



Patient Safety Capabilities Of Utilization Management Programs

Liza Greenberg, RN, MPH

Vice President, Research and Quality Initiatives

&

Stella Schloss, RN, Protocare Sciences

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Patient Safety Practices in Utilization Management Programs
Advisory Group*

Peter C. Dandalides, MD, President
SHPS Healthcare Services

Elaine J. Power, MPP, Vice President of Programs
National Quality Forum

Louis Diamond, MB, ChB
Director of Programs, National Patient Safety
Foundation and;
V.P. and Medical Director, The MEDSTAT Group

Alan B. Rosenberg, MD, VP, Medical Policy
Healthcare Quality Assurance
Wellpoint Health Networks

Kerm Henriksen, PhD, Senior Staff Fellow
Agency for Healthcare Research and Quality
Center for Quality Improvement and Patient Safety

Nancy Siegel, Executive Director of UM
SHPS Healthcare Services

Hart Kannegiesser, M.D. Vice President, Network
Quality Assessment
First Health

Allen Woolf, M.D., Senior Vice President and
National Medical Director
IntraCorp

David Yalowitz MD, MPH
Chief Medical Officer
Future Health

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*Advisory Group affiliations at the time the project began

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Washington, D.C. 20005
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Table of Contents

Executive Summary	i
Overview.....	ii
Background.....	iii
URAC’s Findings.....	iv
Next Steps.....	v
1.0 Introduction.....	1
2.0 Methodology.....	3
3.0 Environment of Patient Safety.....	5
3.1 Definition of Patient Safety Terms.....	5
3.2 Patient Safety at the Forefront.....	5
3.3 The Institute of Medicine’s Challenge to the Health Care System.....	6
3.4 Stakeholder Involvement in Patient Safety.....	7
3.5 The Case for UM Involvement In Patient Safety.....	11
4.0 The Potential Role of Utilization Management in Patient Safety.....	13
4.1 Structure and Function of Utilization Management Programs.....	13
4.2 Patient Safety in UM Organizations.....	15
5.0 Findings – The UM and Patient Safety Interface.....	17
5.1 UM Processes to Support Patient Safety Activity.....	17
5.2 Barriers to UM Involvement in Patient Safety.....	26
6.0 The Future for UM in Defining a Role in Patient Safety.....	28
6.1 Action For Future Research and Development.....	29
6.2 Conclusion.....	31
Appendix I: The Utilization Management Process.....	32
Appendix II: UM’s Role in Patient Safety – A Hypothetical Case Study.....	34
Appendix III: Evaluation of UM Information Technology System Capabilities.....	36
Appendix IV: UM Company Interview Protocol.....	43
References.....	51

About the Authors

Liza Greenberg, RN, MPH, is Vice President of Research and Quality Initiatives at URAC, a nonprofit national accreditation organization for health care. Ms. Greenberg's responsibilities include development of new research initiatives on performance measurement and health outcomes for managed care plans. Her areas of expertise include medical management, disease management, preferred provider organizations, patient safety, and performance measurement. She was project director on a recently completed initiative funded by the Robert Wood Johnson Foundation, "Development of Standard Performance Measures for Workers' Compensation Managed Care Organizations." She has also conducted research projects to examine accountability and performance reporting capabilities in PPOs and recently completed a study of trends in medical management. She has authored a book on PPO performance measurement and has published numerous articles on health care and quality issues. She staffed development of URAC's case management and disease management accreditation standards. She received her BA and BSN from the University of Pennsylvania, and an MPH from the Johns Hopkins University School of Hygiene and Public Health.

Stella Schloss, R.N., MHA was a consultant with Protocare Sciences (now Constella Health Strategies) at the time the report was developed. Her responsibilities included developing and implementing health outcomes programs, performing competitive assessments, market analysis research, and evaluating strategies for medical management programs. Ms. Schloss was formerly a consultant at PacifiCare Health Systems, where her responsibilities included development of health management programs, implementation of case management initiatives and outcomes research. Stella also has an extensive background in clinical practice guideline development, outcomes research and quality improvement having consulted at the RAND Corporation and UCLA Medical Center. Her responsibilities at UCLA Medical Center included developing quality improvement programs and clinical information screening software applications related to the provision of medical care. Prior to this, Stella was a Medical Management Specialist at Maxicare Health Plans. Stella received her Bachelor's of Nursing degree at the New York State University at Brockport and graduate degree in Healthcare Administration from University of La Verne.

Executive Summary

Overview

URAC conducted this study to assess patient safety systems employed by utilization management (UM) organizations with funding from the Robert Wood Johnson (RWJ) Foundation. The goals of the study were to better understand how UM organizations use information technology and UM process to systematically identify and manage potential patient safety problems and to identify research needs to promote future UM involvement in patient safety. URAC interviewed senior management of UM organizations about patient safety practices, reviewed commercial UM software systems, and met with industry leaders to solicit recommendations. The report provides findings from URAC's industry assessment as well as recommendations from industry leaders on UM's potential future role in promoting patient safety.

UM is a medical management process conducted by insurers and managed care organizations to determine medical necessity of selected medical procedures. Most health insurers offer coverage only for "medically necessary" services. During the course of making medical necessity determinations, UM organizations collect and process clinical data that could be compared to evidence-based guidelines to identify patient safety concerns, including some errors of omission or commission. For the purposes of this project, URAC used the Institute of Medicine (IOM) definition of patient safety:

"Freedom from accidental injury. Ensuring patient safety involves the establishment of operational systems and processes that minimize the likelihood of errors and maximizes the likelihood of intercepting them when they occur".¹

Background

Several groups are developing patient safety standards for clinical settings, including the Leapfrog Group, the National Quality Forum (NQF), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the Institute for HealthCare Improvement (IHI). The NQF has developed a consensus list of safe practices for health care organizations. Other groups have developed tools for identifying and investigating patient safety concerns. Thus far, the majority of proposed patient safety practices are focused on the hospital setting. However, the work to date has yielded a framework for patient safety interventions that may be applicable to UM. It is increasingly important for UM organizations, their customers, and other stakeholders to understand the contribution that UM programs can make towards promoting patient safety practices.

Each phase of the UM process – prospective, concurrent, and retrospective review - contains different opportunities for data collection, comparison of findings to expected clinical pathways,

and monitoring for patient safety risks. UM programs frequently use automated algorithms to compare expected processes of care to actual care. A comprehensive UM approach to patient safety could include the identification of variation patterns leading to overuse or under-use, gaps in disease-specific guidelines, or adverse outcomes. UM also could serve an important role in systematically identifying and channeling chronically ill patients into disease management and case management programs for more intensive clinical management based on evidence based guidelines. UM involvement in patient safety may ultimately generate cost savings, both from decreased utilization related to medical errors of omission and commission, and from reduction of risk.

URAC's Findings

URAC found that UM patient safety initiatives are usually carried out under the general “quality management” program title. Many UM programs are engaged in patient safety-related activities that are not specifically labeled as such. Patient safety is not specifically defined for the UM process, and safety indicators most relevant to UM have not been established. In particular, UM programs are designed to identify potential over-use of selected services. UM programs have less systematic approaches to identifying misuse or under-use of recommended services.

Most UM organizations have some capability to identify patient safety concerns, either through automated processes such as flags or triggers, or through judgments of clinical staff. Companies manage these alerts through clinical review and subsequent tracking in a quality management process. There is considerable variability among companies as to how events are clinically managed and reported. UM company responses range from internal monitoring of safety events, to clinical investigation and reporting to clients or facilities regarding safety events.

According to UM leaders, there are opportunities to develop more systematic processes for identifying, managing and reporting patient safety concerns in each phase of the UM process. UM leaders noted, however, that the UM industry will have to establish a clear role and evidence of return on investment for UM activity in order to meet the demands of payer-customers.

Next Steps

UM industry leaders noted that UM programs appear to have the information technology and human resources needed to effectuate a role in patient safety. However, given the cost pressures in the health care industry, and the current circumscribed role of UM, the group called for additional evidence to support a direct role for UM in promoting patient safety. Among many recommendations for additional research and development, they included:

- Establish “proof of concept” regarding the importance of UM involvement, the potential of UM, and the return on investment for UM involvement in patient safety;
- “Map” UM processes and data elements to patient safety standards such as the National Quality Forum Safe Practices and the JCAHO Sentinel Events to determine how UM could support identification and management of these consensus based standards.

Once a clear role and return for UM has been defined, initial steps towards implementation of safety systems in UM would include:

- Implementing systems-based approaches to UM involvement in patient safety. Patient safety concerns could be identified more systematically in the course of UM processes through:
 - The use of standardized patient safety assessment protocols tailored for each stage of the utilization review process;
 - Hard coding data and maximizing use of available UM data fields to facilitate analysis, tracking and reporting of safety issues; and
 - Implementation of systematized policies and procedures to guide investigation, quality management review, and reporting of patient safety concerns.

Other UM patient safety initiatives could include:

- Maximizing value of information systems capability to track and flag deviations from care guidelines that have patient safety implications;
- Defining evidence-based UM safety indicators that will trigger a case review, using National Quality Forum and JCAHO safety practices as a starting point;
- Maximizing the risk management functionality of UM, particularly in reviewing cases with high risk of error, such as intensive care unit stays and transfers in level of care;
- Promoting UM’s capability to manage continuity of care by developing patient safety criteria for medical management referrals and developing automated processes for referring patients to case and disease management programs.

1.0 Introduction

Patient safety is an important concern of many health care stakeholders, including patients, providers, employers, health plans and insurers. This qualitative study was designed to examine the current role of utilization management (UM) programs in promoting patient safety, and to identify strategies through which UM could enhance patient safety in the health care system. URAC received a grant from the Robert Wood Johnson Foundation to examine a cross section of UM companies to better understand their approaches to systematically identifying and investigating potential patient safety concerns. URAC presented preliminary findings to a group of industry leaders to solicit recommendations on future UM research and industry development needed to enable a UM role in patient safety.

URAC's study was based on the premise that through automated information systems and systematic follow up by clinical personnel, UM programs could potentially be positioned to improve patient safety. The goals of the study were to:

- Identify UM software commonly in use and examine automated “triggers” or flags used to indicate a possible adverse event or initiate further investigation;
- Compare potential UM patient safety indicators to triggers identified by other influential patient safety organizations such as the Institute for Healthcare Improvement;
- Catalogue the range of responses by UM companies to investigate and follow up on patient safety concerns; and
- Present findings to a leadership panel of UM and patient safety experts to solicit recommendations on “best practices” in UM detection and response to patient safety concerns and identify areas for future research or policy.

This report focuses on patient safety activities of UM programs in non-provider organizations, such as health plans and stand-alone UM vendors. It does not address UM performed by pharmacy benefit managers (PBMs), hospitals or provider groups, which have very different characteristics, data systems, and operating principles.

2.0 Methodology

URAC began the project by issuing an open invitation to the UM industry to submit information on patient safety practices via URAC's web site. Twenty-two companies responded to the call and provided brief information on their UM processes and patient safety initiatives. URAC then conducted detailed structured interviews with senior managers of 14 UM programs. The programs were selected non-randomly, based on information provided in the web interviews and recommendations from industry experts. In total, URAC collected information from 31 separate UM companies. URAC also reviewed software demonstrations from four commercial UM software vendors. The demonstrations and interviews followed a protocol developed by Protocare Sciences. (See Appendix IV for a copy of the protocol) While the interview sample was small, the findings were very consistent across companies.

URAC presented findings of the IT demonstrations and company interviews to a group of senior staff in UM programs and organizations in March, 2003. These individuals validated the prevalence of patient safety activities in UM programs. They also discussed the current role of UM in promoting patient safety and made suggestions for further investigating, articulating, and enhancing UM's role in promoting patient safety.

3.0 Environment of Patient Safety

3.1 Definition of Patient Safety Terms

A definition of terms is helpful in understanding patient safety concerns and developing programs to improve care. Unfortunately, the lines between quality improvement (QI) and patient safety are indistinct. While patient safety can be assumed under the umbrella of QI, not all quality efforts are considered patient safety improvements. While reduction in medical errors and adverse events (AEs) are important factors in improving patient safety, access to care, overuse and under-use of services are also safety concerns. The IOM used the following definitions in addressing patient safety concerns:²

- **Medical error:** the failure to complete a planned action as intended or the use of a wrong plan to achieve an aim.
 - Medical errors can be categorized as acts of **omission or commission**. An example of an error of omission is not giving the patient the prescribed medication or not performing a procedure. Errors of commission include giving the patient the wrong drug dose. Medical errors usually infer a certain level of patient harm.
- **Adverse event:** an injury caused by medical management rather than by the underlying disease or condition of the patient.
- **Patient safety:** freedom from accidental injury; ensuring patient safety involves the establishment of operational systems and processes that minimize the likelihood of errors and maximizes the likelihood of intercepting them when they occur.

This report uses the term patient safety in discussing a range of practices that could be used by UM to *systematically* decrease errors of commission and omission and to maximize the likelihood of intercepting errors.

3.2 Patient Safety at the Forefront

Several key events during the last decade have catapulted patient safety to the forefront of purchaser and patient attention:

- In 1991, Leape and colleagues reported on several pivotal studies describing the rate of adverse events in 51 acute care hospitals in New York State.³ Adverse events occurred in 3.7 percent of hospitalizations with the majority of events due to medical

- management errors with slightly more than one-quarter due to negligence.^{4,5} Close to one half of adverse events (48 percent) were associated with an operation. Drug complications were the most common type of adverse event (19 percent), followed by wound infections (14 percent) and technical complications (13 percent).⁶
- In 1995, Bates and colleagues further described the incidence of drug-related and potential adverse drug events (ADEs) in two tertiary hospitals in Boston.⁷ They described substantially higher rates of medication-related adverse events than Leape et al. Bates reported ADE rates and potential ADE rates of 6.5 and 5.5, respectively, per 100 non-obstetrical hospitalizations.
 - In 1997, President Clinton established the Advisory Commission on Consumer Protection and the Quality in Care Industry. The 1998 report released by the Advisory Commission identified medical errors as “one of four major challenges facing the Nation in improving health care quality”.⁸ Soon after the report, the Quality Interagency Coordination Task Force (QuIC) was created to manage Federal quality improvement (QI) activities.

In addition, several high profile medical error cases sensationalized in the media have heightened public concern, although the public and professionals disagree on strategies to increase system safety.⁹

3.3 The Institute of Medicine’s Challenge to the Health Care System

In 1999, The Institute of Medicine’s (IOM) released its seminal report, *To Err Is Human: Building a Safer Health System*.¹⁰ The IOM report highlighted the scope the number of preventable patient injuries and deaths occurring in U.S. hospitals annually. The report indicated that:

- Between 44,000 to 98,000 people die each year as a result of medical errors with close to one half being preventable. Medication errors alone account for close to 7,000 deaths annually.
- Medical errors are the eighth leading cause of death in the U.S. surpassing the number of deaths due to motor vehicle accidents, breast cancer, or AIDS.¹¹
- The IOM estimates that medical errors cost the Nation over \$37 billion annually, with close to \$17 billion associated with preventable errors.
- The majority of medical errors are due to “systems” problems and are not the fault of individuals.

The IOM report recommended the establishment of a national goal of reducing the number of medical errors by 50 percent over 5 years. The IOM outlined the following approach to achieve this goal:

- Establish a national focus to create leadership, research, tools, and protocols to enhance the knowledge base about safety;
- Identify and learn from medical errors through both mandatory and voluntary reporting systems;
- Raise standards and expectations for improvements in safety through the actions of oversight organizations, group purchasers, and professional groups; and
- Implement safe practices at the delivery level and build safety into the culture.¹²

The IOM report called on various segments of the health care system to take action to reduce medical errors. To paraphrase recommendations to accreditors and health care organizations, the IOM challenged:

- Regulators and accreditors should require health care organizations to implement meaningful patient safety programs with defined executive responsibility
- Health care organizations should make continually improved patient safety a declared and serious aim by establishing patient safety programs with defined executive responsibility. Programs should:
 - Provide strong, clear and visible attention to safety;
 - Implement non punitive systems for reporting and analyzing errors;
 - Incorporate safety principles;
 - Establish interdisciplinary training.

The report generated enormous attention from the public and private sectors including: business leaders, state and federal policy makers and healthcare industry itself. While the IOM's statistical methods have been challenged,^{13,14,15} there is universal agreement that actions are required to improve patient safety.

3.4 Stakeholder Involvement in Patient Safety

Health care stakeholders have answered the call to action to improve patient safety both in the public and private sectors. For the most part, stakeholders have focused on the role of hospitals and providers in promoting and implementing safe practices. However, there is growing

recognition that other entities in the health care system may also use their contracting and purchasing leverage to drive safety changes.

URAC accreditation standards directly address patient safety and welfare, and also address safety indirectly through standards relating to quality improvement programs (see Table 1). An explicit standard for UM relating to patient safety is found in URAC’s Core Standards. Other URAC standards implicitly address patient safety by requiring companies to conduct

Table 1 – URAC Patient Safety Standards	
Patient Safety in URAC Accreditation Standards	
Implicit Standards	
▪	Quality management and improvement
▪	Credentialing
▪	Complaints, grievances and appeals
Explicit Standards	
▪	Required response to urgent situations posing immediate threat to safety and welfare of patients
Scoring system	
▪	Standards that directly affect safety and welfare of consumers are weighted more heavily

credentialing, review complaints, and initiate data driven quality improvement projects. URAC is undertaking several qualitative research projects to better understand the role of medical management organizations in promoting patient safety.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), which accredits hospitals, nursing homes, home care organizations, ambulatory care providers, clinical laboratories and other health care organizations,¹⁶ includes comprehensive

patient safety error reduction standards and requires organizations to address national patient safety goals.¹⁷ The standards augment JCAHO’s prior work in developing its Sentinel Event Policy, which requires health care organizations to monitor and analyze the most serious events and to identify root-causes. Healthcare organizations accredited by JCAHO must meet the organization’s national patient safety goals.

The Leapfrog Group, a consortium of over 140 private and public companies that purchase health care benefits, reviewed evidence to determine the top three patient safety practices that could be implemented by health plans to decrease risk to patients. Consortium members agreed to incorporate requirements for three evidence-based patient safety practices into their purchasing decisions. Under Leapfrog, large employers are asked to recognize and reward health plans and hospitals that adopt these measures through “preferential use and market reinforcement.” The Leapfrog Group’s three initial hospital safety measures are highlighted in Table 2.¹⁸

Table 2 - Leapfrog’s Hospital Safety Measures¹⁹

Leapfrog’s Hospital Safety Measures	
Computerized Physician Order Entry (CPOE)	
	Physician order entry via computer linked to prescribing error prevention software with a goal of reducing medication errors by greater than 50 percent. The Leapfrog Group has proposed an exemption for rural hospitals in meeting the CPOE requirement.
Evidence-Based Hospital Referral	

<p>Preferential referral of patients requiring complex medical and surgical procedures to facilities with the best survival odds based on scientifically valid criteria. The goal is to reduce patient mortality by greater than 30 percent.</p>
<p>ICU Physician Staffing Staffing intensive care units with physicians credentialed in critical medicine with the goal of reducing ICU mortality by greater than 10 percent</p>

The Institute for Healthcare Improvement (IHI) directs the Breakthrough Series “Reducing Adverse Drug Events” Project, a national collaborative of health care institutions using QI techniques to systematically reduce adverse drug events in their hospitals.²⁰ The IHI developed adverse event trigger indicators for medication errors, intensive care units, and pediatric care. These tools assist hospitals in identifying, tracking and reviewing adverse events. A triggering event is followed by a review process to determine if an error has occurred, which then feeds into systems improvement activities. IHI provides a standard set of monitoring tools to improve patient safety in high-risk areas of the hospital.

The federal Agency for Healthcare Research and Quality (AHRQ) has commissioned Evidence-based Practice Centers (EPC) to draft consensus of “best practices” to improve patient safety. The goal is to identify “universally implemented practices” in applicable care settings to reduce the risk of harm resulting from systems, processes, or environments of care”. Over 80 safety practices were initially identified and ranked based on the strength of evidence and applicability. “Core” subsets having the strongest evidence and widest applicability in reducing the rate of adverse events were identified.²¹ Table 3 lists the top ranking patient safety practices, most of which are applicable to hospital settings:

Table 3- EPC’s Selected Core List of Patient Safety Measures

EPC Measures
Appropriate deep vein thrombus (DVT) prophylaxis for at-risk patients
Perioperative use of β-blockers for at-risk patients
Use of maximum sterile barriers to prevent central intravenous catheter infections
Appropriate antibiotic prophylaxis
Asking the patient to recall details of informed consent
Continuous aspiration of subglottic secretions for ventilator-dependent patients
Use of skin pressure relieving bedding materials to prevent decubitus
Use of real-time ultrasound to place central venous lines
Patient self-management skills for warfarin (Coumadin™) to prevent complications
Appropriate provisions of nutrition with early intervention surgical and critical pts.
Use of antibiotic-impregnated central venous catheters to prevent infections

The National Quality Forum (NQF) is a public-private partnership charged with developing evidence-based standards for assessing and measuring quality care. In 2002 NQF issued a consensus report, “Serious Reportable Events in Healthcare,” listing events that merit further

investigation for errors²². The NQF recently released a consensus report delineating 30 evidence-based practices to improve patient safety. NQF’s safety practices incorporate most EPC high priority targets as well as the Leapfrog Group recommendations. NQF’s patient safety practices, like those of IHI, primarily relate to hospital and physician activities. However, NQF has categorized the practices into five key areas that apply to all health care organizations. NQF’s five categories include:

- Reducing Healthcare Errors by Creating a Culture of Safety
- Reducing Errors by Matching Needs with Service Delivery Capability
- Reducing Errors by Facilitating Information Transfer and Clear Communication
- Reducing Errors in Specific Settings or Processes of Care
- Reducing Errors by Increasing Safe Medication Use²³

NQF’s specifications for a “Culture of Safety,” (see Table 4), are directly applicable to UM. The 30 consensus patient safety practices would also be a valuable starting point for mapping a role for UM. URAC’s recommendations for future research and development in UM, presented in Section 7.1, are organized according to NQF’s Categories of Patient Safety Practices.

Other organizations, including the Centers of Medicare and Medicaid Services (CMS) and the States have also answered patient safety concerns by developing, or in some cases expanding, existing quality initiatives. Currently, 20 states have implemented mandatory reporting systems addressing adverse events.²⁴ States have also responded by introducing patient safety legislation. According to a recent National Academy for State Health Policy Report, 11 medical error-related bills were introduced in 1999 legislative sessions, 34 during the 2000 sessions, and 61 during the 2001 state sessions²⁵.

Table 4 - National Quality Forum Specifications for Creating a Culture of Safety
Specifications :
<p>In a healthcare culture of safety, at a minimum, standardized policies and procedures are in place to:</p> <ul style="list-style-type: none"> ▪ Prioritize patient safety events and situations that should be reported; ▪ Analyze the patient safety events and situations that are reported; ▪ Verify that the remedial actions identified through analysis of reported patient safety events are implemented and effective and do not cause unintended adverse consequences; ▪ Ensure that organizational leadership is kept knowledgeable about patient safety issues present within the organization and continuously involved in processes to assure that the issues re-appropriately addressed and patient safety is improved; ▪ Provide oversight and coordination of patient safety activities; ▪ Provide feedback to frontline healthcare providers about lessons learned; ▪ Publicly disclose implementation of or compliance with all NQF endorsed safe practices applicable to the facility; and ▪ Train all staff in techniques of teamwork-based problem solving and management.

3.5 The Case for UM Involvement in Patient Safety

While this report describes “how” UM companies could address patient safety, some leaders in the field question “if” UM should be involved in patient safety. URAC believes there is a case to be made for UM programs to assume a more systematic role in promoting patient safety. That role may vary according to customer demand and the UM organization’s structure. UM’s role will be defined by access to claims and other data as well as by affiliation of the UM program with a provider network. Challenges to UM involvement in patient safety resulting from the current business model are described in Section 6.2.

Milstein noted in 1997 that UM could play a much stronger role in promoting clinical best practices, improving quality, and identifying quality risks, and commented that such activities would “maximize utilization management’s net contribution to health care value”.²⁶ UM programs have resources that put them in a position to identify potential safety concerns, including:

- Rich databases of clinical information;
- Direct interface with providers and facilities;
- Relatively immediate access to information (compared to claims driven systems);
- Leverage, through reporting, consultation, and denials

There is a credible cost savings argument in favor of UM involvement, which must be validated through future research. Based on IOM cost estimates, it is reasonable to believe that reduction of errors will reduce cost of inpatient and outpatient medical care. This report suggests enhancing and systematizing existing UM activities, rather than overhauling the UM process. Thus UM programs could make a substantial contribution to patient safety without restructuring or massive system investments.

In addition, patient safety is a risk management strategy that may add significant value to UM services. As Dulworth notes, UM programs can augment traditional risk management programs by being vigilant for errors and delays in care that might present significant risk exposure. As an example, Dulworth points out that UM could flag time sensitive procedures, such as angioplasty after acute MI to help ensure timely compliance with best practices.²⁷

Customer demand for active UM involvement in patient safety will be a critical determinant of UM’s future role. UM companies can offer patient safety interventions as a value added service for customers. As this report illustrates, this can be done through cost effective modifications, rather than a UM systems’ overhaul. Within existing business models for UM, UM organizations could engage more actively to identify and manage patient safety concerns. By maximizing existing resources – IT and human – to address patient safety, UM will add value to

existing product offerings. Demand will build as UM programs proactively demonstrate their effect on patient safety and the return on investment for patient safety activities. This report concludes with recommendations for future research and analysis of the return on investment and expected outcomes for a UM role in patient safety.

Implications for UM:

- Given the national attention to patient safety concerns, it is important for stakeholders and decision-makers to understand the contribution that UM can make in promoting patient safety practices.
 - Thus far, the majority of proposed patient safety practices are focused on the hospital setting. UM leaders could work with patient safety stakeholders in addressing UM's unique contribution to patient safety. Several important evidence-based consensus frameworks have been developed by NQF, IHI and JCAHO, which may serve as a platform for UM involvement.
 - There is a business case for UM's involvement in patient safety initiatives. Additional research is needed to evaluate the costs associated with a more active patient safety role for UM, and quantify the potential cost savings due to error reduction. Costs for systematizing UM patient safety efforts will be offset by cost reductions due to error reduction, as well as improved management of risk.
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4.0 The Potential Role of Utilization Management in Patient Safety

4.1 Structure and Function of Utilization Management Programs

Utilization management (UM) was developed to control health care utilization through the evaluation of “medical necessity.” URAC defines UM as the evaluation of medical necessity, appropriateness, and efficacy of the use of health care services, procedures, and facilities under the auspices of the applicable benefits programs”.²⁸ Wickizer and colleagues estimate that fifty to sixty percent patients are subject to some form of UM.²⁹ In certain regions of the country where managed care penetration rates are above average, this percentage is likely to be much higher.

Organizationally, UM may be a program area within a health plan, or it may be a service provided by a third party vendor (stand-alone UM program). Entities with financial risk for health costs including managed care plans, Medicare, provider groups, insurance carriers, private purchasers, and hospitals all employ UM strategies, either by developing UM capacity in-house, or by implementing contracts with UM programs. Structurally, UM programs are diverse in terms of how integrated UM is with payment operations (claims) and with provider network activities.

UM programs’ capability to drive patient safety changes is in part determined by customer demand, access to data, and affiliation with provider networks. Because of this diversity, there may be a range of systematic approaches to patient safety in the UM context. It should also be emphasized that UM is only one of many program areas in the health care system that have leverage to promote patient safety. UM’s role is indirect, through oversight activities, rather than the direct accountability for patient safety born by hospitals and providers. Other organizations and program areas also have contract and financial leverage to directly drive patient safety enhancements.

UM is now often operationally paired with other “medical management” programs, including health call centers, case management, disease management and external review. The UM process is described briefly below. Because they often overlap in operations and human resources, case management (CM) and disease management (DM) are also briefly described. For more detail on the UM process, see Appendix I.

- **Utilization Management:** UM reviews are intended to reduce unnecessary or inappropriate medical care by making medical necessity determinations.³⁰ UM is usually focused on inpatient admissions or high-cost procedures such as a MRI scans. Procedures subject to UM determinations vary from organization to

organization, often depending on payer demand. The UM process is initiated when a provider or facility contacts the UM company for approval of a procedure on behalf of a patient. UM program nurses collect clinical information using algorithms based on diagnosis or procedure codes. The patient's clinical information is manually or electronically "bumped up against" review criteria – often supplied by a commercial entity such as Milliman or InterQual. Cases that meet criteria are approved, while cases that do not meet criteria are referred for additional review. Additional review may include gathering of more detailed clinical information, clinical consultation between physicians, or review by a specialist. Most UM companies try to collect the least possible amount of data in the course of a UM decision to facilitate rapid turnaround time and decrease costs. This practice that presents challenges in analyzing UM data for adverse events.

UM encompasses four functional processes:

- Prospective Review (pre-certification) – includes a pre-service review to certify the need for hospitalization or a procedure and to assign an authorized initial length of stay. Many companies are able to generate pre-certifications electronically for certain types of requests. Automated approval improves turnaround time and enables clinical staff to concentrate on more complex cases.
 - Concurrent Review – authorizes continued hospital stay after expiration of the initial approved stay, or authorizes selected diagnostic and surgical procedures. Concurrent review can be conducted remotely or on-site in a facility
 - Discharge Planning – assists with the transition of care to a lower level such as to a skilled nursing facility or home-based care. Often UM programs will conduct an initial discharge assessment, but will refer patients in need of intensive discharge services to CM services.
 - Retrospective Review – occurs after care has been rendered. Examples of cases where retrospective review might occur include an emergency room visit for care out of network or following a claims submission.
- **Case Management:** CM is patient focused and provides additional care management for patients with complex medical needs. Typical criteria for referral to CM include case cost, use of services, patient characteristics or catastrophic illness. Case managers interact with patients and providers to optimize efficient and timely care. CM services may not be available to all or some patients, and often must be authorized by the customer prior to institution. In stand-alone

medical management organizations, CM is often paid for on a fee-for-service hourly basis.

- Disease Management:** DM programs offer disease-specific care for individuals with selected high cost/high prevalence chronic illnesses. The purpose of DM is to ensure that patients receive care according to evidence-based guidelines or protocols. DM programs often target patients with congestive heart failure (CHF), diabetes, asthma, and high risk pregnancy. Patients may be identified for DM services through UM referral or may be identified through review of claims data. Payment arrangements are distinct from UM payments, and services may or may not be linked or integrated with UM.

Many companies offer multiple medical management programs, and often share staff and data systems between the program areas.³¹

4.2 Patient Safety in UM Organizations

In a 2001 URAC survey of UM organizations,³² URAC reported that 65 percent of UM companies address patient safety issues through their QI activities (Table 5). Only 13 percent have a dedicated committee or program addressing patient safety. Only 45 percent of the respondents reported that they have a tracking or IT system capable of flagging patient safety issues. Less than half (41 percent) have a process to contact providers or facilities that demonstrate patient safety concerns.

Table 5- URAC Patient Safety Survey Results, 2001³³

Program Component	Rate (N= 122)
Patient safety addressed through the QI process	65%
Medical management IT tracking capability to flag potential patient safety problems	45%
Program in place to contact providers/facilities w/ high rate of patient safety issues	41%
Tracks patient safety indicators by provider or facility	37%
Conducts patient safety studies	14%
Formal committee/program dedicated to asses patient safety	13%

The current study builds on 2001 findings to examine in more detail how UM organizations view and operationalize patient safety activities.

Implications for UM:

- UM is widely used in the health care industry as a tool for care management oversight. UM organizations provide health care management across a variety of health care settings. UM

organizations may be positioned to incorporate patient safety oversight programs into their operations.

- Opportunities to promote patient safety may be present in each phase of the UM process. (See Table 8 and Appendix II for examples.) Each phase of the UM process contains different opportunities for data collection, comparison of findings to expected clinical pathways, and monitoring for patient safety risks.
 - UM is often closely linked to CM and DM programs. This may present opportunity to use UM as a tool to refer high risk patients for more intensive care management interventions.
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5.0 Findings – The UM and Patient Safety Interface

This section highlights findings from URAC’s descriptive research on UM activities that address patient safety. Interviews with UM companies focused on systematic approaches used by UM companies to identify and manage potential patient safety problems. URAC queried companies about the use of automatic “triggers” or flags that would be generated automatically in response to specified clinical indicators. See Appendix IV for the protocol used to guide UM company interviews. Discussion of actual information system capabilities (as distinguished from current usage) is found in Appendix III.

5.1 UM Processes to Support Patient Safety Activity

Findings: Patient Safety Role

- 27% of companies interviewed have a specific module incorporated in the UM review process to address patient safety.
- 27% have specific training on patient safety issues; 73% train on quality indicators in general.

Discussion: URAC’s interviews confirmed earlier findings that most UM companies address patient safety indirectly, as part of more global quality management. All UM organizations have processes for addressing identified quality problems. However, there is great variability in mechanisms used to identify problems and how they are managed. In responding to URAC’s questions, most companies described their processes for identifying and responding to “quality problems”. Most did not define patient safety problems specifically or have separate processes for managing safety issues. Behavioral health UM companies tended to have better defined the criteria for safety problems, perhaps because the risk of harm is more readily apparent – homicide or suicide. Behavioral health UM programs had defined assessment protocols to avoid errors as well as management protocols for patients considered high safety risk.

***Patient Safety Practice:** One behavioral health organization uses a specific safety module called the “at risk” screen. When a patient accesses mental health benefit, company nurses conduct a formal assessment to identify specific patient safety risks. The assessment includes risk of self neglect/abuse, risk to others, non-use of medications or over medication, suicide risk, and risk for alcohol or drug abuse). “Risk situations,” are defined as risk of bodily harm to self or others. If the nurse enters data into a “risk situation” field in the information system, a review is triggered. A clinical supervisor and medical*

director review the assessment and make determination of what actions are needed to manage the risk.

Most organizations commented that patient safety is addressed generically in quality management training for staff. All companies provide training of some kind on “quality issues.” Only a third, however, specifically addressed patient safety or discussed applicability of patient safety considerations to the UM environment. Additional companies provide training on quality indicators and how to manage cases that deviate from quality norms. As noted by the NQF and others, use of systematic training based on written policies and procedures has the potential to systematize interpretation of clinical indicators as well as application of patient safety management protocols.

Patient Safety Practice: *One company offers monthly CEU courses on clinical topics. Annually, the company conducts a patient safety seminar to discuss major medical errors in the US, company trends, and safety “hot topics.” Presenters talk about common mistakes and how to identify and discuss errors with patients and providers. The company’s legal department is involved to discuss risk management components.*

Findings: Data Availability to Support Patient Safety Initiatives

- Diagnosis and procedure codes are collected and coded in 100 percent of companies.
- Narrative formats are most often used for laboratory and medication data.
- Commercial UM software is based on data entered through “drop down” selection options, which is then “hard coded” and retrievable for analysis.

Discussion: As shown in Table 6, UM companies systematically collect and code primary diagnosis and procedure data necessary to conduct a pre-certification clinical review. Companies are able to sort and analyze coded data by diagnosis and procedure for reporting on admissions and length of stay. Data collected for other UM decisions – concurrent review and discharge planning, is often based on non-standardized protocols, and is often collected in narrative notes. Narrative information, while qualitatively rich, is difficult to use for

Table 6 – Safety Related Data	
Collection of Data to Support Patient Safety	
Type of data	% of respondents that regularly collect data
Diagnosis codes	100
Procedure codes	100
Physician/Facility	90
Medication	9*
Laboratory	9*
Length of stay	82
UM data can be linked to claims	82**
*Data is routinely collected but contained in narrative notes;	
** for at least some clients	

analyzing trends.

UM companies also do not routinely collect medication or laboratory data. Information in these categories is collected only if it is directly relevant to the review. If collected, it is generally in narrative notes, where it cannot conveniently be retrieved for analysis. Companies minimize the amount of data they routinely collect in order to increase efficiency of staff time, reduce burden on the requesting provider, and to comply with accreditation and regulatory requirements that require companies to collect only necessary data.

***Patient Safety Practice:** All of the commercial software systems reviewed by URAC “hard code” most data entry for UM. Hard coding supports enhanced analysis and reporting capability by the software user. Hard coded data (e.g. items selected from a drop list), can be manipulated, analyzed and retrieved for reporting and trending. Conversely, IT systems cannot sort narrative information, which is mostly lost to further quantitative analysis. Commercial IT systems are also designed to interface with pharmacy benefits managers (PBMs) as a source of outpatient medication information.*

Finding: Flags and Triggers

- 47% have flags or triggers in the UM information system that indicate need to investigate a case further.
- 58% of companies track or flag “sentinel events.”

Discussion: Many companies report having automated protocols that trigger additional review of a case. Companies defined their own conditions for flagging cases. Flags are generic, and may indicate either a quality or a utilization concern. The most common trigger is a request for extended length of stay (LOS) in an inpatient facility. See Table 7 for a list of other common triggers. Companies that do not have automated flags rely on registered nurses to flag cases that “don’t seem right.” A few companies configured their systems to flag for certain quality indicators in addition to generic indicators such as LOS. For example, one company flags cases in which codes for hospital-acquired infection are entered. In addition to triggering quality reviews, triggers are often used to alert staff to the potential for increased utilization, or need for a CM referral.

Table 7 – Triggers	
Common Triggers for Additional Case Review	
•	Unexpected mortality
•	Unusual LOS
•	Unexpected transfer to higher intensity of care
•	Unexpected readmission
•	Unexpected return to the operating room
•	Hospital acquired infection
•	Failure/delay in diagnostic testing

***Patient Safety Practice:** One company uses an “adverse events (AE) flag”*

that uses available data to automatically generate a reminder to clinical staff to take investigative action. The AE flag is a box that pops up on the UM system screen with a message for the UM nurse. The nurse is responsible for addressing the clinical circumstances identified by the flag with the patient's facility, physician or third party payer. The nurse can either address and dismiss the flag or take it up one level to the UM program physician. If the flag relates to a quality problem with a network physician or facility, the data goes on monthly report for physician review. The UM program physician determines what corrective action should be taken by practicing physician or facility. The UM physician interacts with community providers as necessary to resolve the quality concern, and tracks the action. The company reports to clients by provider or facility with a recommendation on future contracting decisions.

Findings: Patterns of Care

- 79% compare proposed or actual treatment to medical review guidelines.

Discussion: As several on URAC's expert panel noted, assessment of treatment patterns may be a fruitful area for UM patient safety activities. Most companies reported in interviews that they compare actual utilization to expected utilization for given diagnostic and procedure specifications. However, few organizations reported that they compare actual treatment to evidence-based guidelines recommended for the condition. Companies reported that they may identify a delay in treatment or diagnostic testing, but only if the delay resulted in overall higher utilization. UM programs are positioned to compare procedure data with diagnosis data to identify overuse, underuse or delays in care.

***Patient Safety Practice:** Some UM companies specialize in specific clinical areas, for example, neonatal care, or transplants. One specialized neonatal care UM company uses neonatologist physicians and pediatric intensive care unit nurses to manage premature infants in the ICU. Working off of specialized guidelines, the clinical staff tracks key indicators of infant physiologic development to ensure that appropriate care is provided at each stage of development. The company uses specialized neonatal guidelines to identify delays in treatment or testing, failure to monitor key indicators, and other safety indicators for fragile newborns. The company tracks quality and safety indicators by facility and reports aggregate information to client health plans.*

Findings: Medication Safety

- 9% of companies routinely obtain medication data during the UM review.

- 27% of UM companies collect medication data on some cases and use “hard coded” fields for medication names.
- All companies occasionally collect medication data where clinically necessary, but do so in narrative note fields.

Discussion: Medication review is not typically considered part of a UM review. For this reason, UM nurses typically do not list all medications taken by the patient. Nurses collect data only on drugs that directly impact the medical condition under review, and rarely enter drug dosages information. UM programs thus have limited capacity to identify adverse drug to drug interactions and dosage related issues. Several UM programs reported that they occasionally interface UM data with claims and pharmacy benefit manager (PBM) data systems at the request of a customer. UM data in combination with PBM data can provide information on outpatient management of selected diseases.

***Patient Safety Practice:** One company routinely assesses Coumadin use prior to hospital admission for patients admitted for atrial fibrillation. Anti-coagulant therapy for diagnosed atrial fibrillation is considered to be standard therapy, and lack of anti-coagulants may represent a failure in outpatient management.*

Findings: Clinical and Safety Assessments

- 95% of UM companies conduct discharge planning for inpatient cases.

Discussion: Many UM opinion leaders report that a key role for UM staff is screening and referring clinically high risk cases to other medical management programs such as CM and DM. In current practice, most companies use a combination of diagnosis code, case cost, and individual patient assessment to determine which cases should be referred to CM and DM. Few companies used standardized UM assessment protocols to determine patient safety risk and generate referrals.

Some companies use flags to signal the need for additional clinical assessment on a case. Other companies report that nurses use clinical judgment to determine if cases are high risk. For example, behavioral health UM companies routinely conduct a risk screen on potential for harm to self or others during the course of discharge planning. If a staff member enters a risk factor, the IT system automatically prompts the staff member to follow up with specific action.

***Patient Safety Practice:** Several companies had pilot projects or targeted clinical initiatives to improve management of selected clinical conditions. They used standardized policies and procedures for flagging cases, managing*

an assessment and reporting the results internally and externally. For example, one UM company programmed the UM IT system to issue a “stop and review” flag for all patients being discharged after a myocardial infarction (MI). The nurse requests additional information on plans for beta blocker administration prior to closing the file, and can refer the case for additional management if the patient care does not meet evidence-based guidelines.

In interviews, discharge planning was often mentioned as a promising venue for proactive assessments of patient safety risks. Safety issues touched upon in the discharge planning process include medication management practices, home safety, plans for treatment follow up, and availability of home medical equipment. The majority of UM organizations conduct some type of risk assessment in the course of discharge planning. Many, but not all companies use a discharge planning form to guide assessment. However, discharge assessment protocols are not standardized to address safety concerns. Companies rely on clinical judgment of the nursing staff to identify potential patient safety risks. No company interviewed had a standard discharge planning protocol that systematically evaluated safety concerns. Many UM leaders commented that standard assessment protocols could be an effective tool for systematically evaluating safety issues through a UM process. They also noted that most UM programs have mechanisms to address identified safety concerns by referring patients to DM or CM.

Findings: Information Management Processes

- 64% of companies interviewed use “homegrown” information management systems in the UM process.
- 55% use commercial medical review criteria; the remainder have developed their own medical management criteria.

Discussion: A significant proportion of UM companies use their own proprietary information management systems and software for UM decision-making. Some of these systems have powerful analytic and reporting capabilities and are interfaced with other systems such as claims management. All of the commercial software systems reviewed by URAC had capability to interface with other data systems in health plans, and are highly customizable by users. Software developers noted that customization enables UM programs to establish their own criteria for flags and triggers and to develop customized reports. This customization feature is valued by UM programs, but also results in a high level of variability in safety flags and reports among UM programs. In the future it may be possible to define standard safety flags based on NQF or other consensus standards that could be programmed into commercial software.

Medical review criteria are embedded in or used with UM software programs. Almost two-thirds of companies use either or both Milliman or InterQual review criteria, while the remainder develop their own criteria. Commercial medical review criteria include care recommendations designed to reduce errors of omission and commission. Most UM companies customize how they use medical review criteria, and many companies do not use all of the features in the criteria. One patient safety strategy may be to incorporate explicit patient safety recommendations in the review criteria, and train staff to maximize safety applications embedded in the guidelines.

***Patient Safety Practice:** Commercial review criteria include recommendations for care management consistent with evidence based guidelines. These could be used as a checklist by clinical staff conducting precertification or concurrent reviews for selected clinical conditions. For example the Milliman Care Guidelines™ identify opportunities to implement and follow best practices for patients admitted with cerebral thrombosis (stroke) who are not independent in ambulation. Milliman's recommendations (bulleted below) could be used as a clinical checklist could help avoid adverse outcomes relating to delays in care, error, or underutilization:*

- Possible thrombolysis
- Neuro checks
- Possible echocardiogram and carotid Doppler
- Possible use of stroke protocol
- Swallowing test completed
- Neurologic consultation
- Therapy needs evaluation (physical, occupational or speech as indicated)
- DVT prophylaxis
- Antiplatelet therapy
- Blood pressure controlled

Findings: Follow up and Management of Patient Safety Alerts

- 73% review some or all quality concerns through a Quality Committee.
- 47% of UM programs have capability to counsel community providers regarding quality concerns.

Discussion: Companies use various systems for responding identified clinical quality problems. Most companies report that UM nurses are trained to alert a supervisor or medical director if they believe that a case indicates a quality concern. In general, front line nurses are responsible for initiating a process to address a patient safety concern. Occasionally this process is automated. In some companies the triggers listed in Table 7 generate a flag to a supervisor or medical

director for case review. More often if the system produces a flag, the first level nurse makes an initial determination regarding management of the case. In most companies, there are no set criteria for initiating a higher level review. Nurses and medical directors have significant discretion in how they evaluate cases, intervene, and refer into the quality management process.

A flag or higher level review may be solely for making a medical necessity determination and does not necessarily trigger a quality or safety review. For example, in one company, readmissions within a specified time frame result in an electronic referral of the case to a medical director for review and approval. Unexpected readmissions may indicate a quality problem, including errors in treatment or discharge planning. In the initial review by the medical director however, flagged cases are reviewed to determine medical necessity of the interventions. Medical directors do not review cases to identify causality or patterns. Several companies noted that their role is simply to determine medical appropriateness of subsequent care, not to evaluate for adverse events or errors.

Once cases are disposed of by a clinician, most UM companies have a process for aggregating cases to examine trends. As noted, 73% of UM programs have a process for reviewing cases through a quality improvement (QI) committee. However, the process by which cases are referred to the quality committee varies by company, as does the role of the QI committee in investigating and reporting on safety concerns. Some companies initiate a case review by the QI committee for every case referred to a medical director. In other companies, cases are reported to the QI committee at the discretion of clinical staff. These companies had no specific criteria for initiating a case review or reporting cases to the QI committee. It may be of value for UM companies to systematize referral criteria in order to gain a better understanding of safety trends.

QI committees are also often charged with investigating issues referred to the committee. For example, many companies have a process to review cases with an unexpectedly long length of stay (LOS). In the surveyed companies QI committees are rarely charged with analysis of UM-identified events to identify patient safety problems or to determine “root cause.” Only a few companies systematically track the cause of the extended LOS (such as nosocomial infection) that could be the basis of a UM-driven quality initiative. The process by which QI committees report back to staff and clients after investigation and review is also variable. Some companies only review the data internally, while some report to customers and/or to facilities and providers. Several UM representatives commented that better communications between QI and UM could enhance UM’s systematic recognition and response to safety concerns.

Patient Safety Practice: *One company uses a systematic “quality module” to manage cases. The quality module flags a case for further action if certain conditions are met, e.g. readmit in certain number of days, complication,*

potential errors. At certain interval, quality assurance (QA) nurses review the flagged cases. QA nurses may request medical records if necessary, or close cases if there are no clinical or administrative quality issue. If the nurse determines there is a quality of care problem, a physician will review for quality (not UR compliance). If the physician confirms a problem, the case is presented to the quality committee. Options for action may include a letter to the attending physician or facility, or in rare instances of severe or immediate danger, the company can terminate the provider from the network. The company tracks events and issues trends reports to customers on participating network facilities and providers.

Findings: Reporting

- 32% report quality concerns to facilities or customers.
- 53% have channeling or referral capability.

Discussion: UM organizations have relationships with payers – either health plans, third party administrators (TPAs), insurance companies, or self insured employers, and could potentially provide them with systematic quality information to support contracting decisions. UM programs affiliated with networks such as PPOs and health plans often report severe quality concerns on a case by case basis to the credentialing/contracting unit of the organization. Most were not able to articulate how this information factors into subsequent decisions. Stand-alone UM companies (e.g. those not operationally linked to a provider network) often did not take any action with the information.

No company routinely reported patient safety indicators to their customers, although a few reported specific incidents. While some organizations did consider legal constraints as a factor in reporting on individual providers, most believe that they have authority to report patient safety events to the payers. UM companies that do not report safety issues to payers indicate that they presume payers will not act upon the information in contracting decisions. No UM company mentioned that they have a process to report quality or safety incidents to professional licensure or accrediting bodies.

***Patient Safety Practice:** In quality-based channeling or referral programs, a UM organization contacted for pre-certification of specified procedures, for example, cardiac bypass or complex organ transplants, may recommend a Center of Excellence facility. A Center of Excellence is a high volume / high experience facility with a track record of good outcomes over time. In the future UM programs, in collaboration with payers, could be used to support payers that have*

adopted the Leapfrog Group's evidence-based hospital referral standard.

5.2 Barriers to UM Involvement in Patient Safety

Not all industry leaders agree that there is a clear role for UM programs in promoting patient safety. Some of the concerns raised included:

- UM companies have limited access to pharmacy, claims and enrollment data, unless the payer chooses to integrate the data system. In addition, as described in earlier sections, the narrative format currently used for UM data entry presents challenges to managing data and analyzing for trends.
- UM's potential safety impact depends partially on the UM program's network affiliation and volume of reviews. UM companies that have a small volume of reviews with any one provider or facility, or that have no influence on contracting decisions, may have little leverage to negotiate or drive changes.
- Customers have not clearly articulated specific patient safety goals for UM. While customers are interested in patient safety, they are more likely to request a generic quality improvement plan than a patient safety plan.
- Customers may not be willing to pay for the increased intensity of UM reviews that would be necessitated in greater vigilance for patient safety concerns. UM companies report that cost control is driving customer behavior more intensively than patient safety.
- There may be costs to increased identification and management of patient safety problems. Use of triggering systems may drive greater use of resources through "false positives" and the costs of investigating cases.
- Providers may resist more oversight from or clinical interface with UM organizations.
- The patient safety agenda for UM is not fully articulated. Industry leaders are not clear on the scope of UM's involvement or the utility of UM patient safety activities.

In spite of identified barriers, many UM leaders felt that there would be value in systematizing efforts already in place to manage patient safety. In addition, they supported additional research to map out a specific UM role to promote patient safety and to evaluate the return on investment for UM efforts.

Implications for UM:

- UM initiatives in patient safety must be consistent with customer demands for price efficiency and value of UM. It may be most effective for UM to build on existing IT and human resources.
 - UM organizations could implement more systematic approaches to patient safety by developing policies and procedures for systematic management of safety concerns, and for feedback and reporting on disposition of cases.
 - UM organizations have information technology and quality management systems in place that could be deployed to promote patient safety. These assets could be enhanced through specific indicators and criteria relating to patient safety.
 - UM software developers and medical review criteria developers could collaborate with the industry to identify standard, universal safety indicators and prompts for patient safety based on NQF, IHI, or JCAHO indicators. These could be embedded in commercial systems and used to upgrade proprietary systems.
 - The UM industry could develop and implement standardized assessment protocols tailored for each stage of the review process to address patient safety concerns and assess cases for errors of omission and commission.
-

6.0 The Future for UM in Defining a Role in Patient Safety

Each stage of the UM process offers opportunities for data collection and clinical interface to promote patient safety. As the URAC interviews demonstrated, UM organizations are responding to quality concerns, but have not developed systems that enable them to monitor data and respond systematically. Opportunities for UM lie in prioritizing clinical domains where UM can impact safety, developing criteria and policies for action, and systematically implementing safety programs. Table 8 illustrates how UM can interface with hospitals and providers at various stages of the UM process to implement NQF and the IHI adverse event triggers. The role of UM would vary according to payer demands and the existence of contractual relationships.

- = Is applicable and can be implemented within the UM organizations framework with an action plan
- ▣ = Is somewhat applicable and can be partially implemented within the UM organizations framework
- = Is not applicable to UM organization's scope of practice

Table 8 - Framework for UM Organizations in Assessing Safety Practices

Safety Practice	Pre-cert Process	Concurrent-Review	Retrospect-Review	Case Management	Reporting
Reduce healthcare errors by creating a culture of safety. Prioritize patient safety events & situations that should be reported analyzed at reported (NQF)	■	■	■	■	■
For specified elective, high-procedures or treatments refer patients to hospitals likely to produce the best outcomes (NQF)	▣	□	□	▣	▣
All patients in an medical or surgical ICU should be managed or co-managed by an intensivist board certified in critical medicine (NQF)	□	■	□	▣	▣
Evaluate patients undergoing elective survey for risk of cardiac ischemia and provide prophylactic beta-blockers to high-risk patients (NQF)	■	■	▣	▣	■
Encourage each adult to designate a healthcare advocate	□	□	□	■	▣
Over sedation/Lethargy/Hypotension (IHI trigger)	□	■	▣	□	▣
Radiologic tests for clot or emboli (IHI trigger)	■	■	■	▣	■
Re-admission to the ICU (IHI trigger)	□	■	■	□	■

6.1 Action for Future Research and Development

In March, 2003, URAC convened leaders from UM organizations to review initial project findings. The group determined that no UM practices yet have enough evidence-base to merit a recommendation for universal adoption. However, they noted that many activities appear intuitively promising. This study highlighted many promising strategies being used by UM programs to promote patient safety. These examples may be the foundation for developing consensus on UM practices that provide the value and return to become system-wide UM patient safety initiatives. UM may be well positioned to take a leadership role in promoting patient safety to customers and demonstrating the value of those activities.

Industry leaders suggested a follow up agenda that could provide a template for better understanding and evaluating the cost and benefits of enhancing UM's role in promoting patient safety. They noted that future activity must be predicated on establishing "proof of concept" regarding the importance of UM involvement and UM's influence on patient safety. They recommended that the industry conduct high level mapping to determine where investments in UM will show returns in patient care management and outcomes improvement. They also recommended mapping UM practices with the National Quality Forum's safe practices and serious reportable events, to determine how UM can support these consensus practices.

Once a clear role for UM has been established, industry leaders recommended a number of strategies that could be adopted to assist UM in systematically supporting a patient safety agenda. URAC used the National Quality Forum's (NQF) safe practices categories as a framework organizing recommendations for UM involvement in patient safety. Recommendations for the UM industry include the following:

Improving Patient Safety by Creating a Culture of Safety:

- Enhance patient safety-specific policies, procedures and training. Train nurses and other clinical staff on standardized policies and procedures for recognizing and managing patient safety concerns in the UM context. The systems approach would also include building more systematic feedback loops between quality management (QM) and UM and contracting units.
- Collaborate with medical review criteria companies such as InterQual and Milliman to improve patient safety screening functionality embedded in clinical review criteria.
- Develop partnerships between UM organizations and training and education organizations such as the American Board of Quality Assurance and Utilization

Review Professionals (ABQAURP), the American Association of Health Plans (AAHP) and the Health Insurance Association of America (HIAA) to develop a patient safety education module applicable to UM. Develop relationships between UM and medical specialty societies on how UM could promote the specialty society best practices.

- On a national level, promote UM representation on influential patient safety groups and in the legislature.
- Determine if there is a role for UM companies to play in reporting adverse events to state licensure and certification programs.

Improving Patient Safety by Matching Healthcare Needs with Service Delivery Capability:

- Collaborate with purchasers in adopting Leapfrog Group evidence-based hospital referral guidelines to channel patients to facilities with a superior level of quality.
- Maximize value of care management guidelines through care management processes of UM program clinicians. For example, follow recommendations for consultations, evaluations, and follow-up for specified clinical conditions and criteria.
- Promote continuity of care by developing patient safety criteria for medical management referrals and developing automated processes for referring patients to CM and DM programs.
- Implement case identification tools for UM that trigger standardized clinical and safety assessment protocols. Standardized assessment protocols could enhance overall management and patient safety capability in areas such as discharge planning, level of care reviews, and clinical management of specific high risk conditions.

Improving Patient Safety by Facilitating Information Transfer and Clear Communication:

- Maximize capability of UM IT infrastructure to support systematic safety-enhancing decision-making and communications. Use the alerts, triggers and indicators already built in to many UM applications in designing a patient safety program.
- Maximize value of information systems capability to track and flag safety related deviations from evidence-based care guidelines. Define specific criteria for deviations from evidence-based practice that trigger case review.

- Optimize the communications workflow between UM program and external providers through enhanced IT infrastructure and web-based communications.
- Identify selected UM data elements for universal hard coding on the basis of relevance to patient safety.
- Explore the role of UM companies in carrying out the “first alert” role in flagging sentinel events such as readmissions after selected procedures.

Improving Patient Safety by Adopting Safe Practices in Specific Clinical Settings or for Specific Processes of Care:

- Maximize the risk management functionality of UM, particularly for high risk diagnoses and high risk situations, such as transfers in level of care. Conduct a “risk management” review for every UM decision to reduce errors relating to patterns of care, underutilization or over-utilization.
- Develop industry consensus on high priority clinical conditions that have a potential role for UM and test the concept of UM involvement through focused, experimental QI studies. The studies could use UM to identify and manage specific safety related clinical events, for example, infection-related inpatient admissions following outpatient surgery.

Improving Patient Safety by Increasing Safe Medication Use:

- Enhance data links to between UM programs and pharmacy benefit manager data to better understand patient medication compliance and mitigate its effect on utilization.

6.2 Conclusion

UM programs have powerful data management capabilities and rich sources of clinical information. They also have trained clinical staff already positioned in an oversight role. To date, UM programs have not specifically embraced a role in promoting patient safety. Additional research is needed to assess where UM interventions can have the most impact, and to determine the return on investment for UM involvement. Using the resources available to them, however, UM programs have the opportunity to take a more pro-active role in identifying potential safety concerns, systematically investigating concerns, and reporting/tracking events for further follow up. To create a “culture of safety,” UM organizations could adopt systematic policies and procedures to support patient safety. The industry as a whole could collaborate to standardize assessment and data collection for at least selected high priority conditions.

Appendix I

The Utilization Management Process

Utilization management is often part of a benefit design package, but is largely unrecognized by patients. UM is available to payers - private insurers, third-party administrators (TPA) or employers through one of three avenues. UM can be provided by “stand-alone” UM companies, many of which also offer a suite of medical management services. It is also frequently a component or program area of a health plan or PPO. Some employers develop their own UM programs. Payers may delegate UM for different aspects of health care to different organizations. For example, UM for behavioral health, pharmacy services and medical review is often provided by separate entities.

Characteristics of the UM process are as follows:

1. *Level of UM Oversight Provided* - The payer determines how "tightly" UM should be enforced. Purchasers can request that the UM organization handle ambiguous cases by routinely authorizing services (“loosely managed”), or they can request that the UM program adhere very strictly to criteria (“tightly managed”).
2. *Provider Notification of Requirements* – Providers are notified of UM requirements in the provider manual and through information provided on health plan enrollee identification cards. Providers or their staff usually initiate UM encounters, although occasionally patients call the UM company directly.
3. *Initiation of Services* – A provider, their designate, facility, or sometimes the patient, initiates contact with the UM company. A UM staff member, usually a nurse, records demographic, subscriber information and may also request initial clinical information such as diagnosis, previous findings or medical history. Most companies collect as little information as possible to make a determination, in order to expedite the review.
4. *The Review Process* – A UM program nurse compares clinical information supplied by the provider to the UM system’s explicit criteria standards. Utilization criteria can be based upon clinical guidelines (e.g., length-of-stay (LOS) guidelines, appropriateness guidelines) or other algorithms that include the intensity of clinical need, severity of clinical condition, and a given diagnosis.³⁴ If the patient meets the criteria, the service is approved. Conversely, if the case does not meet criteria, the service may be denied as “not medically indicated.” A recent study indicated that

more denials are made because the service is not a covered benefit rather than because of medical necessity.³⁵ Medical necessity and benefit coverage decisions are often separate processes.

5. *Denial* – According to URAC standards, a nurse reviewer is authorized to approve procedures using nationally recognized criteria. If a case does not meet criteria, a physician must review it and make a decision to approve or deny the procedure. In URAC accredited UM programs, the patient's attending physician must be notified if the case is not approved and must be given the option to appeal the decision. Ultimately, a physician with the same expertise (e.g. subspecialty training) as the requesting physician renders a decision. Several states also regulate notification timelines and qualifications of UM decision-makers. Patients have a right to appeal the UM decision. In several states and for Medicare+Choice programs, patients also have the right to an independent review of a UM denial through an external review organization.
6. *Continued Care Review* – Concurrent review occurs for patients requiring inpatient facility care on a continuing basis. The process is accomplished by comparing the patient's severity of illness to established review criteria with additional days approved. Again, decisions are typically based on externally developed review criteria such as InterQual.
7. *Use of Criteria in Medical Necessity Decisions* – A number of services are available to assist UM organizations in determining medical review decisions. ECRI, Hayes and Blue Cross and Blue Shield's Technology Evaluation Center (TEC) conduct technology assessments to assist organizations in developing medical policies that determine coverage of medically necessary services. These companies critically review the strength of the evidence in determining their recommendations for coverage. Commercial medical review criteria are available to assist UM programs in comparing clinical findings to expected utilization levels. Milliman and InterQual are the two major suppliers of commercial medical review criteria.

Appendix II

UM’s Role in Patient Safety – A Hypothetical Case Study

In the broadest sense, UM organizations are in a unique position to intervene on behalf of the patient on multiple fronts. The UM organization cannot only identify adverse events, they can reinforce safe patient practices. The following case study illustrates this point. The case study is a 73-year-old male with coronary artery disease (CAD) whose physician is electively requesting coronary artery bypass surgery (CABG).

Table 9 - Case Study Analysis

PROCESS	STEP(S) IN PROCESS	IMPACT OF TECHNOLOGY	COMMENTS
Pre-certification Process	<ul style="list-style-type: none"> ▪ The InterQual criteria are reviewed to confirm that the patient is a surgical candidate. ▪ Both the surgeon and facility are reviewed prior to approval to see if they meet the volume indicators for high-risk procedures ▪ Once the procedure is approved, the system automatically generates patient information regarding informed consent and the statistical relationship between patient survival and procedure volume 	<ul style="list-style-type: none"> ▪ The InterQual criteria is embedded into the UM system ▪ These data is linked to the UM software application via state, facility or public domain databases. 	<ul style="list-style-type: none"> ▪ Monitoring for overuse and underuse of care ▪ Leapfrog and Nfq safe practice recommendations ▪ NQF safe practice recommendations
Concurrent Review Process	<ul style="list-style-type: none"> ▪ While the patient is in the ICU, the UM nurse verifies that a critical care attending physician is also following the patient ▪ The patient is transferred out of the intensive care unit after day 5 due to excessive bleeding and returns to the operating room ▪ The following day the patient is given an excessive amount of pain medication meant for another patient and must be given Narcan®. ▪ On day 7, the patient’s leg wound is red, edematous and hot to the touch. The patient is started on antibiotics or a wound 	<ul style="list-style-type: none"> ▪ The UM system automatically prompts the UM nurse to ask this question. ▪ The data is entered in the UM system for retrospective trending. ▪ The data is entered in the UM system for retrospective trending. ▪ The data is entered in the UM system for retrospective trending. 	<ul style="list-style-type: none"> ▪ Leapfrog and NQF safe practices indicator ▪ IHI trigger - drop in Hct greater than 4 points with harm classified as Category F: <i>“Contributed to or resulted in temporary harm to the patients and required re-admission to the ICU or prolonged hospitalization either in the ICU or step down units”</i>. ▪ IHI trigger administration of Narcan® with harm classified as Category E: <i>“Contributed to or resulted in temporary harm to the patient and required intervention.”</i> The event is recorded in

PROCESS	STEP(s) IN PROCESS	IMPACT OF TECHNOLOGY	COMMENTS
	infection.		the UM system under the Adverse Drug Event flag.
Discharge Planning Process	<ul style="list-style-type: none"> ▪ The physician anticipates that the patient will need IV antibiotics for a total of two weeks. The patient will require IV antibiotics for a few more days. The patient lives alone in a rural community, requires dressing changes, and continues to have impaired mobility with unsteady gait from leg pain. ▪ The UM nurse intervenes by coordinating home care, DME, and follow-up visits with the 	<ul style="list-style-type: none"> ▪ The UM system's on-line discharge safety assessment criteria automatically flags the patient as high-risk. ▪ UM application faxes the referrals to the appropriate providers 	
Follow-up UM Patient Safety Operations		<ul style="list-style-type: none"> ▪ The adverse events flagged in the system are automatically added to database and incorporated into the monthly report of trended data for QI Committee ▪ The use of Narcan® was the third occurrence in this facility during the past two months. The UM organization subsequently follows up with the hospital ▪ The post-operative bleeding adverse event will be profiled in the system. If the provider's rate exceeds the benchmark, this will be communicated to the physician 	<ul style="list-style-type: none"> ▪ Summary aggregate reports will be shared with the purchaser annually addressing patient safety practices. The UM organization may proactively recommend channeling subscribers to facilities or providers based on data shared with the purchaser

Appendix III

Evaluation of UM Information Technology System Capabilities

Introduction

At the heart of a patient safety program is the information technology infrastructure to support data collection, monitoring and reporting capabilities. This section profiles the state of commercial information technology (IT) software applications currently on the market. URAC received product demonstrations from four companies addressing the following system capabilities:

- System compatibility, interface, and customization
- Data entry protocols and processes
- Use of systems alerts and standardized assessment protocols for UM processes;
- Adverse events “flagging” and tracking in the areas of diagnosis, treatment, under-utilization, over-utilization, and disease specific care pathways;
- Reporting functions

Many “home grown” IT systems have similar functionalities as commercial programs. The demonstrations provided a better understanding of UM IT system functionality, and assisted in analyzing the respective roles of data systems, data entry, and systems function in facilitating patient safety activities. All of these components can be customized by the end user in both commercial and home grown systems. The IT demonstrations illustrated the resounding importance of IT in developing UM systems approaches to patient safety.

UM software companies often provide a suite of medical management system offerings. UM software is the most frequently co-marketed with DM and CM programs. Some companies also offer predictive modeling software applications as an add-on module for organizations with access to claims data.

Most of the UM software application companies indicate that “stand-alone” UM organizations (companies not associated with a health plan, provider organization or hospital) represent only a small fraction of their business. The majority of UM organizations contacted use internally developed applications or a combination of internal and third-party software programs. The third-party modules most frequently purchased include medical review criteria programs (i.e. InterQual or Milliman), technology assessment software (i.e. ECRI or TEC), clinical practice guidelines and clinical pathway software. Likewise, UM software companies use these third-party modules as well often integrating clinical practice guidelines and medical review criteria

into their own applications. All UM software companies have capability to incorporate or link most third-party medical review applications as well as internally developed criteria into their application.

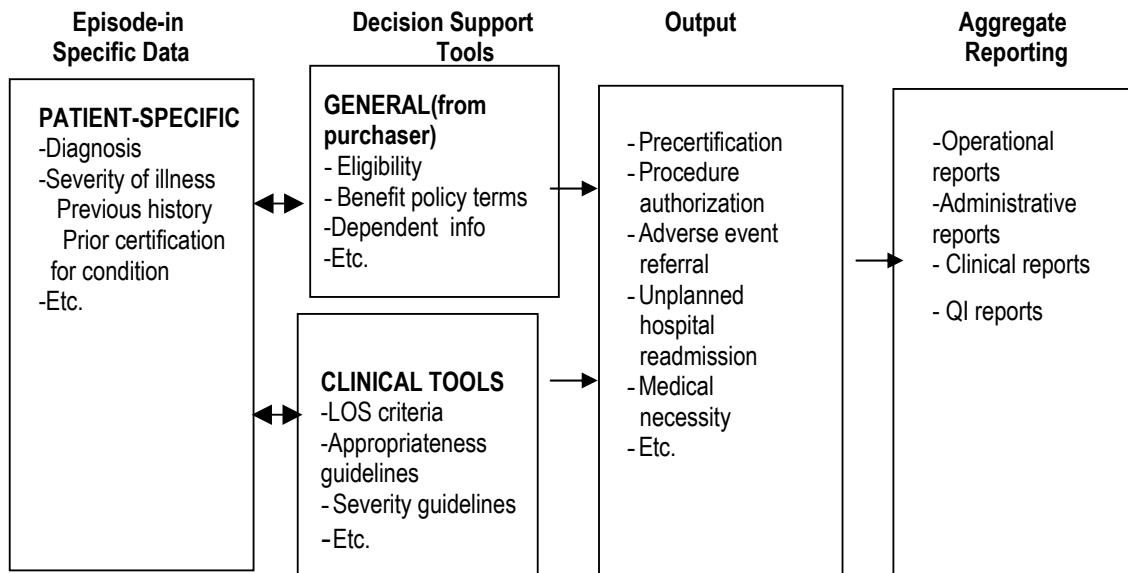
Technology Overview

Many systems run on UNIX. Database management systems include Oracle or SQL. Programs are written in C+/C++, Tcl, Visual Basic or PowerBuilder. On the client side, the systems can typically run on any of the following platforms: Microsoft’s Windows 95, Windows 98, Windows 2000, or Windows NT. Many systems are compliant with Microsoft’s Windows, HL7, OLE/ActiveX, and some are POSIX-compliant. Either the entire or part of the user interface can be web-based. Desktop functionality is very similar to Windows products such as Word, Excel or Outlook. Some systems use these programs or have exporting functionality in generating reports, ad-hoc queries, notifications, and correspondence. As noted, most interface or provide medical review criteria within their program. All companies report being compliant with HIPAA regulations.

Typical Data Elements in Utilization Management IT Applications

UM software applications are patient-centric. Data is stored and linked to a given patient. Each patient can have multiple encounters also referred to as episodes. It is possible to track pre-certifications including disposition; concurrent review documentation; number of continuing days and procedure authorizations; and in some cases appeals are also incorporated into the system. Figure 1 shows a diagram of the data elements stored, collected and reported.

Figure 1. Data Flow of Elements Collected in Utilization Management IT Applications



Most data fields are “drop-down” selections whereby the user chooses from a list of allowable options. Minimal typing (“free-text”) is allowed within the system. It is preferred to have very little free-text so that transactions are consistently entered into the system thereby allowing data aggregation for report generation. Concurrent review notes and physician contact information is usually a free-text entry.

While not all companies provide all options, there are some standard components available among the commercial UM software companies. These include:

- Patient Profile History – At the patient level data is stored and linked within the system to display a chronological profile for each patient. This profile includes pre-certifications, authorization history, admissions and referrals, concurrent review notes, diagnoses, procedures, clinical review determinations and to some extent physicians providing care. This functionality is important in enabling UM organizations to identify patient safety issues across the continuum of care.
- Subscriber, Dependent and Benefit Policy Terms Tables – This information is usually transmitted by the purchaser and is updated from time to time. The UM and CM organizations may update this data in their own system as well.
- On-line Eligibility Verification – Many UM companies receive periodic updates of enrollee eligibility data. In some cases, this may be entirely handled by the health plan or purchaser prior to sending the referral to the UM company.
- The following look-up tables are typically stored within the application to aid in data entry. Most modules can be interchanged for internally developed tables or modified to some degree as necessary.
 - Provider Registry Tables – Provider tables typically include name, contact information, and subspecialty data for physicians, sometimes additional profile information is housed within the system such as network related data.
 - Medical Review Criteria (third-party or organization specific) - Sometimes this is directly integrated and accessible within the UM application or may be a standalone package whereby the data are looked-up and then recorded manually.
 - Clinical Practice Guidelines – Some interface with third-party packages. Again, all companies will work with the UM organization to incorporate whatever guidelines they may choose; however, most are already enabled to work with the most common guideline and evidenced-based packages on the market.
 - Length of Stay Assessment (LOS) Criteria Tables – LOS criteria can be separate or embedded into the medical review criteria application. The

LOS criteria could serve as a potential adverse event indicator since an AE may lengthen an inpatient stay or cause a patient to move to a higher level of care (i.e. intensive care unit).

- Diagnosis and Procedure Codes – All companies contacted have standard coding systems as part of their application platform. Standard coding programs typically include at least ICD-9 diagnosis and procedure codes with descriptions, CPT codes, DRG codes, and DSM-IV codes for behavioral health. Diagnosis codes can provide assistance in identifying adverse events. There are specific ICD-9 codes, which describe procedure and medication-related complications. ICD-9 codes can be incorporated in screening algorithms to establish temporal relationships to identify adverse events. For instance, the application could assist in screening patients admitted with fever or other signs of infection following a surgical procedure.
- Medication Tables – Several software applications also supply NDC drug code tables. Many companies also supply or can interface with drug-drug interaction software. However, most UM organizations find NDC codes too cumbersome to use in everyday practice. Generally, UM staff use a modified medication table or free-text entries into the system.

Typical UM Application Functional System Capabilities

Not only is it important how data is collected and stored in a UM system, the functional capabilities (i.e. features) play an important role in patient safety. UM applications use the information contained in the data fields listed in section 7.3 to automatically perform several functions. Most UM vendors interviewed support the majority of functions described in this section.

- Record Linking Functionally – All UM applications have this functionality embedded within their system to a lesser or greater extent. In practice, the system is able to determine overuse of the emergency room for a given patient by comparing the number of and reasons for encounters over a designated period of time. Another example of this functionality would be to identify unplanned readmissions to the hospital or to track procedure-related adverse events by physician. In order to gather data for profiling, the application must be able to link procedures, patients and providers.
- Decision Support Tools – these tools include the data necessary to make care determinations. Examples include medical review criteria, length of stay data, evidence-based guidelines and technology assessment tools. All UM applications either support these functions through third-party programs and/or have their own

proprietary tools embedded within the system. Patient safety could be embedded within these tools as well.

- **Workflow Management Tools** – This category encompasses a wide range of system functionality. These tools provide operational workflow support at the individual and departmental level. Some examples of workflow processes include: automation of review assignments; automation of scheduling for follow-up reviews; the generation of task lists, internal and external referrals, creation of “tickler” lists; generation of benefit advisory letters; and follow-up letters to providers.
- **Web-enhanced Tools for Providers** – A few vendors are offering this capability through the Internet, allowing providers to complete on-line authorizations, referrals, eligibility and benefits on-line referrals forms. For UM systems that have this capability, there may be opportunities to use this tool to enhance patient safety.
- **Linkage to Claims Data** - Some systems have this capability. This functionality provides powerful data mining opportunities to establish benchmarks, create provider profiling tools, and perform retrospective analyses in identifying patient safety concerns.

Adverse Events Flags

System capabilities for system alerts, flags and adverse event identification are key in supporting patient safety activities. Embedded within the UM software application is the ability to flag cases and generate alerts. The extent to which this process is automated varies across products. Most systems flag the following types of adverse events:

- Unplanned hospital readmission within X days (variable threshold)
- Unanticipated death
- Unplanned return to the operating room
- Post-operative infection
- Outpatient procedure requiring hospitalization

Flags are handled in two ways, they can be embedded into the system’s decision support logic and triggered automatically (i.e. hospital readmissions within X number of days) or manually initiated by the UM nurse by tagging the case. The superior method is for the application to flag the event and generate an alert without reliance on staff. All UM applications reviewed have a field dedicated to flagging patients with adverse events. The UM organization has the option of customizing the adverse events flagged. The use of automated flags is usually handled through

the reporting function. However, some systems can provide this functionality in real-time by displaying it on the screen.

System Reporting Capabilities

Commercial UM software applications reviewed have powerful and flexible reporting capabilities. Generally, any data relationships contained in the system can be presented in a report. All UM applications have tools to create ad-hoc queries with most applications basic enough to be created by non-programmer staff. More complex queries requiring the development of rules may need to be initially programmed by technical staff. Many systems support the ability of query results to be exported into Microsoft desktop applications such as Excel.

Reporting capabilities can be used by UM organizations to perform the following functions:

- Establish benchmarks by using historical data in profile patient safety issues
- Track and trend the types of patient safety issues identified at the purchaser, facility, provider and patient level
- Generate reports for other departments involved with patients safety such as QI or Risk Management Departments
- Monitor the outcome and resolution of patient safety issues through feedback
- Generate reports to purchasers and providers regarding patient safety concerns
- For some applications, the reporting system also generates reports enabling UM organizations to determine the financial impact of adverse events.

Implications for UM:

- Commercial UM software applications are flexible in design and will support a wide variety of patient safety practices.
 - Commercial manufacturers report that software is highly customizable. This results in great variability in function at the user level. Many users do not “enable” patient safety related fields, alerts, and decision support/workflow tools. This is largely thought to be an effort to increase efficiency by minimizing the number of screens managed by staff and the number of questions included in the UM review.
 - Many UM organizations use proprietary home grown IT systems, while other customize commercial programs. Thus, few UM organizations have standardized functionality to any degree. The use of many different systems with variable capabilities could be a barrier to implementing patient safety program standards across UM organizations.
 - Most IT systems interface with medical review criteria. It may be possible to embed patient safety factors into criteria to enhance patient safety in the UM process.
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- It is likely that many UM organizations are not using the UM system's patient safety features to their maximum capabilities. Opportunities exist to improve patient safety related data capture.
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Appendix IV UM Company Interview Protocol

Assessment of UM Program Capabilities to Identify and Manage Patient Safety Concerns

UM Company Interview Guide

Project Background:

Utilization management (UM) is a technique widely used in the health care industry to evaluate the necessity of medical interventions – particularly inpatient stays and surgical procedures. UM systems compare clinical information entered into the system against algorithms defining usual patterns of care to generate a recommendation on intensity of care. Experts have noted the potential for UM systems to contribute more to patient safety, but have reported that this is not routinely a part of UM programs.

URAC, a national leader in the field of accreditation of HMOs, PPOs, utilization and case management organizations, is currently sponsoring a research project on patient safety. The goal of the study is to better understand the use of information technology employed by UM organizations to identify potential patient safety problems and how they use this information in practice. As part of the research project, URAC will be interviewing both IT companies who develop UM and CM software and UM organizations. URAC is focusing on major vendors that currently serve the U.S. UM and CM market and have systems that are operational in multiple sites. The primary focus of the interview is to identify IT system capabilities of flagging patient safety problems or adverse events (AEs). Specific interview objectives are to:

- Gain a greater understanding of UM software capabilities
- Identify UM software commonly in use and examine customized or “vendor-embedded” triggers used to indicate a possible adverse event (AE) or trigger further investigation
- Compare UM triggers to those identified by the Institute for Healthcare Improvement (IHI), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the National Foundation for Quality (NFQ) that have been correlated to inpatient adverse events.

We appreciate your participation.

Date/Time of Interview:

Interviewers:

Section One – Interviewee Information

Name:

Organization:

Title/Responsibility:

Address:

Mailing Address

(if different than above):

Telephone Number:

Fax Number:

e-mail:

Section Two – Company Overview

1. Provide an overview of your company (e.g., size, volume of reviews, eligible lives product focus, customers)

Section Three – Clients

2. Describe your primary client(s) – in what health care segment(s) is/are your UM products being targeted (%)

Section Four – Overview Information System Description

3. In basic terms, describe your information system's platform architecture, components contained within this system and their functionalities.
4. To help us better understand your product(s), can you walk us through an example of how the system is used by your clients (part of demonstration or verbally)? The tour might begin with the pre-certification process, then prospective review, concurrent review and discharge phase etc.

5. Are the UM modules used as a standalone or interfaced with existing 3rd-party systems or rules engines (e.g., M&R, InterQual, home-grown systems, etc)?

6. To better understand how data is stored in your system, describe how the following data elements are stored:
 - a. Patient diagnoses - (e.g. free-text, ICD-9 discrete fields)? How many diagnoses per case can be stored in the system (admitting, discharge, others)?

 - b. Procedures or surgeries- (e.g. free-text, ICD-9 discrete fields)? How many diagnoses per case can be stored in the system (admitting, discharge, others)? Does your system allow for tracking of procedure or surgery volume by facility or physician?

 - c. Physicians – How are they stored (drop-down, free-text)? How many physicians can be stored in the system per case? Are physicians' names linked a procedure or surgery?

 - d. Medications – How are medications stored in your system? What fields are stored names? Dose? Frequency? Route? (entered via free-text or pre-defined)?

 - e. Laboratory Results – How are laboratory results stored in the system? Can the results of wound, blood cultures also be stored?

 - f. Facility and length of stay parameters – How stored in system? How are continued stay parameters tracked?

 - g. Can the data described above be linked with claims data at the patient level

Section Five – Patient Safety Modules

The term patient safety is quite broad and means different things to different people. For the purposes of this project, we will focus on adverse events. The Institute of Medicine (IOM) defines an adverse event as "an injury caused by medical management rather than by the underlying disease or condition of the patient."

7. Does your UM system have a dedicated module to identify adverse events?

Yes No

a. Can they be derived from other existing modules? Describe

Yes No

b. Can the AEs module be customized?

8. Does your system support discharge planning activities that may impact patient safety?

a. caretaker arrangements Yes No

b. home safety Yes No

c. follow up care Yes No

d. pharmacy tracking or refill alerts Yes No

9. Indicate what types of adverse events are tracked within your UM system. Note whether they are part of the “basic” platform or can be customized. Check all that apply.

Event	Available	Customize	Add in the near future	# Sites using
	√	√	√	
Diagnostic				
Error or delay in diagnosis				
Failure to perform an indicated test				
Unplanned hospital readmission				
Delay in acting or monitoring test result				
Treatment				
Procedure complication				
▪ Wrong procedure				
▪ Wrong patient				
▪ Wrong site				
▪ Other complications (e.g. pneumothorax following procedure)				
▪ Contrast related renal complications				
Conscious sedation issues				
General anesthesia related complication				
Surgery complication				
▪ Wrong surgical procedure				
▪ Wrong patient				
▪ Wrong site				
▪ Surgical wound infection				
▪ Other Complications				
Transfusion errors				
Maternal death				
Medication Errors				
▪ Wrong medication				
▪ Wrong dose				
▪ Wrong route of administration				
▪ Failure to monitor critical drug level				
▪ med given to pt with known allergy				
▪ Drug-drug interaction				
▪ Drug-condition interaction				
▪ Drug-disease interaction				
▪ High alert medication related errors				
▪ Dose sensitive medication not run on an infusion pump				

Event	Available	Customize	Add in the near future	# Sites using
	√	√	√	
Under-utilized Care & Practices				
Development of stress ulcers				
DVT development				
Verbal order related misinterpretation				
Patient fall				
Development of pressure ulcer				
Pneumonia				
▪ Aspiration pneumonia				
▪ Other Noscomial pneumonia				
Noscomial infection (other than wound)				
▪ Central venous catheter infection				
Malnutrition in facility setting				
Death injury related to restraints				
▪ Patient elopement				
▪ Premature hospital discharge				
▪ Premature transfer to lower level of care				
▪ Death associated with pt transfer to another facility				
Facility homicide/rape/assault				
Disease Specific Care Pathways				
Errors of omission (e.g.ASA and beta-blocker for MI)				
Other				
Improper functioning of a clinical physiologic alarms (cardiac, ventilator) leading to complication				
Other equipment malfunction				

* Not all respondents provided responses to each line. Questions were omitted if the respondent indicated that they tracked no indicators.

Section Six – AE Management

10. How are staff alerted to the occurrence of an AE by the system?

11. What is the protocol for responding to an AE alert? Are activities documented in the system?

12. Does the IT system have prompts to alert staff to the need for follow up on AEs?
13. Are AEs reviewed by the medical director or QI committee? Is there a process for “closing” the case following an AE?
14. Are staff provided with specific training on patient safety?

Section Seven– Reporting

15. Describe the trending and reporting capabilities of the system with respect to AEs (do reports go to clients and or internal committees?)
- a. Can reports be generated by provider or facility?
Yes No
- b. Can these reports be customized for clients?
Yes No
- c. Does the system support channeling (in network referral)? Does the channeling algorithm include use of AE or patient safety criteria.
Yes No

Section Eight – System Improvements/Outcomes

16. How do you obtain ongoing feedback from your clients? How and to whom are the comments communicated within your organization?
17. Has the AE module or capabilities been a prerequisite requirement for any of your clients? If yes what percent?
18. What refinements have you made to your system to address tracking and monitoring of AEs since initial implementation and how are these system updates integrated into existing sites?
19. Describe any systematic or anecdotal outcome or /improvements in patient safety demonstrated by system(s) implementation and how collection of this information is supported.

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