

Primer

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**Risk Adjustment:
A Tool for Leveling
the Playing Field**

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MDRC
MANAGEMENT DECISION
AND RESEARCH CENTER

 **HSR&I**

Risk Adjustment: A Tool for Leveling the Playing Field

Primer

Management Decision and Research Center
Health Services Research and Development Service
Office of Research and Development
Department of Veterans Affairs

In collaboration with
Association for Health Services Research

The Health Services Research and Development Service (HSR&D) is a program within the Veterans Health Administration's Office of Research and Development. HSR&D provides expertise in health services research, a field that examines the effects of organization, financing and management on a wide range of problems in health care delivery — quality of care, access, cost and patient outcomes. Its programs span the continuum of health care research and delivery, from basic research to the dissemination of research results, and ultimately to the application of these findings to clinical, managerial and policy decisions.

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Risk Adjustment: A Tool for Leveling the Playing Field

Purpose of primer series: to help bridge the gap between health services researchers, policy makers, managers and clinicians in an effort to improve the quality and cost effectiveness of health care for veterans. The primer series is part of a larger set of dissemination initiatives developed by VHA's Office of Research and Development through its Management Decision and Research Center and in collaboration with the Association for Health Services Research.

Purpose of Risk Adjustment: A Tool for Leveling the Playing Field: to introduce the purposes, general approaches and limitations of risk adjustment. The primer provides a basic framework for understanding risk adjustment and describes the potential of risk adjustment as a management tool in health care settings, particularly in VA. More in-depth readings and other resources are listed in the appendices.

Suggested audience: professionals involved in health care decision making, including managers working in administration, clinical care, quality management and strategic planning at VA headquarters, Veterans Integrated Service Networks and within VA facilities.

Suggested uses: ■ individual study, ■ management training programs in Veterans Integrated Service Networks and medical centers, ■ resource for strategic planning, ■ continuing medical education courses and other medical and health professional training programs.

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Preface

Decision makers at all
levels of VHA need to
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As the Veterans Health Administration (VHA) moves toward objective appraisal of outcome and other clinical performance measures, risk adjustment will become increasingly important in making informed clinical, administrative and economic decisions. Decision makers at all levels of VHA need to recognize how risk adjustment can be used to isolate the outcomes of treatment interventions from pre-existing factors, such as the severity of patients' illnesses. Understanding these relationships is critical in order to adopt the best and most cost-effective practices.

Many factors play a role in determining patient outcomes yet have nothing to do with the quality of the care provided. Types, severity and incidence of illness vary significantly across and even within networks. Geographic factors, population densities and distances between facilities may have profound effects on practice patterns, access to care and patient outcomes. Coverage limits that differ across state medical aid programs may influence veterans' illness severity, as well as the spectrum of services those veterans seek from VHA. In addition, recent research has shown that higher patient income is positively associated with better clinical outcomes.

These factors are particularly important for VHA to understand because its patients generally have poorer health status and lower economic status than other patients across the country. If, as proposed, VHA is to compare its performance relative to "national" standards, these differences must be taken into consideration.

The initial publication of unadjusted Medicare mortality data illustrates this point. These data showed that the death rate for cholecystectomy was lower at a small rural Maryland community hospital than at Johns Hopkins University Hospital. However, it is impossible to conclude on the basis of those data alone where a prudent patient should seek the procedure, because it is likely that the more difficult cases were referred to Hopkins. Unadjusted mortality rates provide little information on the actual relative hazards associated with care in different hospitals.

Risk adjustment has had a significant impact on clinical practice and research. It has been used to determine best practices for many malignant diseases. For example, treatment selection for Hodgkins disease often derives from whether a patient has exhibited apparently trivial symptoms such as fever, night sweats or weight loss – all of which have been associated with poorer prognoses. In addition, research in oncology has demonstrated the significant pretreatment influence of many characteristics on patient outcomes. As a result, virtually all cancer research protocols stratify patients at entry for such factors.

An understanding of risk adjustment is also invaluable when appraising clinical trial results. For example, several studies reported that organ recipients who underwent a dual-organ transplant enjoyed a higher quality of life than single-transplant patients. But a careful review revealed that the clinical selection criteria for the two

interventions differed; the sickest patients were only offered a single transplant. As a result, it is impossible to tell whether dual-transplant patients' slight benefit was due to the second graft or to their better health at the time of transplant. Such study designs are frequently encountered in reports alleging the benefit of a wide variety of interventions.

These are just a few illustrations of how risk adjustment can be used to manage and provide care more effectively. In addition, risk adjustment is becoming increasingly important in resource allocation. As pressures to contain health care costs continue, it is important to understand where the needs are greatest in order to target resources effectively.

Risk adjustment is an important topic that demands serious attention. This primer is designed to provide decision makers at all levels of VHA with a basic understanding of risk adjustment and resources to turn to for additional information.

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Introduction

This primer is designed
to help clinicians,
managers and policy
makers gain a better
understanding of the
fundamentals of risk
adjustment and its
potential applications
by VA.

VA's mission of providing excellent health care service and value to America's veterans is becoming increasingly complex in today's rapidly changing health care environment. To achieve its objectives, VA must identify and successfully implement new and emerging tools that will promote high-quality, effective and efficient care and deployment of resources according to local needs. Risk adjustment is one of those critical new tools.

Risk adjustment is a method of compensating for differences in health status among patients that may affect their health care treatment outcomes. It is a way to level the playing field by determining how sick patients are when they enter a health care encounter. Only then can we accurately measure and assess the effects of our interventions on patients.

Outcomes research, performance measurement, quality improvement and resource allocation under capitation are critical components of VA's new strategy for achieving and delivering excellent service and value. Risk adjustment is an essential tool for integrating these components at the national, network and facility levels.

VA is committed to supporting the development and use of credible and reliable risk-adjustment mechanisms. This primer is designed to help clinicians, managers and policy makers gain a better understanding of the fundamentals of risk adjustment and its potential applications by VA. A question-and-answer format has been used for easier reading. Included are several examples of VA research that use risk adjustment, as well as three appendices of in-depth reading resources and people and organizations involved in risk adjustment.

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What is risk adjustment?

Risk adjustment is a mechanism to compensate for differences among patients that may affect their health care outcomes. It is a way to level the playing field by accounting for illness, demographics and other factors that patients bring to a health care encounter.

Why do we need risk adjustment?

Risk adjustment creates a starting point from which sound comparisons about treatment effectiveness, provider and organizational performance and resource needs may be made. By recognizing that not all patients are alike, risk adjustment helps assure that clinical treatment and management decisions are grounded in sound information.

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Risk adjustment is important for a number of reasons:

- First, risk adjustment is a critical concern in internal quality improvement initiatives and in performance measurement activities that involve comparisons of different providers. By reconciling key differences among patients, risk adjustment permits comparisons of “apples with apples.” Studies have shown that failure to adjust appropriately for patient risk produces comparisons that are flawed, misleading and, sometimes, meaningless. Risk adjustment also figures heavily in efforts to track quality, either internally or across facilities, over time, by helping to establish a valid baseline.
- Second, risk adjustment is necessary in outcomes studies that seek to ascertain the effectiveness of specific health care treatments and interventions. Without adequate risk adjustment, it is impossible to say whether perceived improvements in patient outcomes reflect better treatment, healthier patients or other factors.
- Third, risk adjustment is an increasingly important consideration in the allocation of funds to providers. Risk adjustment helps providers quantify their patients’ illness burdens and predict their resource needs and costs accordingly. In this way, risk adjustment facilitates more rational resource allocation based on need. Most capitated payment methods use some type of risk adjustment to come up with payment amounts that take into account providers’ resource requirements for treating their patients. Probably the most prominent example of this use of risk adjustment comes from the Health Care Financing Administration, which adjusts for demographic and geographic variables in setting payment rates for Medicare risk plans.

Why is risk adjustment important to VA managers and clinicians?

Since its reorganization, VHA has embarked on a course that is focused on achieving excellence in health care value. Performance measurement, quality improvement and the pooling and alignment of resources in accordance with local needs are critical components of this strategy. Risk adjustment is an essential tool for conducting these activities at the national, network and facility levels.

Risk adjustment will become increasingly important to VHA managers. VHA is implementing a commercial software program called the Decision Support System (DSS) to help manage quality and costs. Ultimately, DSS will serve as VA's principal clinical management, budgeting and planning system. It may be used alone to determine risk, or it may be used in conjunction with other risk adjustment methods. DSS is a patient-focused program that can tag each patient with a specific risk code. It can do the same with outcome codes. In this way, patients may be sorted and grouped by risk and outcome and associated costs. DSS has significant applications for quality improvement and budget planning at all levels of VA.

An understanding of risk adjustment will also help clinicians make better informed assessments of new research findings and decide whether and how they should use those findings themselves. In addition, clinicians who are familiar with risk adjustment will have a clearer understanding of activities related to performance measurement, benchmarking, quality improvement and practice guidelines.

Is risk adjustment the same as risk assessment? Is it the same as severity adjustment?

Risk adjustment and risk assessment are related but different concepts. Risk adjustment must be preceded by some form of risk assessment. The term "risk assessment" is used in two ways. Risk assessment is the process through which insurers and decision makers attempt to predict claims costs for a specific enrollee or patient population group. These efforts to predict costs generally factor in claims experience or health care utilization and demographic and geographic characteristics. In that sense, risk assessment may draw on some of the same types of data used in certain risk adjustment methods, but for a different purpose. Risk assessment may also refer to attempts by clinicians to predict a patient's risk for experiencing a specific adverse outcome or event, such as developing a certain type of cancer.

Risk adjustment and severity adjustment may be used interchangeably, although the term "risk adjustment" appears to be better understood and more widely used. Indeed, one expert observes that the problem with the term "severity adjustment" is that it lacks a single, precise definition and may mean different things to different people.¹ This applies to the term "case-mix adjustment" as well.

What data are used to perform risk adjustment?

Good risk adjustment depends on the collection of good data that measure various dimensions of risk. These dimensions may include:²

- Age
- Sex
- Extent and severity of principal diagnosis
- Comorbid chronic illnesses
- Physical functional status
- Cultural and socioeconomic attributes
- Patient attitudes and preferences for outcomes

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These data generally have come from either administrative sources or medical records, although some researchers are using data from patient health status surveys as well. Each source has its advantages and its drawbacks. Administrative data are less costly to collect and are more readily available for populations of patients. However, they contain limited clinical information. Medical record data are much more difficult and costly to collect, but they are richer in clinical detail. Patient surveys may supply information about patient attitudes, preferences and health status that is otherwise difficult to obtain. But surveys are also costly because of the time required to administer them and the expertise needed to interpret them correctly. The choice of what data sources to use for risk adjustment will involve some trade-offs.

The ability to distinguish pre-existing conditions from conditions that develop subsequent to a health care encounter is critical. Hospital discharge data, for example, may tell you that a bypass surgery patient had a secondary diagnosis of pneumonia, but they won't tell you whether that pneumonia was a pre-existing condition or whether it developed during hospitalization. It is important to collect data in such a way that the effect of health care provided can be differentiated from the patient's condition before receiving any care.

Data may be used in a variety of risk adjustment methods, depending on the questions you are trying to answer. For example, a comparison of hospital length-of-stay following bypass surgery requires a different approach than an examination of emergency room admissions for diabetics. Most risk adjustment methods rely on a combination of clinical judgment and empirical modeling.

Commercial vendors have developed a variety of risk adjustment products, some of which use administrative data and some of which rely on clinical data. These systems are all designed for different purposes. Most are geared toward risk-adjusting for hospital-based surgical procedures, like bypass surgery, or conditions commonly treated in hospitals, such as pneumonia. These systems focus on particular dimensions of risk, and they use different data terms and definitions, as well as particular variables and other methodologic considerations. Many of these systems have been reviewed in the medical literature. It is wise to keep in mind that the state of the art may vary considerably, depending on the health care conditions, treatments and settings involved.

Most risk adjustment activities for inpatient care at VA have drawn on its Patient Treatment File (PTF) administrative database. Researchers at HSR&D's Houston Center for Quality of Care and Utilization Studies have conducted several studies using the PTF and are evaluating the PTF's predictive powers compared with two models that are based on clinical data. The researchers hope to produce a comprehensive analysis of the strengths and weaknesses of the PTF with respect to risk adjustment, as well as specific information on how this data source may be improved or enriched with clinical data.

VA also is interested in developing models for outpatient risk adjustment. A new outpatient database, called the National Patient Care Database, will create opportunities at VA for outpatient risk adjustment as well.³

What role can risk adjustment play in allocating funds to networks, facilities and other providers?

To assure optimal care for VA's sickest and most vulnerable patients, networks, facilities and other providers must not be penalized financially if they care for large numbers of very sick patients. Risk adjustment can assist VA in its efforts to deploy resources where they are needed most.

On April 1, 1997, VA began allocating its medical care funds on a capitation-based model among the 22 Veterans Integrated Service Networks (VISNs). The new funding model, called the Veterans Equitable Resource Allocation (VERA) system, is designed to ensure that the distribution of funds supports equitable access to care based on need, rather than on historic funding patterns.

Research in progress may help refine a risk adjustment method for VERA. In particular, the Veterans Health Study, a large-scale observational study of veterans, has found that illness burden as measured in health status surveys filled out by veterans is a good indicator of resource need. Information culled from these surveys may be used to develop risk profiles of patients at the VISN and facility levels. These profiles may then be used to make risk comparisons across VISNs and across facilities. Discussions are underway on how findings from this research may be integrated with the VERA system.

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What role can risk adjustment play in measuring, reporting and managing patient outcomes?

. . . performance
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but searching for ways
to improve it.

Performance measurement is a critical component of VHA's objective to promote a culture of continuous quality improvement that will maximize the value of VA's health care services. VA is committed to measuring, reporting and comparing performance for multiple patient outcomes at the national, VISN and facility levels. VA also wants to become competitive with the private sector in terms of quality and efficiency – and that means being able to compare its performance with that of non-VA providers.

Accurate, meaningful comparisons will require adequate risk adjustment. The Veterans Health Study has shown that illness burdens vary widely across VISNs. In addition, other studies have shown that VA patients tend to be sicker than patients treated in non-VA facilities. Sound risk adjustment will help VA determine which providers really provide better care – and, ultimately, identify best practices of care.

Currently, VA's national performance measurement system does not incorporate much risk adjustment, although patient satisfaction survey measures used by the National Customer Feedback Center are risk-adjusted using several variables, including age and sex. In addition, activities that compare VISN performance against that of the local Medicare population are adjusted for regional factors.

Other well-established performance measurement systems within VA are not only using risk adjustment but searching for ways to improve it. The National VA Surgical Quality Improvement Program (NSQIP) is a good example. This program began as a multi-year investigation into clinical and management factors that influence outcomes of surgical care. It produces risk-adjusted outcomes data on specific surgical interventions. Research from this program has identified important links between processes, structures and outcomes of care and has served as the impetus for local surgical quality improvement projects throughout VA.

The Center for Continuous Quality Improvement in Cardiac Surgery, based at the Denver Veterans Ambulatory Medical Center (VAMC), has done considerable work in the calculation and analysis of risk-adjusted outcomes among cardiac surgery patients. Researchers have estimated the relative risk of death for numerous patient-specific factors. This work is now being applied to clinical decision making through continuous feedback of quality improvement data to cardiothoracic surgeons and cardiologists, and overall mortality has declined significantly. Researchers are now conducting a study of how the organization and processes of cardiac services units affect outcomes of open heart surgery for atherosclerotic cardiovascular disease.

The HSR&D Center for Practice Management and Outcomes Research in Ann Arbor, MI, has produced annual risk-adjusted length-of-stay profiles of VA hospitals for about six years. Researchers are now shifting the focus of their efforts from inpatient stays toward reporting on episodes of care. In addition, the HSR&D Center for Quality of Care and Utilization Studies in Houston, TX, has been providing risk-adjusted data to compare VISN performance in inpatient and outpatient utilization and mortality for several years.⁴

What are the limitations of risk adjustment?

Risk adjustment systems differ greatly in their ability to explain variations in patient outcomes and resource utilization.

The greatest limiting factors to any risk adjustment method are the uniformity, reliability and accessibility of the data on which it is dependent. These are issues that managers will have to consider carefully when deciding what risk adjustment methods to use. The data will more or less dictate what dimensions of risk for which you may control.

Risk adjustment systems differ greatly in their ability to explain variations in patient outcomes and resource utilization. They may account for only a small proportion of these variations. For example, the Physician Payment Review Commission reported that the ability of prospective risk adjusters to explain variations in individual-level health care costs ranged from about 1 percent to as much as 13 percent when a number of predictors were combined. “In theory, a perfect risk adjustment formula might explain as much as 25 percent of the variation in individuals’ costs,” the commission notes.⁵

Risk-adjusted outcomes reports have from time to time resulted in the publication and dissemination of information that is confusing, contradictory and controversial. Experts disagree, for example, on the value of risk-adjusted death rates in determining hospital quality. Hospitals that were identified as low-performing “outliers” using one risk adjustment formula later were found to be average performers using another.

There is no perfect risk adjustment system, and managers would be wise to think of risk adjustment as a tool for accomplishing a larger purpose, such as quality improvement or more equitable resource allocation. For example, few clinical quality improvement programs that rely on outcomes measurement will succeed without some type of risk adjustment, because physicians probably will not accept the data as credible otherwise. Risk adjustment also helps minimize situations in which hospitals or physicians feel pressured to turn away high-risk patients out of fear that they will suffer financially if they accept them. In short, risk adjustment may be viewed as an imperfect but needed tool.

Who is coordinating risk adjustment within VA?

Risk adjustment at VA is being done at the national, VISN and local levels. Within the Office of Policy Planning and Performance (OPPP), the Performance Management Office oversees ongoing performance improvement activities, including risk adjustment. Within the Office of Research and Development (OR&D), the Health Services Research and Development Service (HSR&D) has and will continue to commit resources to developing and testing risk adjustment methods.

A number of research projects within VA are investigating the design and use of various risk adjustment methods to measure performance, validate treatment effectiveness, improve care and allocate resources. A subset of these projects, with contact information, is included in Appendix C.

What issues should VA managers consider with respect to risk adjustment?

Managers need to recognize that if they are planning to do any type of outcomes-based comparisons or evaluations, they should use risk adjustment. . .

Managers need to recognize that if they are planning to do any type of outcomes-based comparisons or evaluations, they should use risk adjustment, or their information may be flawed. A number of resources are available to managers, some of which are listed in Appendix C. Some considerations while contemplating risk adjustment include:

- What questions are you trying to answer? Are you trying to identify mortality rates among hospitals for cardiac bypass surgery, or evaluate length-of-stay in intensive care units? The type of risk adjustment that you need will depend largely on the problems you are trying to solve.
- What type of risk adjustment instrument do you want to use? Do you want to buy an off-the-shelf product or develop something in-house? You could also take a commercial product and modify it to suit your purposes. All of these choices involve trade-offs in time, cost, quality and specificity that you will have to evaluate carefully.
- How should you report risk-adjusted information? It is usually helpful to include a technical explanation of the risk adjustment method or system that you used when reporting risk-adjusted outcomes data. This is particularly important if you are sharing your information with clinicians, who may be skeptical of the validity of the data.

Concluding remarks

. . . risk adjustment
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Risk adjustment is an essential tool for accomplishing several objectives that are important to VA: clinical quality improvement and performance measurement, assessment of the effectiveness of new health care interventions and technologies and rational resource allocation. For this reason, it is important for VA managers, clinicians and other decision makers to understand the fundamentals of risk adjustment and how it can help them provide better and more cost-effective care.

However, it is also important to point out that risk adjustment itself does not provide the answers to the issues we are trying to resolve – rather, it is a means for helping us find more accurate answers. Because these issues are so critical to VHA's new mission, VHA will look for new ways to apply risk adjustment as it continues its efforts to provide excellent health care services to U.S. veterans.

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² This list is taken from a May 7, 1997, presentation by Lisa Iezzoni for the Center for Studying Health System Change in Alexandria, VA.

³ For more information on the National Patient Care Database, contact Elizabeth Thiner, RRA, phone: 605/333-6846.

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Appendix B: Where can VA managers turn for additional information about risk adjustment?

Listed below are some organizations within and outside of VA that may provide useful information about risk adjustment. This list is not exhaustive.

Inside VA

Office of Performance and Quality
VA Headquarters
Nancy Wilson, M.D., Director
phone and FTS: 202/273-8936
fax: 202/273-9030

The Office of Performance and Quality oversees ongoing performance improvement activities. This office is responsible for: system performance measures and evaluation; benchmarking and best practices; risk adjustment; leadership on issues related to the Joint Commission on Accreditation of Healthcare Organizations and the National Committee for Quality Assurance; clinical guidelines; and the National Performance Data Resource Center and the National Customer Feedback Center.

National Performance Data Resource Center
Durham VAMC
Eileen Ciesco, Ed.D., Acting Director
phone: 919/286-6978
FTS: 700/671-6978 x229
fax: 919/286-6864
e-mail: ciesco.eileen@forum.va.gov

The NPDRC's mission is to enable VISNs and facilities to improve performance and advance the delivery of health care by offering understandable, applicable, impartial and comparable data and information systems that support VHA's vision and strategic principles.

Office of Research and Development (OR&D)
VA Headquarters
John R. Feussner, M.D., Chief Research and Development Officer
phone and FTS: 202/273-8284
fax: 202/273-6526

OR&D focuses its efforts on the health and care of our nation's veterans. The office oversees the full range of research in VA including: medical research, multi-site clinical trials, rehabilitation research and health services research. OR&D acts as a clearinghouse for VA activities related to risk adjustment.

Cooperative Studies Program Coordinating Center, Hines, IL
William G. Henderson, Ph.D.
Chief, CSPCC, Hines, IL
phone: 708/343-7200 x5853
FTS: 700/381-5853
fax: 708/216-2116
e-mail: henderson@research.hines.med.va.gov
The five Cooperative Studies Program Coordinating Centers (CSPCC) provide statistical and methodological, pharmaceutical

and administrative support to multi-site clinical trials and other research studies conducted through the VA Cooperative Studies Program. The Hines CSPCC performs the data coordination and analysis for the VA National Surgical Quality Improvement Program.

Health Services Research and Development Service (HSR&D)

VA Headquarters

John G. Demakis, M.D., Acting Director

phone and FTS: 202/273-8287

fax: 202/273-9007

Within the Office of Research and Development, HSR&D provides expertise in health services research, a field that examines the effects of health care organization, financing and management on a wide range of delivery issues, including quality of care, access, cost and patient outcomes. These programs span the continuum of health care research and delivery, from research to the dissemination of research results, and, ultimately, to the application of these findings to clinical, managerial and policy decisions. HSR&D's key operating units are its nine field programs, each of which is a center of excellence in a particular domain of health services research, along with the Management Decision and Research Center (MDRC) which facilitates the interaction between HSR&D and VHA senior managers and policy makers. Contact information for HSR&D field programs with expertise in risk-adjustment is listed below:

Center for Practice Management and Outcomes Research

Ann Arbor VAMC

Rodney A. Hayward, M.D., Director

phone and FTS: 313/930-5100

fax: 313/930-5159

Center for Health Quality, Outcomes and Economic Research

Bedford VAMC

Mark J. Prashker, M.D., M.P.H., Director

phone and FTS: 781/687-3250

fax: 781/687-3106

email: Prashker.Mark@Bedford.va.gov

Midwest Center for Health Services and Policy Research Hines VAMC

John G. Demakis, M.D., Director

phone: 708/216-2414

FTS: 700/381-2414

fax: 708/216-2316

email: demakis@research.hines.med.va.gov

Center for Quality of Care and Utilization Studies Houston VAMC

Nelda P. Wray, M.D., M.P.H., Director

phone: 713/794-7615

FTS: 700/528-7615

fax: 713/794-7103

HSR&D Field Program for Mental Health Little Rock VAMC

G. Richard Smith, M.D., Director

phone: 501/688-1622

FTS: 700/742-1622

fax: 501/688-1621

Center for Health Care Evaluation
Palo Alto VAMC
Rudolf H. Moos, Ph.D., Director
phone: 415/858-3996
FTS: 700/463-5527
fax: 415/852-3420
e-mail: ms.rhm@forsythe.stanford.edu

Management Decision and Research Center
Martin P. Charns, M.B.A., D.B.A., Director
phone: 617/278-4433
FTS: 700/839-4433
fax: 617/278-4438
e-mail: vhaboscharnm@med.va.gov

Outside VA

Agency for Health Care Policy and Research (AHCPR)
Center for Outcomes and Effectiveness Research
Carolyn M. Clancy, M.D., Director
phone: 301/594-1485, ext. 1199
website: <http://www.ahcpr.gov>
AHCPR is a good source of information about issues related to outcomes and effectiveness research. Its website contains a search area where articles and reports with information on risk adjustment may be found. In addition, AHCPR's CONQUEST 1.0 database, also available at the website, summarizes information on more than 1,000 clinical performance measures developed by public and private-sector organizations to examine the quality of clinical care.

Health Care Financing Administration (HCFA)
Office of Research and Demonstrations (ORD)
7500 Security Boulevard
Baltimore, MD 21244-1850
website: <http://www.hcfa.gov>
HCFA's ORD has invested considerable energy in the development of various types of risk-adjusters, and is exploring the development of new risk adjustment mechanisms. HCFA's website contains a 28-page description of ORD's activities as well as published articles from ORD.

National Library of Medicine (NLM)
National Information Center on Health Services Research and Health Care Technology (NICHSR)
8600 Rockville Pike
Building 38, Mail Stop 20
Bethesda, MD 20894
phone: 301/496-0176
fax: 301/402-3193
e-mail: nichsr@nlm.nih.gov
website: <http://nlm.nih.gov/nichsr/nichsr.html>
NICHSR was established to improve "the collection, storage, analysis, retrieval and dissemination of information on health services research, clinical practice guidelines and on health care technology, including the assessment of such technology." It coordinates the development of new information products and services related to health services research and maintains some useful databases, including:

■ HealthSTAR, an online bibliographic database that provides access to literature on health services technology, administration and research;

- HSRProj (Health Services Research Projects), a database of citations to research in progress funded by federal and foundation grants and contracts;
- HSTAT (Health Services/Technology Assessment Texts), a free full-text electronic resource for clinical practice guidelines; and
- DIRLINE (Director of Information Resources on LINE), an NLM database of organizations that has a special subfile covering health services research organizations.

Private Sector Groups

Kaiser Permanente Center for Health Research

Mark C. Hornbrook, Ph.D.

Program Director

3800 North Kaiser Center Drive

Portland, OR 97227-1098

phone: 503/335-6746

e-mail: hornbrookma@chr.mts.kpnw.org

Kaiser Permanente's Center for Health Research (CHR) conducts a program of research and demonstration projects on a broad range of health and medical care issues. Although the CHR is professionally independent, it is affiliated with the Northwest Division of Kaiser Permanente, and uses this large operating medical care system as a research setting and laboratory for answering health-related research questions and for testing innovations in health care delivery and financing. The CHR has produced a significant body of work on risk adjustment.

RAND

Health Sciences Program

Robert H. Brook, M.D., Sc.D., Director

1700 Main Street

Santa Monica, CA 90407

phone: 310/393-0411, ext. 7368

fax: 310/451-6917

website: www.rand.org/organization/drd/health

RAND conducts one of the largest private, not-for-profit programs of health policy research and analysis in the world. The mission of this program is to advance knowledge about how costs, quality and access to care can be altered to promote a better health care system.

Among the areas in which the Health Sciences Program is conducting studies are: quality and appropriateness of care, health care financing and delivery, health services research methods, mental health, maternal and child health, care of the elderly, substance abuse and HIV and AIDS.

State University of New York, School of Public Health

Ed Hannan, Ph.D., Professor and Chair

Department of Health Policy, Management and Behavior

1 University Place

Rensselaer, NY 12144

phone: 518/402-0333

fax: 518/402-0414

e-mail: ELH03@albanydh2.health.state.ny.us

Dr. Hannan has been involved in the development and use of clinical databases for cardiac surgery, angioplasty and trauma care. These databases have been used to identify risk factors related to mortality and complications, to predict these adverse events and to assess provider performance after adjusting for differences in patients' preprocedural risk.

Appendix C: What are some examples of current VA risk adjustment activities?

Listed below is a sampling of risk adjustment projects within VA. The list is illustrative, rather than exhaustive. Contact information is followed by a short summary of relevant activities.

VISTA Severity of Illness Index

Cincinnati VAMC

Marta L. Render, M.D.

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fax: 513/475-6409

e-mail: Render_Marta@Cincinnati.VA.GOV

This multi-center study is developing and evaluating a Severity Illness model to predict 60-day mortality in ICU patients using variables found in the Veterans Health Information Systems and Technology Architecture (VISTA). The Severity Illness model will be a tool for administration and quality assurance.

The Veterans Health Study

Center for Health Quality, Outcomes and Economics Research

Bedford VAMC

Lewis E. Kazis, Sc.D.

phone and FTS: 781/687-2860

fax: 781/687-3106

This large-scale observational study of veterans in New England has found that disease burden as measured in health status surveys filled out by veterans is a good indicator of resource need. Information culled from these surveys may be used to develop risk profiles of patients at the VISN and facility levels. These profiles may then be used to make risk comparisons across VISNs and across facilities.

Hospital Length-of-Stay

Center for Practice Management and Outcomes Research

Ann Arbor VAMC

Timothy Hofer, M.D.

phone: 313/930-5108

FTS: 313/930-5100

fax: 313/930-5159

email: thofer@umich.edu

The Ann Arbor HSR&D Center of Excellence produced annual risk-adjusted length-of-stay profiles of VA hospitals for about six years. Researchers are now shifting the focus of their efforts from inpatient stays toward reporting on episodes of care.

The Utility of PTF Data in Monitoring Outcomes of Surgical Care

Center for Quality of Care and Utilization Studies

Houston VAMC

Nancy J. Petersen, Ph.D.

phone: 713/794-7713

fax: 713/794-7103

e-mail: petersen@bcm.tmc.edu

VA's Patient Treatment File is an administrative database that provides the data for most of VA's risk adjustment activities in inpatient

care. The Houston HSR&D Center of Excellence is evaluating the PTF's predictive powers compared with two models based on clinical data. The researchers hope to produce a comprehensive analysis of the strengths and weaknesses of the PTF with respect to risk adjustment, as well as specific information on how this data source may be improved or enriched with clinical data.

Health Services Utilization and Survival in Nine Cohorts
Center for Quality of Care and Utilization Studies

Houston VAMC

Carol M. Ashton, M.D., M.P.H.

phone: 713/794-7351

FTS: 700/528-7615

fax: 713/794-7103

Investigators at the Houston HSR&D Center of Excellence are analyzing risk adjusted hospital and clinic utilization rates and survival rates in nine disease cohorts of patients. Network-level and, in some cases, hospital-level data have been analyzed for six consecutive fiscal years. Risk adjustment variables being used include patient demographics, proxies for social support and physiologic reserve, principal diagnosis within DRG, count of comorbidities, and body systems affected by comorbid conditions.

Provider Profiling

Center for Quality of Care and Utilization Studies and the
Northwest VA Network

Houston VAMC

Carol M. Ashton, M.D., M.P.H. and James Tuchschtidt, M.D.,
M.B.A.

phone: 713/794-7351

FTS: 700/528-7615

fax: 713/794-7103

Investigators at the Houston HSR&D Center of Excellence are working on the risk-adjustment aspects of the Northwest Network's provider profiling project, part of their Consumer Health Information and Performance Set (CHIPS) program. Risk adjustment equations are being evaluated and validated that take into account the influence of patient age, gender, and disease burden on the provider-level patient outcomes and utilization measures of interest to the network.

Pressure Ulcer Prevention and Treatment Improvement

Center for Health Quality, Outcomes and Economic Research

Bedford VAMC

Dan Berlowitz, M.D.

phone and FTS: 781/687-2962

fax: 781/687-3106

The Bedford HSR&D Center of Excellence has developed a risk adjustment model using administrative data for the prediction of pressure ulcer development among patients in long-term care facilities. This model became the foundation for a successful quality improvement program that has lowered the rate of pressure ulcer incidence.

Hospital Quality
Cleveland VAMC
Gary E. Rosenthal, M.D.
phone: 216/231-3262
fax: 216/231-3420

The Cleveland VAMC is using risk-adjusted data to produce the first regional market-based analysis of the relative quality and efficiency of care in a large VA hospital. This study will compare a wide range of outcomes in a VA hospital and in private-sector hospitals serving the same major metropolitan area. In another study, Cleveland health services researchers are evaluating severity-adjusted mortality, patient perceptions of hospital quality and costs associated with cardiac bypass surgery in VA and private-sector hospitals.

Early Readmission Rates
Houston Center for Quality of Care and Utilization Studies
Houston VAMC

Nancy J. Petersen, Ph.D.
phone: 713/794-7713
fax: 713/794-7103

e-mail: petersen@bcm.tmc.edu

Researchers at the Houston HSR&D Center of Excellence have developed a methodology using variables available in administrative databases to predict unplanned hospital readmissions. The goal is to use this model to identify hospitals with quality-of-care problems.

AIDS/HIV

Houston Center for Quality of Care and Utilization Studies
Houston VAMC

Linda Rabeneck, M.D., M.P.H.
phone: 713/794-7345 or 794-7719
fax: 713/790-1040

The Houston HSR&D Center of Excellence has developed two illness severity systems that predict progression to AIDS in HIV-infected patients, and a third system that predicts survival in AIDS patients. These systems were based on relatively few variables, for which the data are readily available in clinical practice settings.

Chronic Disease

Center for Health Quality, Outcomes and Economic Research
Bedford VAMC

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phone and FTS: 781/687-2962
fax: 781/687-3106

e-mail: dberlow@bu.edu

Amy K. Rosen, Ph.D.
phone: 781/687-2960
fax: 781/687-3106

e-mail: akrosen@bu.edu

This program identified predictors of poor outcomes among patients with hypertension, diabetes and chronic obstructive pulmonary disease. Project researchers are now using risk-adjusted diagnostic information from VA databases to try to predict resource utilization in outpatient settings.

The National VA Surgical Quality Improvement Program
Brockton/West Roxbury VAMC and Hines VAMC
Jeanette Spenser, R.N., M.S., C.S., National Coordinator
phone: 617/323-7700, ext. 6738/6740

FTS: 700/885-6738

fax: 617/363-5567

e-mail: spenser.jeanette@brockton.va.gov

William G. Henderson, Ph.D.

Chief, CSPCC, Hines, IL

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fax: 708/216-2116

email: henderson@research.hines.med.va.gov

Continuous collection and analysis of valid information about surgical practice and outcomes within VHA are critical for monitoring and improving the quality of care in all VAMCs. The NSQIP produces risk-adjusted data for specific surgical interventions that are used to measure surgical outcomes and achieve substantive clinical improvement at the local level.

The National Customer Feedback Center (NCFC)

Brockton/West Roxbury VAMC

Eileen Tarsky, R.N.D., Director

phone: 617/323-7700, ext. 5538

FTS: 700/885-5538

fax: 617/363-5539

The NCFC surveys inpatients and outpatients annually, collecting data on patients' perceptions of care continuity and coordination, access to needed services, waiting times and whether the care they received met their expectations. These measures are risk-adjusted using several variables, including age and sex. This and other information forms the basis of VHA's customer service standards. The NCFC provides each VA medical center with information about how well each medical center compares with its peers.

The Center for Continuous Quality Improvement in
Cardiac Surgery (CCQICS)

Denver VAMC

Karl E. Hammermeister, M.D.

phone: 303/399-8020, ext. 2826

FTS: 700/322-2826

fax: 303/393-4694

email: khammer@sebilan.uchsc.edu

The CCQICS has done considerable work in the calculation and analysis of risk-adjusted outcomes among cardiac surgery patients. Researchers have estimated the relative risk of death for numerous patient-specific factors. This work is now being applied to clinical decision making through continuous feedback of quality improvement data to cardiothoracic surgeons and cardiologists, and overall mortality has declined significantly. The Center is now investigating how the organization and processes of cardiac services units affect outcomes of open heart surgery for atherosclerotic cardiovascular disease.

Decision Support System (DSS)

Bedford VAMC

Howard H. Green, M.D., Deputy Director for Technical
Implementation

phone and FTS: 781/275-9175, ext. 111

fax: 781/275-9829

email: howard.h.green.md@med.va.gov

Elisabeth McSherry, M.D., M.P.H., Deputy Director for Data Systems

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fax: 781/275-5416

email: Elisabeth.mcsherry@med.va.gov

DSS is a commercial software product that VA is implementing to help manage quality and costs. It may be used alone to determine risk, or it may be used in conjunction with other risk adjustment methods. DSS is a patient-focused program that can translate patient risk into an alpha-numeric code and tag each patient with a specific risk code. It can do the same with outcome codes. In this way, patients may be sorted and grouped by risk and outcome and associated costs. The product is meant to be used by hospital managers. Implementation is underway; ultimately, DSS will serve as VA's principal clinical management, budgeting and planning system.

Fax us your comments!

To: MDRC

Fax: 617/278-4438

From: _____

name

title

address/facility

How will you use the risk adjustment primer? (check all that apply)

for my own education/information

to work with other staff members to increase understanding of risk adjustment

as a meeting/conference/in-service training handout

other (please specify) _____

Please rate the amount of information provided (circle one)

(1= not enough 5= just right) 1 2 3 4 5

What is your overall rating of the primer? (circle one)

(1= not helpful 5= very helpful) 1 2 3 4 5

General comments _____

Suggestions for future primer topics _____
