Chief Knowledge Officer: Leading the Knowledge Revolution

Robert S. Fry
LCDR, MSC, USN, CHE, CFAAMA
Doctoral Candidate, College of Public Health
University of South Florida, Tampa

Seena Salyani, MBA
MHA Candidate, College of Public Health
University of South Florida, Tampa

INTRODUCTION

Many healthcare executives are intimately aware of paradigm shifts in the healthcare industry. This awareness has been accomplished through their personal experiences with management by objectives, total quality management, continuous quality improvement, business process reengineering, benchmarking, best business practices, clinical practice guidelines, and ISO 9000. This generation of executives, in particular, should recognize how scientific change and management philosophies have been used to prepare the workforce for the pending intellectual healthcare revolution. Key to their success will be their ability to "get the *right* information to the *right* people at the *right* time … to enable the *right* actions" (Eisenberg, 1999).

To document this evolution, the concepts of research utilization, intellectual capital, knowledge management (KM), and the position of Chief Knowledge Officer (CKO) have entered healthcare literature. This paper explores a proposed systems approach for increasing research utilization in knowledge management programs, by enhancing graduate healthcare education and focusing on professional credentials, with the leadership of a CKO. Such an approach is proposed for helping employees recognize knowledge they have about their jobs; getting them to share this knowledge; and capturing and leveraging it.

OVERVIEW

Approximately, 40 percent of the Fortune 1000 companies have hired a CKO, a senior-level executive responsible for creating an infrastructure and cultural environment for knowledge sharing and knowledge management (O'leary, 1998). Although there is no acceptable definition of knowledge management, the basic concepts are simple: employees are expected to maintain a body of knowledge about an organization's customers and competitors, products and processes which, if collected and shared, should be used to generate intellectual capital and organizational value (Earl & Scott, 1999; Bonner, 2000). Knowledge is spread throughout the organization and learning usually occurs at an individual level, outside the context of the organization.

In managing knowledge, the challenge for the CKO is to identify all the sources of information so that it can be documented, developed, and shared through a standardized universal application. Unfortunately, many healthcare organizations invest millions of dollars in information technology (IT) infrastructure and then fail to optimize its capabilities. Interestingly, current IT research indicates no correlation between investments in IT and successful organizational outcomes or performance (Malhotra, 1998). Intuitively we expect an association to emerge in the long-term. Subsequently, this paper should assist healthcare leaders in understanding the elements for a knowledge management program, and the role and responsibilities of the CKO in the context of a systems approach presented in figure 1 and discussed in the following section. The systems approach introduced in figure 1 identifies graduate healthcare education and professional credentialing as variables for the increased use of research findings. It also shows research utilization, information technology, and the knowledge workforce as major components of a knowledge management program, which is overseen by a CKO.

Insert Figure 1 about here.

INTERNAL ENVIRONMENTAL COMPONENTS

In evaluating the internal environment, many consultants will take a strategic approach to determine if an organization is prepared to establish a knowledge management program. Some of these questions include: How will this methodology, infrastructure, and technology further our organizational goals? How does this fit with our overall mission? How can we get maximum participation from employees? The key to any successful KM program is the support of the CEO. Together the CEO and the CKO need to establish a culture of sharing and trust (Coleman, 1998).

HEALTHCARE ADMINISTRATION EDUCATION

Ideally, healthcare administrators are well educated and, in addition, dedicated to lifelong learning. One aspect of this constant learning is routinely reviewing the healthcare journals and literature. Approximately 2,000 students receive graduate degrees in healthcare management annually (ACHE, 2000). Some programs are more research focused than others. Graduate programs in healthcare administration typically range from vocational or how-to programs to research-oriented programs. Increasingly today's administrators are expected to be research-oriented (Studnicki, 2000).

One health administration program developed an epidemiological focused curriculum to provide students with more research experience. The curriculum emphasizes a research foundation, integrating epidemiology with health services management, and including an applied course in which the students conduct their own research (Ibrahim, 2000). Although conducting research is not the same as utilizing it, and teaching research methodology is not the same as teaching research utilization, such attempts demonstrate significant departures from traditional curricula that emphasize pedagogy and practical application (Valentine, 2000). As colleges and universities develop research-oriented health administration programs, distance learning and Internet degree programs are being increasingly introduced. To ensure quality and standardization among research-oriented educational programs, accreditation will become a necessary benchmark.

ACCREDITATION IN GRADUATE HEALTH ADMINISTRATION PROGRAMS

Quality is hard to differentiate without voluntary accreditation. Accreditation of master's level health administration programs in the U.S. and Canada is only performed by the Accrediting Commission on Education for Health Services Administration, ACEHSA. The Schools of Public Health and Schools of Business may be accredited by the Council on Education in Public Health (CEPH) and the American Accreditation Council for Schools of Business (AACSB), respectively. However, their graduate level health administration programs may or may not be accredited by ACEHSA. A comparison of the three accrediting agencies' required curricula indicates ACEHSA requires a more research-oriented program (ACEHSA, 2000; CEPH, 1999; AACSB, 1998). Although the other agencies require exposure to research concepts, it is not specifically for health administration. Between the three agencies, over 400 colleges and universities are accredited, but less than 18% of these programs are ACEHSA accredited. This presents a potential barrier to increasing research utilization in healthcare administration. Fortunately for most healthcare executives, the education process does not cease upon graduation, but signals the beginning of lifelong learning through professional affiliation.

PROFESSIONAL AFFILIATION AND CREDENTIALING

An estimated 100,000 professionals occupy health management positions at numerous organizational levels, from department head to chief executive officer (ACHE, 2000). Many of these executives are dedicated to lifelong learning as a requisite component of the their professional development. They accomplish this through affiliation and credentialing in a variety of professional organizations. The three primary professional organizations for general healthcare administrators and their approximate membership reported in year 2002 are the following: 1) The American College of Healthcare Executives (ACHE, 2002) - 29,000 affiliates, 2) The American Academy of Medical Administrators (AAMA, 2002) - 4,000 affiliates and 3) The Medical Group Management Association (MGMA, 2002) - 19,000 affiliates. Each organization offers continuing educational programs and professional credentialing through an examination process.

Table 1 describes the credentialing examination by these organizations. A comparison of educational offerings with the posted credentialing examination criteria, called healthcare knowledge areas, body of knowledge, or performance domains, reveals a paradox among these organizations. For example, AAMA conducts examinations, which query examinees in the area of research knowledge, but does not offers continuing education courses in research methodology or utilization. Conversely, while MGMA does not include research in any of their examinations of performance domains, the association offers numerous courses in research methodology. ACHE has removed the topic of research from their testable healthcare knowledge areas. Clearly, these professional organizations could encourage more research utilization by offering continuing education aimed at interpreting research. These organizations could also emphasize research more during credentialing examinations. As it stands, exposure to research is available through their professional journals, which are a benefit of membership. These journals share both current knowledge and research about the healthcare industry.

Insert Table 1 about here.

COMPONENTS OF KNOWLEDGE MANAGEMENT

Figure 1 also identifies three major components of knowledge management: 1) research utilization, 2) information technology and 3) knowledge management workforce. Research utilization can be increased by routinely reviewing the health services research literature. The Institute of Medicine defines health services research as a multidisciplinary field of inquiry, both basic and applied, that examines the use, costs, quality, accessibility, delivery, organization, financing, and outcomes of health care services to increase knowledge and understanding of the structure, processes and effects of health services for individuals and populations (Hadley, 2000, p. 176). The challenge is to encourage managers to read the journal articles and start thinking like researchers or at least, start applying the health services research available to them. A critical issue for research utilization, when reviewing research articles, is what type of information creates knowledge? What do health services researchers and healthcare administrators look for in their reviews? Table 2 illustrates the differing perspectives on research by comparing how a practitioner and a researcher review a typical journal article.

Insert Table 2 about here.

As table 2 shows, researchers review articles with a critical eye towards reliability, validity and methodology, while practitioners focus on mainly applicability found in the discussion section. However, some journals for example, The Journal for Healthcare Management, provide an applied section (i.e. *Practitioner Application*), which discusses practical use and application of the research.

INFORMATION TECHNOLOGY INFRASTRUCTURE

The next component of knowledge management is information technology (IT). There are various knowledge management software available that can be purchased and customized to meet organizational the KM requirements of gathering, organizing, refining and disseminating. Although much of this being done on-line via an intranet or the Internet. The information on projects, products, and processes is being gathered at an impressive rate.

According to the *Hospital & Health Networks Most Wired Survey* (Morrissey, 2000), results indicate that in the most "wired" hospitals, 58% of them report physicians and nurses use the Internet to access patient information, order labs, submit prescriptions, or review lab results. Additionally health plans and suppliers report more on-line transactions with customers, while healthcare employees report increasing on-line use for career management issues. Perhaps more importantly, patients are reporting more on-line use for appointment scheduling, physician referrals, prescription renewals, and support groups. This utilization provides organizations and its' customers with enormous amounts of data, information and convenience. However, the latest advances of information technology can facilitate the processes, the final burden is on humans to translate this information into actionable knowledge depending on the acute understanding of their business context (Malhotra, 1997).

KNOWLEDGE MANAGEMENT WORKFORCE

The third component of knowledge management is centered on the organization's employees. In 1988 Peter Drucker coined the term "*knowledge worker*" as the individual, or team of individuals, who would be at the core of the new knowledge-driven company. Conceptually, the idea went well beyond the views of the Information Age. These employees would collect data, analyze the information, and communicate the knowledge (Winning, 1998). Is this new worker an analyst, a researcher or an administrator? The exact role of these workers is difficult to ascertain. Another emerging role is that of a healthcare informatician. These workers are an integral part of a knowledge management program because they help design clinical information systems from decision support to computerized medical records, as well as, ensuring the maintenance and efficiency of these systems (Malugani, 2000). The development of key information sources is critical for knowledge management success.

FUNCTIONS OF KNOWLEDGE MANAGEMENT

The definition of knowledge management is debatable. Knowledge management caters to the critical issues of organizational adaptation, survival, and competence in the face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek the synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings (Malhotra, 1997). Some organizational experts have called the new change in terms of radical discontinuous pace of change while others have tried to describe it in terms of the world of re-everything (Malhotra, 2000).

The primary functions of knowledge management include gathering, organizing, refining, and disseminating information. This is simple conceptually, but difficult to execute. The task is made easier if organizational resources are dedicated and available to support these functions. The gathering phase brings information and data into the system. This can be accomplished through interviews with employees and customers or the knowledge workers can enter the value laden organizational information directly into the system. The organizing phase associates items with subjects, giving them context. In the refining phase, value is added by discovering relationships, performing synthesis, and abstracting. The skills of a highly trained informatician would enhance the processes during the organizing and refining phases. The final and most critical phase is dissemination. In this phase, knowledge is distributed to the people who can use it in a form that makes it usable. (Angus et. al., 1999) As the knowledge is disseminated, the opportunity exists as part of the system, to provide feedback on its value. The feedback is integrated throughout the component and the cycle continues.

CHIEF KNOWLEDGE OFFICER

The CKO is sometimes confused with the Chief Information Officer (CIO) because the concept of knowledge management has not fully evolved. The CIO is focused on “the how” information is distributed and the CKO is more concerned with the content or “the what.” (Pemberton, 1997). The following is a list of activities and responsibilities for a typical CKO that have been universally cited in several studies (Bonner, 2000; Earl & Scott, 1999; Pemberton, 1997):

- Integrate and align various functions and teams.
- Establish senior level partnerships.
- Conduct strategic planning and implementation.
- Create a culture for the acceptance of continuous organizational learning and KM by eliminating barriers to sharing information and leveraging corporate-wide learning.
- Be an advocate, a champion, and visionary for organizational learning and KM.
- Design and implement the corporation's knowledge infrastructure, including knowledge bases, libraries, data warehouses, and research groups.
- Liaison with external suppliers of knowledge; i.e., consultants, database vendors, and academic organizations.

The model CKO has two core competencies as a technologist and as an environmentalist (Bonner, 2000). As a technologist, the CKO manages the myriad of technical details, and as an environmentalist, creates social and organizational settings for the exchange of information. The responsibilities differ by size and culture of the organization, but the primary focus is the development of intellectual capital.

INTELLECTUAL CAPITAL DEVELOPMENT

Intellectual capital (IC) has been defined as the conversion or leverage of knowledge to produce a higher valued asset. IC is the total inventory of knowledge-based equity that an organization maintains. Generally, it is classified into three categories human, structural, and relational. Human asks: "how competent are our employees?"; structural asks: "do we meet market demands?"; relational asks: "how well are we linked to our customers?" (Cooper, 2000). Each category facilitates understanding of core competencies, discerning hidden knowledge, performance improvement and competitive advantage (Cooper, 2000).

EXTERNAL HEALTHCARE ENVIRONMENT

Healthcare organizations must continually scan the external environment to maintain competitive perspective. In this age of rapid change, it is important to focus on the future of healthcare, since the potential exists that today's solutions are outdated by tomorrow's challenges. Numerous challenges and revolutions in healthcare delivery have been predicted. Some predictions are: computer-assisted therapy, DNA chips, cloning, gene drug therapy an increase in the quality and length of life; hospital consolidations and reduction of bed capacity; enormous growth in long-term care; insurance coverage decisions made by consumers; and expanding government scrutiny (Zuckerman, 2000). Awareness of the impact of theses challenges and implications would enhance the effectiveness of a knowledge management program.

DEVELOPING A SUCCESSFUL KM PROGRAM

The development of a successful knowledge management program involves everyone in the organization. Some recommendations for successful implementation include:

- Conduct a pre-assessment of the organizational readiness for implementing knowledge management;
- Develop realistic expectations and goals for the program;
- Prior to implementation, ensure the executive leadership team has been trained and are fully aware of the resource implications;
- Create a culture of trust and sharing that encourages and rewards creativity;
- Encourage research utilization by funding additional research utilization educational programs and professional development opportunities;
- Develop and invest in an IT infrastructure with expansion capabilities;
- Ensure every member of the staff has the opportunity to participate and is involved;
- Hire the right CKO, a person with strong communication and motivational skills, who is an optimistic, analytical visionary;
- Do not implement a knowledge management program until all the resources are in place.

These recommendations are based on known change management principles and lessons learned from successful knowledge management programs that have saved numerous companies millions of dollars (Earl & Scott, 1999). For example, "from 1997-2000, the Ford Motor Company saved $914 million, mainly due to effective knowledge management programs; Chevron has saved $650 million since 1991, while Texas Instruments has saved $1 billion since it launched KM programs in the mid-1990s" (Bontis, 2002).

CONCLUSIONS

Although this paper proposes a systems approach for increasing research utilization in knowledge management programs, there are numerous implications and recommendations for the individual healthcare executive, as well as the entire healthcare industry. Possibly, the next Chief Knowledge Officer is reading this article right now. Remember, the pending intellectual healthcare revolution is going to occur – in fact it has already started!

Figure 1: Conceptual Framework for a Systems Approach to Knowledge Management

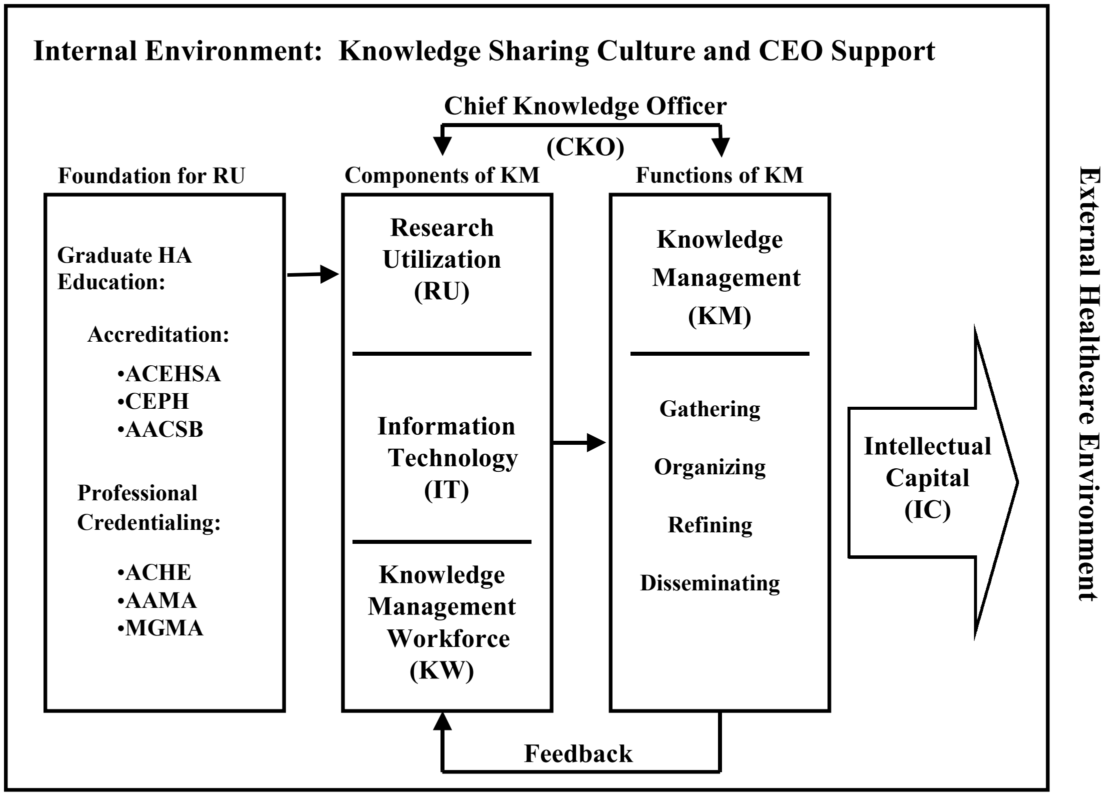

Table 1. Credentialing Examinations by Professional Organization and Knowledge Domains

ACHE: Board of Governors' Examination. CHE® Credential 10 Knowledge Areas	AAMA: Credentialing Examination. CAAMA Basic Body of Knowledge	MGMA: Certification Examination. ACMPE 8 Performance Domains
Governance and Organizational Structure	Understanding of leadership creativity and communication skill development.	Governance and Organizational Dynamics
Business	Understanding of, and development of skills in, positioning organizations favorably in the environment and managing these organizations for continued effectiveness.	Planning and Marketing
Human Resources	Understanding of, and development of skills in, the management of human resources, information systems, and capital.	Human Resources Management
Finance	Understanding of, and development of skills in, economic, financial, policy, and quantitative analysis.	Financial Management
Management	Understanding of, and development of skills in, the management of human resources, information systems, and capital.	Business and Clinical Operations
Healthcare Technology and Information Management	Understanding of, and development of skills in, the management of human resources, information systems, and capital.	Information Management
Quality and Performance Improvement	Understanding of, and development of skills in, methods for assessing overall organizational performance and, in particular, assuring quality of services provided.	Risk Management
Laws and Regulations	Understanding of the	

	organization, financing, and delivery of health services, drawing on the social science disciplines (broadly defined to include economics, law, political science, psychology, sociology, and related disciplines).	
Healthcare	Assessment and understanding of the health status of populations; determinants of health and illness; and factors influencing the use of health services.	Business and Clinical Operations.
Professionalism and Ethics	Understanding of the values and ethical issues associated with the practice of health services administration, and the development of skills in ethical analysis.	Professional Responsibility
Testing Criteria		
170 multiple-choice questions: based on 10 health care knowledge areas and ACHE's Code of Ethics.	Section 1: 100 objective multiple-choice questions. Section 2: Three essays questions based on current healthcare issues and developments.	175-item multiple-choice objective exam. 30-minute oral exam to solve problems, propose strategies, and make professional decisions. Three-question essay to test knowledge of trends, issues and management approaches.

Adapted from: ACHE, 2002; AAMA, 2002; and MGMA, 2002, credentialing websites.

Table 2: Researcher and Practitioner Views relative to a Typical Journal Article

Typical Journal Article *	Researcher's Perspective	Practitioner's Perspective
1. Abstract	Summary of entire article. Is this research of any value?	Does this article have any value to my job or does it sound interesting?
2. Introduction a. Review of Literature b. Statement of Purpose	Discussion of previous research. Rationale for the study. Purpose is most important. States study "destination."	Reads only if not clear from abstract or wants to know what other research has been done in this area.
3. Method a. Subjects b. Design c. Materials d. Procedure	Detail of how the study was conducted, enough to replicate the study. Are methods valid and reliable? What was the n/N?	Possible concern about how large was the sample size.
4. Results	Presented in context of article, tables or graphs. Thoroughly reviewed for corrections.	Usually avoided.
5. Discussion	Non-technical interpretation of results.	How does it apply to my situation?
6. References	How much research was previously completed?	Usually avoided, unless looking for specifics.
Practitioner's Application	May or may not be included with the article.	Section in some journals and (i.e. JHCM) provides practical use. Usually read.

*(Adapted from: *Reading Statistics and Research,* Huck, S. W. and et. al., 1974).

References

1. AACSB, (2002). “Accreditation Standards” [On-line]. Available: http://www.aacsb.edu/accreditation/standards.asp
2. AAMA, (2002). “American Academy of Medical Administrators” [On-line]. Available: http://www.aameda.org
3. ACEHSA, (2002). “What is ACEHSA?” [On-line]. Available: http://www.acehsa.org/info.htm
4. ACEHSA, (2002). “Accreditation Criteria” [On-line]. Available: http://www.acehsa.org/criteria.htm
5. ACHE, (2002). “Your Career as a Healthcare Executive” [On-line]. Available: http://www.ache.org/carsvcs/ycareer.cfm
6. ACHE, (2002). “May 2002 Fact Sheet” [On-line]. Available: http://www.ache.org/abt_ache/facts.cfm
7. ACHE, (2002). “Board of Governors Examination” [On-line]. Available: http://www.ache.org/mbership/AdvtoDiplomate/EXAM/EXAM.cfm
8. Angus, J., Balla, J. & Harty, J., 1999, “Get a Grasp on Knowledge.” *Information Week*, 732.
9. Bonner, D., 2000, “Enter the Chief Knowledge Officer.” *Training and Development*, 54 (2): 36-40.
10. Bontis, N., 2002, “The Rising Star of the Chief Knowledge Officer.” *Ivey Business Journal*, 66 (4): 20-25.

11. CEPH, (2002). “Accreditation Criteria” [On-line]. Available: http://www.ceph.org

12. Cooper, J., 2000, "Turning Knowledge into Value." *CMA Management*, 74 (8): 22-27

13. Earl, M. J. & Scott, I. A. 1999, "Opinion: what is a chief knowledge officer?" *Sloan Management Review* 40(2): 29-38.

14. Eisenberg, H. 1999, "Transforming Hospitals into Knowledge Management Centres" [On-line]. Available: http://www.syntrek.com/kmppt/index.htm

15. Hadley, J., 2000, "Better Health Care Decisions: Fulfilling the Promise of Health Services Research." *Health Services Research* 35 (1): 175-186.

16. Huck, S. W., Cormier, W. H., and Bounds Jr., W.G., 1974, *Reading Statistics and Research.* New York, NY: Harper & Row, Publishers.

17. Ibrahim, I. A., 2000, "Building An Epidemiological Focus in Health Administration Programs: Penn State's Experience." *The Journal of Health Administration Education* 18 (3): 335-343.

18. Malhotra, Y., 1997, "Current Business Concerns and Knowledge Management " [On-line]. Available: http://www.brint.com/interview/times.htm

19. Malhotra, Y., 1998, "Knowledge Management for the New World of Business" [On-line]. Available: http://www.brint.com/km/whatis.htm

20. Malhotra, Y., 2000, "Knowledge Management and E-Business in the New Millennium" [On-line]. Available: http://www.brint.com/advisor/

21. Malugani, M., 2000, "Opportunities Explode for Healthcare Infomaticians" [On-line]. Available: http://healthcare.monster.com/articles/informatics/

22. MGMA, 2002, "About Us" [On-line]. Available: http://www.mgma.com/aboutmgma.cfm

23. Morrissey, J., 2000, "Maximizing unused power" *Modern Healthcare* 30 (34): 50-56.

24. O'leary, D. E., 1998, "Enterprise Knowledge Management" *Computer* 31 (3): 54-57.

25. Pemberton, J. M., 1997, "Chief Knowledge Officer: the climax to your career? "*Records Management Quarterly"* 31: 66-69.

26. Studnicki, J. 2000, Personal communication [lecture] on 12 October 2000.

27. Sultz, H. A., Young, K. M., 1999 Health Care USA, Understanding Its Organization and Delivery, Gaithersburg, MD: Aspen Publisher, Inc.

28. Valentine, J. A., 2000, "Research Utilization in the Health Administration Profession." *The Journal of Health Administration Education* 18 (3): 275-298.

29. Winning, E. A., 1998, "The Chief Knowledge Officer", On-line: http://www1.ewin.com/ewin/articles/cko.htm

30. Zuckerman, A. M., 2000, "Creating a Vision for the Twenty-First Century Healthcare Organization." *The Journal of Healthcare Management* 45 (5): 294-306.