromolytic therapy and their patients were 2- to 4-fold more likely to undergo revascularization procedures. However, the authors found that treatment by a cardiologist was not associated with greater short-term patient survival (30 –day mortality), although their patients did have a lower 1-year mortality.

The authors believed that all these differences were small and did not explain the differences in patient outcomes. They concluded that increasing the use of recommended therapies to that provided by cardiologists would only marginally improve quality compared with raising the average level of care. Policies should thus aim at improving the care given by all physicians.

Frances CD, Go AS, Dauterman KW, Deosaransingh K, Jung DL, Gettner S, Newman JM, Massie BM, Browner WS .Outcome following acute myocardial infarction: are differences among physician specialties the result of quality care or case mix? Arch Intern Med 1999;159:1429-1436.



51. Kim and colleagues sought to determine whether tailored educational interventions could improve the quality of care.

The authors conducted a randomized controlled study of 41 primary care physicians caring for 1810, randomly selected patients (65 to 75 years old) at Kaiser Permanente Woodland Hills (Panorama City, CA). All physicians received ongoing education. Physicians randomly assigned to the comprehensive intervention group also received peer-comparison feedback and academic detailing. Surveys and reviews of the medical records at baseline and postintervention (2 to 2.5 years later) examined the provision of preventive care and patient satisfaction.

Based on the results of patient surveys, the authors found significant improvements over time in the provision of preventive care in both the education and the comprehensive intervention groups for influenza immunization (79% vs 89% and 80% vs 91%), pneumococcal immunization (42% vs 73% and 34% vs 73%), and tetanus immunization (64% vs 72% and 59% vs 79%).

Mammography (90% vs 80%) and clinical breast examination (85% vs 79%) scores worsened in the education-only group, but not in the comprehensive intervention group. However, there were few differences in rates of preventive services between the groups at the end of the study, and the improvements in preventive care were not confirmed by reviews of medical records. Patient satisfaction scores improved significantly in the comprehensive intervention group, but not in the education-only group.

The conclusions drawn from the study were that a physician-targeted approach of education, peer-comparison feedback, and academic



detailing had modest effects on patient satisfaction and possibly on the offering of selected preventive care services.

Kim CS, Kristopaitis RJ, Stone E, Pelter M, Sandhu M, Weingarten SR. Physician education and report cards: do they make the grade? Results from a randomized controlled trial. Am J Med 1999;107:556-560.

52. In this article, Paul Mazmanian examined the role of a physician as a continuous learner and the effectiveness of continuing medical education in increasing the physician's knowledge base.

The author used various studies to substantiate and frame the role of physicians in formulating continuous learning programs for their needs.

Dr. Mazmanian concluded that physicians should reconsider the perspective of CME consisting solely of lectures, grand rounds, or medical staff meetings. They should participate in educational activities that offer personal involvement in thinking about professional practice and in identifying learning needs. To achieve this potential, CME must be truly continuing, not casual or sporadic. Physicians need to recognize ongoing opportunities to generate important questions, interpret new knowledge, and judge how to apply that knowledge in clinical settings. Essentially, the CME must be self-directed by the physician, including management of content and of context of learning.

Mazmanian PE. Continuing medical education and the physician as a learner. JAMA 2002;288:1057-1060.



53. The authors conducted a randomized, controlled trial comparing processes and outcomes of care for HIV-infected patients delivered by generalists in a general medicine clinic (GMC) to the care delivered by specialists in an infectious disease clinic (IDC).

To enhance the education necessary for the primary care of HIV patients, a primary care educational program was implemented for the physicians at the GMC. Differences were measured regarding hospitalization rates and lengths, health-related quality-of-life scores, and the delivery of appropriate preventive healthcare.

The authors used Duke University Medical Center (Durham, NC) for the randomized trial, and they examined 214 consecutive patients.

The processes of care in both the IDC and the GMC were seen to be remarkably similar because of a teaching program covering HIV-related training and evidence-based practice guidelines for the GMC residents. However, a sizable difference was found between the 2 clinics in their healthcare services use. Hospital use was higher for GMC patients with the average stay of 7.8 days compared with 5.7 days for IDC patients. GMC patients also made more visits to the emergency department (average: 1.6) compared with IDC patients (average: 0.7).

The authors thus concluded that targeted education in a GMC achieved similar provision of primary care for GMC patients, yet use of healthcare services was higher for this group. Attaining the clinical goal of high-quality care and limited use of expensive hospital services for HIV-infected patients may require a greater degree of subspecialty input.



Keitz SA, Box TL, Homan RK, Bartlett JA, Oddone EZ . Primary care for patients infected with human immunodeficiency virus: a randomized controlled trial. J Gen Intern Med 2001;16:573-582.

54. Lewis and colleagues evaluated the impact of a continuing education program on the AIDS-related competencies of primary care physicians in Los Angeles County.

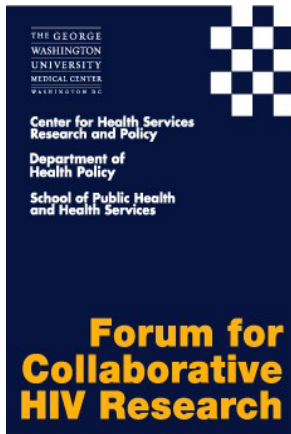
The methodology consisted of conducting telephone interviews of a random sample of general internists, and family and general practitioners. 635 physicians completed the interview.

Less than 30% of the interviewed physicians demonstrated adequate knowledge or practices necessary to deal with patients' AIDS-related symptoms and concerns. All physicians were assigned to treatment groups receiving materials presenting similar content about AIDS in printed, audiocassette or videocassette formats. Several descriptors of physicians and their practices were significant predictors of competence as assessed on pre- and post-test interviews. The descriptors tested the physicians on the treatment regimens they followed for specific AIDS related symptoms.

Follow-up interviews with 81% of the study group revealed significant increases in the competence. The authors concluded that interventions that were directed at filling a specific knowledge gap in HIV treatment can be useful.

Lewis CE, Freeman HE, Kaplan SH, Corey CR. The impact of a program to enhance the competencies of primary care

55. Smith and colleagues conducted this 3.5-year study with the aim of developing and evaluating a model of healthcare for HIV-positive



patients. The model would integrate hospital-based care with services already provided and delivered effectively by primary healthcare teams for other medical conditions.

Two hospitals in West London and 88 general practitioners in 72 general practices were involved in the treatment of 209 adults with HIV infection. Through structured intervention, general practitioners enrolled in the project were faxed outpatient clinical summaries. When hospital inpatients were discharged, a brief discharge summary was faxed. General practitioners had access to consultant physicians skilled in HIV medicine through a 24-hour mobile telephone service.

The study produced an HIV/AIDS management and treatment guide containing relevant local information. The group held quarterly discussion forums for general practitioners and a produced regular newsletter.

At the end of the study, the results showed that the average length of a hospital inpatient stay was halved for those patients who had participated in the project for more than 2 years, and the average number of visits to the outpatient clinics per month fell for patients with AIDS. There was a substantial increase in the number of visits to the general practitioner by patients with AIDS and symptomatic HIV infection. Patients and general practitioners both believed that the standard of healthcare had improved.

The authors thus concluded that this model of healthcare effectively and efficiently used existing teams of hospital and primary healthcare professionals to provide care for HIV-positive patients. Simple, prompt, and regular communication systems that provided information relevant to the needs of general practitioners were central to its success.



Smith S, Robinson J, Hollyer J, Bhatt R, Ash S, Shaunak S. Combining specialist and primary healthcare teams for HIV-positive patients: retrospective and prospective studies. Br Med J 1996;312:416-420.

56. Laine and Weinberg addressed the challenge faced by physicians in keeping their personal fund of knowledge current.

This paper considered a few strategies that may help physicians as they struggle to keep their knowledge up-to-date. The 4 strategies highlighted were: development by physicians of their own goals for staying current; systematic and periodic searches of the literature for high-quality material relevant to the topics on their agendas; familiarization with methods for critical appraisal of the literature; and scheduled time for reading.

The authors believe that one of the responsibilities of any professional is to maintain expertise, and this responsibility is probably nowhere more critical, or more difficult, than in the profession of medicine.

Laine C, Weinberg DS. How can physicians keep up-to-date? Annu Rev Med 1999;50:99-110.

57. In this review article, Holmes examines various studies that compared the knowledge relating to treatment of HIV/AIDS among generalists and specialists addressed the knowledge on issues. The predominant finding was that specialists had a more extensive knowledge basis than the generalists.

Most of the studies also confirmed a relation between a practitioner's experience with HIV/AIDS care and providing better care or having more HIV-related knowledge.



However, the managed care organizations' have been largely unable to identify HIV/AIDS-experienced clinicians. This could be due to the difficulty associated with measuring a clinician's experience with HIV/AIDS. None of the measures of experience have been validated until now, and there is very limited agreement on how to measure experience.

The author concluded that until better measures exist for determining how much experience is necessary, the best interim strategy is to give clinicians access to emerging information and to create practice settings that are conducive to high-quality HIV/AIDS care.

Holmes WC. Quality in HIV/AIDS care: specialty-related or experience-related? J Gen Intern Med 1997;13:195-197.



Section III

Appendix A – Planning Committee Members

Appendix B – Quality of Care Workshop Agenda

Appendix C – Quality of Care Workshop Participants



Appendix A

Planning Committee Members

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| <p><i>Bruce Agins</i> New York State AIDS Institute New York State Department of Health New York, New York</p> | <p><i>Terje Anderson</i> National Association of People with AIDS Washington, D.C.</p> |
| <p><i>Jim Braun</i> Physician's Research Network New York, New York</p> | <p><i>Sophia Chang</i> Center for Quality Management in Public Health Veterans Health Administration Palo Alto, CA</p> |
| <p><i>Laura Cheever</i> HIV/AIDS Bureau Health Resource and Services Administration Rockville, Maryland</p> | <p><i>Ben Cheng</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> |
| <p><i>Tom Dionne</i> CPCRA Arlington, Virginia</p> | <p><i>Robert Glass</i> New York State AIDS Institute New York State Health Department New York, New York</p> |
| <p><i>Julia Hidalgo</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> | <p><i>Scott Hitt</i> American Academy for HIV Medicine Beverly Hills, California</p> |
| <p><i>Joan Holloway</i> HIV/AIDS Bureau Health Resources and Services Administration Rockville, Maryland</p> | <p><i>Jeffrey Levi</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> |
| <p><i>Christine Lubinski</i> HIV Medicine Association Alexandria, Virginia</p> | <p><i>Joseph Masci</i> Mount Sinai Services Elmhurst, New York</p> |



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| <p><i>Veronica Miller</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> | <p><i>Jose Morales</i> HIV/AIDS Bureau Health Resources and Services Administration Rockville, Maryland</p> |
| <p><i>Blaine Parrish</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> | <p><i>Murray Penner</i> National Alliance of State and Territorial AIDS Directors Washington, D.C.</p> |
| <p><i>William Powderly</i> Washington University School of Medicine St. Louis, Missouri</p> | <p><i>Keith Rawlings</i> Integrated Minority AIDS Network, Inc. Dallas, Texas</p> |
| <p><i>Renee Ridzon</i> Centers for Disease Control and Prevention Atlanta, Georgia</p> | <p><i>Sara Rosenbaum</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> |
| <p><i>Jerry Tolson</i> GlaxoSmithKline RTP, North Carolina</p> | <p><i>Basil Vareldzis</i> World Health Organization Geneva, Switzerland</p> |



Appendix B

QUALITY OF HIV CARE – CLOSING THE GAP AGENDA

December 10, 2002

8:30-9:00AM **Welcome – Introduction to the FORUM**
Veronica Miller, Ph.D.

Why Address Quality Issues Now?
Laura Cheever, M.D.

9:00-9:45AM **Presentation #1: Quality**
Session Chairs:
Sara Rosenbaum, J.D.
Jeff Levi, Ph.D.

Speakers:
Bruce Agins, M.D.
Sophia Chang, M.D.

9:45-10:15AM **Presentation #2: Quality in Other Disciplines**
Lynn Price, A.P.R.N.
Ron Manderscheid, Ph.D.

10:15-10:30AM **Break**

10:30-11:30AM **Panel #1: Quality in the United States**
Session Chair:
Bruce Agins, M.D.

Speakers:
Robert Gass, M.P.H.
Sophia Chang, M.D.

11:30-12:30PM **Luncheon**

12:30-1:45PM **Group Discussion #1 – Identifying Gaps**
Facilitators:
Jeff Levi, Ph.D.
Veronica Miller, Ph.D.

Group #1
Group #2



- 1:45-2:00PM **Break**
- 2:00-2:30PM **Group Report Back**
Group Representatives
- 2:30-3:45PM **Group Discussion #2 – Addressing Systems**
Facilitators:
Blaine Parrish, M.A.
Philip Keiser, M.D.
- 3:45-4:15PM **Group Report Back**
Group Representatives
- 4:15-4:45PM **Panel #2: Quality Internationally**
Session Chairs:
Jeff Levi, Ph.D.
Bruce Agins, M.D.

Speakers:-
Steve Lambert, M.P.H.
Basil Vareldzis, M.D.
- 4:45-5:15PM **Panel #3: Certification, Testing, and Education**
Dan Kuritzkes, M.D.
Scott Hitt, M.D.

December 11, 2002

- 8:30-8:45AM **Second Day Welcome/Remarks**
Veronica Miller, Ph.D.
- 8:45-10:00AM **Group Discussion #3 – Addressing Provider Qualifications**
Facilitators:
Jeff Levi, Ph.D.
Bruce Agins, M.D.
- 10:00-10:15AM **Break**
- 10:15-10:45AM **Group Report Back**
Group Representatives



10:45-12:00PM **Group Discussion #4 – Addressing Implementation Barriers**

Group #1
Group #2

Facilitators:
Bruce Siegel, M.D.
Ben Cheng, M.S.

12:00-12:30PM **Group Report Back**

Group Representatives

12:30-12:45PM **Next Steps for the Quality of Care Project**

Veronica Miller, Ph.D.



Appendix C

Workshop Participants

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| <p><i>Bruce Agins</i> New York State AIDS Institute New York State Department of Health New York, New York</p> | <p><i>Arlene Bardequez</i> University of Medicine and Dentistry of New Jersey Newark, New Jersey</p> |
| <p><i>Christopher Bates</i> Department of Health and Human Services Washington, D.C</p> | <p><i>Michael Bosket</i> Lutheran Medical Center Brooklyn, New York</p> |
| <p><i>Jim Braun</i> Physician's Research Network New York, New York</p> | <p><i>Sophia Chang</i> Center for Quality Management in Public Health Veteran's Administration Palo Alto, CA</p> |
| <p><i>Laura Cheever</i> HIV/AIDS Bureau Health Resource and Services Administration Rockville, Maryland</p> | <p><i>Ben Cheng</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> |
| <p><i>Philippe Chiliade</i> Whitman-Walker Clinic, Inc. Washington, D.C.</p> | <p><i>Sara Collina</i> National Breast Cancer Coalition Washington, D.C.</p> |
| <p><i>Judith Feinberg</i> University of Cincinnati Cincinnati, Ohio</p> | <p><i>Linda Frank</i> Pennsylvania/MidAtlantic AIDS Education Training Center Pittsburgh, Pennsylvania</p> |
| <p><i>Robert Gass</i> New York State Health Department New York, New York</p> | <p><i>Shikha Gupta</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> |



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| <p><i>Julia Hidalgo</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> | <p><i>Scott Hitt</i> American Academy for HIV Medicine Beverly Hills, California</p> |
| <p><i>Joan Holloway</i> HIV/AIDS Bureau Health Resources and Services Administration Rockville, Maryland</p> | <p><i>Vincent Jarvis</i> Lutheran Medical Center Brooklyn, New York</p> |
| <p><i>Philip Keiser</i> University of Texas Southwestern Medical Center Dallas, Texas</p> | <p><i>Dan Kuritzkes</i> Brigham and Women's Hospital Cambridge, Massachusetts</p> |
| <p><i>Steve Lambert</i> University of Queensland HIV and HCV Education Project Herston, Australia</p> | <p><i>Jeffrey Levi</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> |
| <p><i>Ronald Manderscheid</i> Substance Abuse/Mental Health Services Administration Rockville, Maryland</p> | <p><i>Veronica Miller</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> |
| <p><i>Jose Morales</i> HIV/AIDS Bureau Health Resources and Services Administration Rockville, Maryland</p> | <p><i>Charles Muller</i> Department of Psychology University of Hawaii Honolulu, Hawaii</p> |
| <p><i>Blaine Parrish</i> Forum for Collaborative HIV Research George Washington University Washington, D.C.</p> | <p><i>Murray Penner</i> National Alliance of State and Territorial AIDS Directors Washington, D.C.</p> |



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| <p><i>Phil Renner</i> National Council on Quality Assurance Washington, D.C.</p> | <p><i>Sara Rosenbaum</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> |
| <p><i>Jamie Schield</i> North Central Texas HIV Planning Council Fort Worth, Texas</p> | <p><i>Jennifer Self</i> Tarrant County Health Department Fort Worth, Texas</p> |
| <p><i>Bruce Siegel</i> Center for Health Services Research and Policy George Washington University Washington, D.C.</p> | <p><i>Deborah Simon</i> Lutheran Medical Center Brooklyn, New York</p> |
| <p><i>Jerry Tolson</i> GlaxoSmithKline RTP, North Carolina</p> | <p><i>Clint Trout</i> AIDS Healthcare Foundation Los Angeles, California</p> |
| <p><i>Stephen Trujillio</i> El Rio/Special Immunology\ Associates Tucson, Arizona</p> | <p><i>Basil Vareldzis</i> World Health Organization Geneva, Switzerland</p> |
| <p><i>Anita Vaughn</i> Newark Department of Health Plainfield, New Jersey</p> | <p><i>Andrea Weddle</i> HIV Medical Association Alexandria, Virginia</p> |
| <p><i>Douglas Weil</i> Institute of Medicine Washington, D.C</p> | <p><i>Lester Wright</i> New York State Department Of Correctional Services Albany, New York</p> |
| <p><i>Barry Zingman</i> Montefiore Medical Center Bronx, New York</p> | |