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Editor's Note ii

Articles

A Brief History and Assessment of the Health Occupations Education
Division1
Mary M. Randall

The National Association of Health Occupations Teachers12
Frances A. Robichaux

Multi-Competency Health Professionals: A Revolution in Health Care15
J. Steven Lytle

Ramifications of DRGs on Health Care Delivery in New Jersey22
Margaret Snell

History of Licensure in Several Occupations in the Health Professions35
Shirley Baker

Secondary Health Occupations: Implications for Program Development42
Lou Ebrite and Barbara Plake

Effects of Compressed Speech Theory Applied to Health Occupations
Education Instruction51
Norma J. Walters, S. Tracy Trussell, and James Noel Wilmoth

Book Reviews

Body Structures and Functions63
D'Ann L. Wilson

General Information Inside front and back covers

Editor's Note

Information related to changes in the Health Occupations Education (HOE) division, changes in the health professionals, implications for additional programs in secondary HOE, instructional delivery modes, and a book review of anatomy and physiology are featured in this issue.

Margaret Mead once said, "No man will ever again die in the same world in which he was born." Her theme of change certainly applies to the HOE division of the American Vocational Association.

At one time in the not-too-distant **past**, the HOE division was **only** an idea of 29 interested health care professionals. Today, there are 2124 members according to Mary Randall, Vice-President of the HOE division, in her article on the history and assessment of the division. Our growth has resulted in the organization of the National Association of Health Occupations Teachers (**NAHOT**) as explained by President **Robichaux**.

Steven **Lytle** reflected **on** the current trends for multi-competent health care professionals. He stresses that health care providers are beginning to shift in-patient services to a variety of ambulatory services transforming the evolution of health care into a revolution. Indeed, this trend **may** necessitate the development of new multi-competent programs or the modification of current training programs to include multi-competent skills.

According to Margaret **Snell**, change has become a way of life. **She** wrote about ramifications of diagnosis related groups (**DRGs**) and other emerging trends which may be of interest to health occupations teachers as they acclimate their programs to the phenomenon and prepare for future changes. In addition, current trends toward multi-competent health care professionals and program changes which may be a result **of DRGs**, may surface many questions related to **licensure**. Specifically, Shirley Baker emphasized the advantages **and** disadvantages of **licensure** and also indicated that the major issue facing licensing boards today is, "How do we assure the public of an individual's continued competence?"

Researchers would be interested in the findings reported by Lou Ebrite. Her analysis suggests imminent growth for secondary HOE programs. Even though the health professions career prognosis is excellent, she indicated that HOE programs are not available to a large number of students who desire and could benefit from them. Another study revealed that educational material may be learned by the compressed auditory mode. **This** has implications for increasing opportunities to **learn** and achieve academically.

We wish to thank the contributors to this issue and hope that every reader will benefit from the information. In addition, all members are encouraged to take a giant step and write for the Journal. The sharing of the potpourri of classroom-tested ideas, current trends and issues, as **well** as research findings, and book reviews can be helpful **to** us all.

Norma J. Walters
Editor

A BRIEF HISTORY AND ASSESSMENT OF THE
HEALTH OCCUPATIONS EDUCATION DIVISION

Mary M. Randall¹

Abstract: The Health Occupations Education Division of the American Vocational Association is only 16 years old, but it has already compiled a history of accomplishments. The original interest group formed by an official of the United States Office of Education numbered 29 members in 1966; today, the Division boasts 2124 professional members. Division members have also organized a national student organization, Health Occupations Students of America; a teacher **educators'** group: the Association of Health Occupations Teacher Educators; an administrators' group: the National Association for State Administrators of Health

¹Mary M. Randall is Vice President of the Health Occupations Division of the American Vocational Association and State Specialist, Health Occupations Education, Oklahoma State Department of Vocational-Technical Education. The author would like to acknowledge Richard T. **Zdorkowski**, Research Specialist, Oklahoma State Department of Vocational-Technical Education for his assistance.

Occupations Education and, a teachers' group; the National Association of Health Occupations Teachers. The Division is advancing into the next phase of professional growth and development with the publication of the Journal of Health Occupations Education and the HOE Newsletter.

In December 1966, American Vocational Association (AVA) members with an interest in Health Occupations Education (HOE) recognized the need for a HOE Division in the AVA. The need was based on the urgency of the demands for trained health personnel, the obvious lack of participation of health occupations educators and employers in AVA and the proliferation of problems invading the health occupations among many diversified groups within AVA without any single coordinating force.

Organizational Meetings

The first meeting of the HOE interest group was called by Helen K. Powera, Chief, Health Occupations Division, Vocational-Technical Education, United States Office of Education, on December 5, 1966. Twenty nine persons were present. The purpose was "to explain means, whereby, the AVA members representing the health occupations might establish identity and visibility for health occupations within the AVA structure." The AVA members present decided to become a "committee of the whole" to further development of a Health Occupations Division and Louise M. Daily, Chief, Health Occupations, Illinois was elected Chairman of the Committee.

By the second meeting in December, 1967, 1,252 membership petitions had been received. Participants learned that the AVA Board was "receptive to the idea of divisional status **for** Health Occupations Education."

The AVA bylaws were also revised in December, 1967. One revision of the

bylaws provided for the recognition of the New and Related Services Division of AVA, and the HOE group was listed as one of several groups within the new Division. At this time, the organizational criteria by which these groups could become AVA Divisions were also established. The most challenging criterion for the HOE group was the most basic one: a membership of 1000 health occupations educators.

Membership

Membership of the HOE interest group grew rather rapidly from the date of the first meeting in 1966, until the recognition of the group as a Division in 1970. There was rapid growth during the early years and slower maturation during the time prior to the achievement of divisional status:

December 1966	29	April 1969	9	4	0
November 1968	479	May 2, 1969	951		
February 1969	855	May 22, 1969	922		
March 1969	931	June 23, 1969	1,001		

Divisional Status

In June of 1969, a prepared petition for divisional status was submitted to the AVA Board. In July of that year, the AVA Board of Directors approved the HOE interest group petition for divisional status and HOE officially became a Division of AVA on July 1, 1970.

The HOE Division

In 1970, Dale Petersen, Administrative Assistant and Research Coordinator, University of Iowa, was elected the first Vice President of the new HOE Division and the Division's first operational policies were adopted. The first HOE Policy Committee was established and the first meetings of the Policy Committee and the Division membership were held.

Divisional Change Throughout the Years

Many changes have occurred in **the** HOE Division during the past 16 years. The Division's membership is 2,124 as of June 30, 1986. The Health Occupations Students of America (HOSA), a national vocational student organization for students in vocational health occupations programs, was organized in 1976 as an integral component of the HOE program. Three groups for teacher-educators, teachers, and administrators have also been formed. The Division's Operating Policies have undergone several revisions and a "workable" Program of Work that is supportive of the goals of the American Vocational Association has been developed. Linkages are being established between the Division and (a) the health care industry, (b) the federal government, (c) other professional organizations in the health care industry, and (d) educational communities.

For years, HOE Division members stressed an interest in publishing a newsletter and a journal. Finally, as a result of many meetings and discussions these publications became a reality in 1986.

The General Purposes of the HOE Division

The general purposes of the HOE Division included in the Division's Operating Policies have evolved over the years and now describe a comprehensive program of professional improvement. The general purposes include:

1. Establishing and maintaining an active national leadership in the health occupations;
2. Developing high professional standards among the membership;
3. Developing a better understanding of health occupations education;
4. Serving as an agent for the dissemination of information related to

health occupations education;

5. Encouraging cooperative working relationships between health occupations educators and other agencies, organizations, and institutions;

6. Identifying the function of health occupations education in preparing students for the world of work;

7. Working toward the development and expansion of quality health occupations education programs;

8. Keeping members of the HOE Division informed of policies, plans, and issues of the AVA as they relate to the development of vocational and technical education;

9. Providing a mechanism for effective communications and exchange between teachers, teacher educators, and supervisors of health occupations education;

10. Considering national, international, regional, state, and local needs and problems, and in relation to these, designing long-range goals for health occupations education;

11. Encouraging membership and participation in programs of AVA; and

12. Encouraging and supporting student activities which include participation of health occupations students in their student organization HOSA .

These purposes have been described because they present a comprehensive picture of the Division's maturing program of work and its current vision of the future. With widespread agreement on these, the purposes of the Division, the HOE membership can better serve the health care industry of the nation.

Membership Organizations

Several membership organizations within the HOE Division have developed

as the interests of the membership have expanded to encompass broader professional horizons. At the present time, membership organizations include the National Association for State Administrators of Health Occupations Education (**NASAHOE**); the Association of Health Occupations Teacher Educators (**AHOTE**); and the National Association of Health Occupations Teachers (**NAHOT**).

Each organization has developed its own organizational structure, elected its own officers, and adopted its own operating policies, program of work, and statements of policy. These must conform to the broad operating policies of the Division and AVA, the parent organization. Each divisional organization also has liaison representation on the Division's Policy Committee, on each of its standing committees, and on such special committees as are deemed appropriate by the Policy Committee. The President, or a delegated representative from each divisional organization serves as the liaison representative to the Division's Policy Committee.

Other membership organizations may affiliate with the Division with the approval of the Division's Policy Committee, in accordance with the policies of the AVA Board of Directors. Although each remains independent, the current membership groups have produced "a whole that is greater than the sum of its parts." Teachers are on the front line in the struggle to prepare health care workers who can deliver quality health care to the nation; teacher-educators provide them with the professional tools to meet that challenge; and state administrators provide the management and communications expertise needed to organize the complex HOE enterprise. The Division is, in short, stronger and more competent as a Division than are the groups individually, and the Division's Operating Policies are structured to foster such "synergy" in the future.

The Policy Committee

The purpose of the Policy Committee is to formulate and **carry out the** general purposes of the Division. The membership of the Policy Committee consists of voting members who are the elected officers of the Division, and a variable number of non-voting members.

The voting members are the HOE Division Vice-President, six members selected from specific professional backgrounds in the Division, and an eighth member (either the Past Vice-President or a Member-at-Large). The six **professional** embers include an adult/continuing education teacher, a secondary education teacher, a **postsecondary** education teacher, a supervisor or administrator of two or more programs, a supervisor or administrator of a statewide HOE delivery system, and a teacher-educator in a collegiate program providing preservice and/or **inservice** preparation of HOE teachers.

The immediate Past Vice-President is eligible to serve as a voting member on the Policy Committee for the year following the completion of the Vice-President term of office. The Member-at-Large **is** elected from the classroom teacher constituency of the Division membership (secondary, adult and/or postsecondary with no administrative/supervisory responsibilities).

The non-voting members **on** the Policy Committee include the chairperson of the HOE Convention Program Committee; **the** president, or a delegated representative from each divisional organization; a designated representative from the **HOSA** Inc., Board of Directors; a liaison representative(s) from the United States Office of Education; and, the newly elected HOE Division Vice-President (if a Policy Committee meeting is held prior to July 1).

The Policy Committee has developed the Division's current statement of purposes and program of work. The committee also coordinates activities of

the Division's membership. It has established communication linkages with federal and state agencies, with professional health care associations, and with the nation's health care industry. Members who are experienced and dedicated are vital to this committee. **All** Division members are urged to aspire to service on the Policy Committee, the administrative body of the Division.

Other Committees

Any member of the HOE Division is eligible for appointment to serve on the general and the special committees of AVA, in accordance with the provisions of AVA bylaws and policies of the AVA Board of Directors. In order to provide professional leadership opportunities for the largest number of members, the HOE Policy Committee members may not serve on any other AVA committees. This policy has benefited the Division over the years. The standing committees of the Division are the Awards, Convention Program, Critical Issues, Editorial and Publications, Membership, Nominating, Operating Policies, Professional Development, and Resolutions. As in the past, special committees may be appointed from **time** to time as they are needed to implement the work **of** the Division.

Student Organization

One of the major accomplishments of the HOE Division over the last 16 years has been the formation of **HOSA**. HOSA is the national student organization endorsed by the **HOE** Division as **well** as by the United States Office of Education as the appropriate student organization for those students who are enrolled in vocational HOE programs. A designated representative of the HOSA Inc. , Board of Directors is invited to serve as a liaison representative to the Division's Policy Committee.

The promotion and expansion of HOSA is one of the most important projects of the HOE Division. A strong partnership between the HOE Division and HOSA should achieve the ultimate goals of preparing health care workers who will be able to accept the challenges of providing quality health care in a rapidly changing health care industry.

HOE Publications

Newsletter

The first issue of the HOE Newsletter was published in the Spring of 1986, under the direction of the Vice President of the HOE Division. The purpose of the newsletter is to provide a communication link **among** the HOE Division members. Through this publication information can be shared from the various states as well as from the HOE Division. In addition, a calendar of events for the Division is included. Editorial materials should **be** forwarded to the Vice President of the HOE Division.

The Journal of Health Occupations Education

The first issue of the Journal of Health Occupations Education, an official publication of the HOE Division was published in the Spring **of** 1986. The purpose of the Journal is to keep health occupations personnel informed of current research methods and findings in HOE, current programmatic trends and issues in health care, and of new books which have an impact on HOE.

The refereed Journal publishes research and informative papers, as well as book reviews related to specific or broad occupational areas. Manuscripts and book reviews are juried by readers on the Editorial Board.

The Editorial Staff consists of the (a) Editorial Board Council (Editor, Associate Editor, Managing Editor and the Chairman of the Editorial and Publication Committee of the HOE Division); and (b) Editorial Board (21 member

panel of reviewers elected by the Editorial Board Council). Members of the first Editorial Board Council include: (a) Editor, Dr. Norma J. Walters, Assistant Professor and Coordinator of Health Occupations Education, Auburn University; (b) Associate Editor, Dr. James N. **Wilmoth**, Associate Professor, Auburn University; (c) Managing Editor, Dr. Beverly Richards, Assistant Professor, Health Occupations Education, University of Iowa; and (d) Chairman of Editorial and Publications Committee of the HOE Division, Dr. **Lauretta** Cole, State Supervisor HOE, West Virginia Department of Education.

The Journal is published **in** the Spring and Fall. Contributed research papers, informative papers and book reviews are submitted to the Editor for publication consideration. Subscriptions are submitted to the Managing Editor.

Summary

The newly formed HOE Division, was initiated by an official of the federal government, was small in number, and was united in scope. Through time the Division grew until **it** was large enough to attain self-governing and independent status within AVA. Its new members, with their self-determination, led to the development and statement of a sophisticated list of professional purposes. Its new members and their expanding professional aspirations have also led the Division **to** organize into three major membership organizations and a student organization.

The Policy Committee, as the administrative body, is purposely designed to provide a representative cross-section of **all** HOE members and interests. Other standing and special committees carry on the functions of the Division.

The Division is growing and evolving having recently begun publication of a Division Newsletter and The Journal of Health Occupations Education. Its

expanding membership continues to enlarge its professional horizons through an increasingly sophisticated system of communications linkages between the Division's operational groups and individuals and the broader community of health care professions and the health care industry.

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THE NATIONAL ASSOCIATION OF HEALTH
OCCUPATIONS TEACHERS

Frances A. Robichaux¹

Abstract: The National Association of Health Occupations Teachers is a voluntary affiliated organization of the Health Occupations Division of the American Vocational Association. The business of the organization is conducted by an Executive Committee consisting of six members elected as officers by the membership. The general purposes of the organization are to promote a broad understanding and an appreciation for the total spectrum of Health Occupations Education, identify and support common goals among **all** the disciplines within Health Occupations Education, provide a mechanism for effective communication among Health Occupations Teachers, and encourage active involvement of all Health Occupations Education Teachers at the national, state, and **local levels**.

¹Frances A. Robichaux, R.N., E.M.T., B.A. is President of NAHOT and Health Occupations Teacher at **Thibodaux** Area Vocational-Technical School, Thibodaux, Louisiana.

The National Association of Health Occupations Teachers (**NAHOT**) was established to meet the needs of classroom teachers on secondary, **postsecondary**, and continuing education levels and to provide a mechanism for effective communication and support. **Bylaws** were adopted **by** members of the NAHOT organizing group at the American Vocational Association Convention, December 5, 1979.

Membership

Membership is open to instructors of secondary, post-secondary, adult preparatory, and continuing health occupations education and other interested individuals who promote Health Occupations Education (HOE). NAHOT meets annually during the American Vocational Association Convention in December.

Executive Council Officers are elected at the annual meeting and work throughout the year as the Executive Committee consisting of the president, president-elect, secretary, treasurer, parliamentarian, and reporter. The president serves a one-year term, immediately preceded by a one-year term as president-elect. All other officers serve a term of two years. The treasurer and reporter are elected to assume office on even years. The secretary and parliamentarian are elected to assume office on odd years. All terms begin at the **close** of the annual meeting during which they were elected.

Committees

NAHOT has representation on **all** standing committees of the Health Occupations Division of the American Vocational Association, and has an **ex-officio** representative on its Policy Committee. The president of NAHOT serves as an **ex-officio** member of the Health Occupations Students of America Association.

There are six standing committees appointed by the NAHOT Executive

The National Association

Council: Bylaws, Professional Development, Membership, Publication, Nominating and Budget-Finance. Standing Committee membership consists of at least three members. Each committee chairperson reports in writing annually to the members of the Association. Special committees may be appointed by the President with the consent of the Executive Council to carry out the work of the Association.

Purpose

NAHOT is a group of professional classroom instructors representing all Vocational health occupations. The general purposes of NAHOT are to:

1. Identify and support common goals among all the disciplines within HOE ;
2. Encourage active involvement of all HOE teachers at the national, state, and local levels;
3. Provide a mechanism for effective communications among HOE teachers;
4. Promote a broad understanding and an appreciation for the total spectrum of HOE.

Summary

NAHOT meets the needs of classroom HOE teachers by recognizing their need for professional growth, knowledge, information, idea-sharing, and contacts. In summary, NAHOT represents the professional interests of classroom HOE teachers on **all** vocational levels.

MULTI-COMPETENCY HEALTH PROFESSIONS;
A REVOLUTION IN HEALTH CARE

J. Stephen Lytle¹

Abstract: The health care industry is being driven by the same traditional economic forces that are found in the general business environment. This has been brought about by increased pressure to contain costs and maintain quality of care. Health care professionals are faced with having to assume new and more diversified roles in every segment of the health care industry. Increased demands for multi-competent individuals are being observed as services move from the in-patient to out-patient locale. Health care professionals should have additional skills and function productively in a changing environment placing increased pressure on educational institutions, professional societies, and **credentialing** authorities.

Today, many people believe that the trend is moving away from the

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specialist toward a world dominated **by** multi-competent generalists. A series of problems and questions exist concerning multi-competency skills for health care professionals. These involve (a) the skills needed, (b) **credentialing**, (c) accreditation for training programs, (d) placement, and (e) acceptance of the professionals.

Similar problems occurred during the 1960s and 1970s when the health profession grew by gigantic proportions. New professions arose to meet the needs of society and existing ones began to solidify and mature. This growth was created by a shortage of physicians, but also resulted in the demand for health care services generated by the passage of Medicare and the changing demographics of our society. The health care industry accounted for approximately 5% of the gross national product in the early 1960s and in 1983 was above 11% (**Hodgetts & Cascio**, 1983). During these evolutionary times, federal intervention, state **licensure**, and complex accreditation procedures for hospitals and training programs became commonplace. It was believed that the hospital, which was the center of employment, provided the optimal environment for health care. Specialization of medical practice, of allied health professions, and of nursing became the rule and was in part brought about by growth of technology in the work place.

This was also an era when people became dependent on hospitals and doctors to keep them healthy. This is the **classic** "sickness" model of health care where patients live their lives, wait until they are ill and then go to the doctor for help, often with chronic or life threatening problems.

Increased Demand for Health Services

As the demand for health care services increased, so did the cost of providing those services. The system used to reimburse health care providers

Multi-competency Health Professions

was retrospective in nature with no incentive to control costs. According to the Florida Cost Containment Board, the average in-patient stay in a community hospital rose to over \$600 per day (State of Florida, 1984). This situation stimulated Congress to authorize Medicare to begin using a prospective system of reimbursement beginning in 1983. Under this system, diagnosis of each hospitalized patient is classified into one specific diagnostic related group (DRG). The provider is then paid a specific fixed fee for treating this condition. If the provider spends more than the system allows, the hospital will lose money and vice versa. This provides accountability by forcing providers to look at costs very carefully. The great expense of health care has also forced consumers to begin assuming responsibility for health maintenance. Health promotion is now becoming an important focus of consumers, health care industries, insurance companies, and employers.

In-patient to Outpatient Services

As prospective reimbursement was introduced, **health** care providers began shifting emphasis from in-patient services to a variety of ambulatory and outpatient services. This transformed the evolution of the health care industry into a revolution. As cost cutting proceeds, cost of labor becomes a focal point since 60-70% of health care provider budgets is allocated to salaries. Consequently, one way to make significant progress in controlling costs is to motivate health personnel to increased productivity. Health care providers are expecting employees to adjust to new roles and become proficient with new technology. Many providers have released individuals or instituted hiring freezes, allowing attrition to scale down the work force.

The Health Care Professional Today

Today's health care professionals should possess multi-competent skills

or continue their education and training to obtain these skills for future survival and growth, Educational institutions should consider these facts and respond quickly in order **to** avoid serious problems. New health care professionals should be taught those skills that will make them productive and employable in a dynamic medical environment. Large community hospitals and medical centers may still require some degree of specialization due to their volume of patients and diagnostic tests. Smaller hospitals and satellite facilities, ambulatory clinics, one-day surgical centers, physician's offices, health maintenance organizations, and health promotion programs may all require multi-competency health professionals **to** keep a competitive edge in today's market.

The University of Alabama at Birmingham has completed a detailed task' analysis which lists the various **competencies** required for a multiple competency clinical **technican** program providing training in **basic** patient care, radiography, laboratory methods, and medical office assisting (Keenon, 1985) . Specific curricular needs also should be based to some extent on local needs. This can be accomplished by surveying the communities of interest in the service area.

Credentialing of Multi-competent Professionals

Credentialing remains an important question for the multi-competent professional, There is no state **licensure** or national **credentialing** system to certify these individuals. Some states may prevent practice by current laws requiring credentials for performance of various diagnostic tests or therapeutic procedures. This could be a serious limiting factor to further development of these individuals. It is important to point out that traditional economic forces (such as supply, demand, price, and competition)

Multi-competency Health Professions

are influencing the health care industry. This fact may prompt changes in regulatory laws if the marketplace accepts multi-competency professionals.

Uncertainty of Professional Societies

Members **of** professional societies are also unsure **about** the development of individuals who cross traditional lines of responsibility. Cross-training may be viewed **as** a threat **to** some health professions. The result may be a rush to adopt restrictive legislative measures aimed at limiting growth of multi-competency **programs** and practice of their graduates. The growing supply of physicians is an intangible factor in this scenario. By **1990**, a surplus of 70,000 physicians is predicted (Johnson, 1983). It is impossible to determine what effect this surplus may have on existing health professions and the development **of** multi-competency practitioners.

Need and Type of Program

If multi-competency educational programs are needed, what institutions should provide the training? Should the programs be at the certificate, associate of science, or baccalaureate degree levels? At this time, a limited number of programs exist at the certificate or associate of science degree in community colleges. It has been suggested that current traditional baccalaureate health **programs** incorporate some degree of multi-competent skills in their curricula (**Bamberg & Blayney**, 1984). The result could be future practitioners that have **little** resemblance to present practitioners. Sites for multi-competency clinical education could be a problem in the next five years. What institutiona, for instance, would train the student in basic radiography? Traditional hospital radiography departments might be resistant if another program area began cross-training in radiography since **it** could be a threat to the profession.

The mechanism used to accredit programs may require adjustment to meet the needs of a rapidly changing industry. Currently, an accreditation body exists for each allied health specialty and nursing (Wilson & Neuhauser, 1985). Health care professionals **programs** planning to cross-train individuals may encounter problems from a matrix of accrediting agencies. Important questions exist for (a) the American Medical Association which accredits most allied health programs, (b) the National League for Nursing, (c) the American Physical Therapy Association, and (d) other organizationa involved in accrediting health training programs.

Conclusions and Recommendations

Planners for educational programs that graduate health professionals meeting the needs of the health care industry should be prepared to respond to changing times. Traditional economic values now influencing the industry may necessitate the development of new multi-competent individuals or the modification of current training **programs** to include multi-competent skills, It is important for all personnel in health programs and professions to monitor carefully all contemporary trends in multi-competency training to insure that the communities of interest may be optimally served.

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RAMIFICATIONS OF DRGS ON HEALTH
CARE DELIVERY IN NEW JERSEY

Margaret Snell¹

Abstract: Diagnosis Related Groups, a prospective payment plan, were pilot tested in New Jersey starting in 1980. Within three years, they became the cost containment mechanism governing the state's hospital patient care. Many changes resulted from the impact of this financial mechanism; hospitals, doctors, health care providers and patients were all affected as well as Visiting Nurse Associations and Health Maintenance Organizations. Because Diagnosis Related Groups have been utilized longer in New Jersey than in any other state, ramifications and emerging trends can be identified. These changes may be of interest to health occupations teachers to help them acclimate their programs to the Diagnosis Related Groups phenomenon and to prepare for future changes.

Change has become a way of life. Change is experienced so frequently and

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in so many ways that at times it is treated quite casually. **In health care** this casualness often is extended to sophisticated advances that are **occurring** with almost predictable frequency in medical technology and in biochemistry.

Not too many years ago we were even moderately unimpressed **about** the introduction of **the** cost control mechanism called Diagnosis Related Groups (**DRGs**). New Jersey was the first state to utilize this new cost control mechanism. At the time of its introduction few health care practitioners knew what the letters DRG represented. Now it is difficult to find anyone associated with health care delivery who is not aware of **DRGs**.

DRGs were introduced in New Jersey on a **pilot** basis in 1980 with one third of the hospitals participating the first year, one third the next, and all hospitals by the third year. Indeed, almost before the health care community had learned what the initials stood for, this system that has, or is, revolutionizing health care delivery was in place and people were expected to use it. DRGs represented a definite challenge to hospitals to operate within the rates established by the DRG system. New Jersey hospitals without exception have had to **undergo** major adjustments and adaptations and, as a result, some are on the brink of bankruptcy.

Some of the changes that have occurred in health care in New **Jersey as a** result of DRGs are presented in this article. While cost containment mechanisms **are** found nationally, seemingly some of the changes in New Jersey have not occurred elsewhere. Because New Jersey implemented DRGs a few years earlier than other states, the changes occurring in New Jersey may forecast developments in other states. Certainly the opportunity to compare may be worthwhile.

The information reported in this paper reflects interviews with

administrators of 4 health care agencies. **Fruther** information from the interviews may be obtained on request from the author. Specific statements are not credited to any particular individual.

Impact on Hospitals

Very often when DRGs are discussed the question, "How have hospitals fared under the cost control mechanism?" is asked as though there were a simple answer. No general statement reflects an accurate assessment of the impact of DRGs on hospitals (medical centers). Each facility should be considered separately in the context of the following two questions: (a) How financially sound was the hospital when DRGs came into being? and (b) How effective is the hospital's marketing procedures? Answers to these questions seem to be closely guarded secrets.

These questions also represent a starting point in considering whether hospitals are surviving or thriving under the DRG system. Of vital importance, for example, are classification of patients served by the institution, type of medical problems they have, and length of convalescent periods before they can be returned to their homes or placed in extended care facilities. Although the DRG formula contains a variable providing a higher payment level to hospitals with a complex case load, some hospitals engage in selective admissions practices. The DRG fixed base payment, whether or not it means to do so, provides an incentive for hospitals to specialize in the most profitable types of health care. There is also a financial incentive to select less severely **ill** patients within a DRG group and **to** choose patients with social and economic characteristics requiring relatively short hospital stays. Thus, medicare patients with complex problems provide decreased financial rewards to hospitals. Some hospitals are reluctant to treat very

ill patients.

In addition, hospitals need a sophisticated system to insure accuracy of primary and secondary diagnoses because the payment system is generated from the diagnosis. Using the system accurately, therefore, influences rate of occupancy, length of stay, and insurance payments received. Inappropriate DRG coding can result in decreased reimbursement for a hospital. Teaching doctors how to use the system initially was by trial and error. Doctors' orientation to DRGs varied from one institution to another, so hospitals initially varied widely in their ability to use DRGs with any degree of efficiency. Some doctors, particularly the older, established ones, resented the system. It took them time to comply with the requirements. It also made them accountable. Hospitals had to spend considerable effort to encourage some physicians to use DRGs accurately.

Teaching and Non-teaching Hospitals

In New Jersey, major teaching hospitals, teaching hospitals, and non-teaching hospitals receive different reimbursement for the same illness. Major teaching hospitals get the highest reimbursement rate because they have higher costs associated with their major teaching functions than teaching hospitals. Additionally, even in the major teaching category there is reported to be a slight difference in the DRG reimbursement. Non-teaching hospitals may get the smallest payments. Many hospital administrators may feel major teaching **hospitals** have an unfair advantage.

Endowments/Business Ventures

Also, endowments considerably influence how well a hospital is faring under **DRGs**. In some instances, hospitals, particularly those with little or no endowments, are trying to survive by entering into business ventures not

typically utilized in the past. Some form corporations with other businesses or incorporate. Others utilize 'unbundling,' another survival technique, in which two hospitals jointly purchase a piece of equipment they both need or offer a service to their patients at a third site separate from the two hospitals. Thus, the hospitals save the total expense of purchasing and maintaining expensive equipment or providing a particular service for their patients. DRGs offer no reimbursement for capital equipment, maintenance, and updating equipment. It is expected that unbundling will be utilized in the future by an increasing number of hospitals.

Health Maintenance Organizations

In addition to these survival techniques, some hospitals are adapting to changing trends in health care delivery by making contractual agreements with Health Maintenance Organizations (**HMOs**). An HMO will send all its subscribers to a particular hospital which offers an agreed upon lower rate than other hospitals in the area. Naturally, **hospitals** offering the best financial arrangements are selected resulting in an assured supply of patients, even though their hospital stays may be shorter than patients with other types of insurance. **Thus**, some hospitals are forced to cut back on services in order to offer those reduced rates. An element of competition is being introduced where previously **little** existed.

Professional Review Boards

Professional Review Organizations (PROS) also influence hospitals in their practice of conducting almost daily reviews of some patients. For those reasons and others, hospitals are becoming more cost effective than ever before.

Another cause for concern is non-payment of bills. If a particular

hospitalization or other aspect of care is not covered by health insurance and a patient is unable to pay the **bill**, hospitals must absorb the cost. When a patient is ready to go home and the family does **not** want the person at home, hospitals must continue care until other arrangements can be made. Some hospitals have even had patients abandoned in their care by families who give fictitious information or move out of the area. These occasions are rare, but only a few instances can seriously deplete resources.

In the past, hospitals were able to recoup some of these deficits and others associated with DRGs by setting fixed costs for "**outlyings**" relatively high. This was possible because for a time outlying did not fall within the DRG system. **Outlyings** are those incidents of care that do not require overnight hospitalization. Typical examples are a D & C (dilation and curettage) and removal of a cyst from the breast. Recent evolutions of New Jersey guidelines control what can be charged for **outlyings**. As a result hospital administrators will be faced with a dilemma of how to pay for expenses not paid under the **DRG** system. This is a problem hospitals are not discussing with any amount of publicity, but it is of concern to almost all of them.

Utilization of Personnel

Hospitals must find ways to cut expenses and one way is efficient utilization of personnel. To increase cost cutting, unnecessary or non-vital functions have been discontinued in many hospitals. Unfortunately many of these cost reduction practices are related to maintaining or improving the quality of care patients receive. Essentials must be provided. Many little "extras" are stopped. Nursing care may be reduced to a dollar value orientation with the quality of care getting little consideration. When a

hospital is having financial difficulties, personnel is one area that administrators examine. Often it seems an easy way to cut costs. For example, members **of** the staff may be encouraged to take unpaid days off or vacation without pay. Hospitals have tried different staffing patterns. Some have laid off low skill level personnel. Administrators rationalize that because patients tend to remain hospitalized for shorter periods and because they tend to require complex, sophisticated care, registered nurses (**RNs**) are essential. Some hospitals use a per diem structure **to** staff their floors, calling part-time nurses as needed. Other hospitals utilize differential staffing patterns with fewer low skilled practitioners than before. Whenever possible, however, expensive personnel are replaced with less expensive.

Members of the health care nursing team who do **not** utilize sophisticated nursing skills, who prefer not to work at hospitals, or whose services are not desired by hospitals, are relocating to nursing homes, home care settings, or community oriented jobs. Sometimes these jobs are associated with hospital outreach programs. This move to community type jobs probably will continue, because the cost of hospital care limits the number of available hospital nursing positions. The DRG system also tends to result in patients being discharged from hospitals earlier in their recuperation than before. Therefore health care providers may find their services are more needed for providing care to patients in non-hospital environments.

Patients and DRGs

Patients may be noticing a difference in the nature and extent of care they receive. Patients may be sensing that patient satisfaction **is** not as important to hospitals as it once was. Yet, patients **may** be focal points of high pressure merchandising. Hospital administrators seem to want patients to

stay until the "trim point" period is established, while HMOS urge subscribers to leave before that time. The trim point for a particular DRG is that span of days during which most patients with that diagnosis will be discharged. Hospitals are paid the same amount for a patient regardless of which day during the trim point period that patient is discharged. It is to the hospital's benefit **to** discharge patients immediately **after** the trim point period is established. Hospitals lose money if patients remain hospitalized to the end of the trim point period. On the other hand, if patients go home before the trim point period starts HMO's save a great deal of money. Incentives are offered patients to influence them to stay or leave early. The incentives vary from a champagne dinner in the hospital to home care support to be provided by the HMO. Many patients are confused by the DRG system and uneasy about the type and quality of care they receive under it. They, particularly the older population, have been programmed all their lives to do as their doctors say. They are expected to be involved in decision making. However, sometimes they have to make decisions on their own and many patients are uncomfortable with this new role.

Physicians and DRGs

Doctors may be the one group most affected **by** changes resulting from the DRG system. **Many** of them seem not to be enthusiastic about DRGs at best and others seem absolutely to dislike the whole system. They have to get approval from PRO Review Boards before they can admit some patients to a hospital. Their decisions about, and care of, patients are being carefully monitored. They seem to resent being questioned about their practices. Some surgery may be considered unnecessary. So called 'Bread and Butter Surgery" (breast biopsy, gall bladder and knee surgery) requires a second opinion In

addition, some businesses offer 100% coverage for **their** employees if they use the company's health care services. These company's services can be associated with an HMO **or** their own physicians. only 80% of patients' bills are paid by the company for employees choosing to use their own physicians. Thus, many patients are transferring from family physicians. Some doctors are seeing numbers of their patients selecting these options.

Hospitals also are **offering** some services that previously were provided by doctors such as weight control, diabetic maintenance and hypertension clinics. Hospitals seem to be expanding services as a way to survive under DRGs . Doctors are noticing the resulting decrease in income.

Visiting Nurse Association

Another major change associated with DRGs involves the nature and quality of home care offered under this system. Because sicker patients are leaving the hospitals in greater numbers than ever before, home care services, such as the Visiting Nurse Association (**VNA**), must prepare to provide subacute care. Many nurses became associated with the VNA initially in order to avoid having to care for acutely ill patients. They enjoyed the support-care nursing typically needed by a home bound person. However, many failed to update nursing skills. Suddenly there are demands for home care services for patients requiring both subacute and acute care. **Many** agencies are not staffed to meet this new need. Skills of personnel in VNAs must be updated and, in some instances, certified. Additionally, many agencies must now offer 24-hour care where they previously closed at 5 pm.

These and other changes resulting from implementation of DRG systems have created many problems. Many community health care service agencies operate on a voluntary non-profit basis. Suddenly home care is big industry. Agencies

now must market **their** services, a process which is time consuming and costly. Many agencies lack adequate personnel, let alone personnel trained in merchandising and public relations. Nevertheless, merchandising an agency's services may become essential if an agency wishes to survive. Complicating this problem and undermining some home care agencies **are** businesses that have emerged to address only one aspect of health care. Services offered by these new businesses in almost every instance are profitable ones. These businesses skim money making services that provided sources of revenue for non-profit agencies **initially**. As a result, non-profit agencies must discover **other** means for making sufficient profit to survive. Otherwise, providing care for patients who are unable to pay may spell doom for many VNA agencies.

DRGs and HMOS

HMOS guarantee their subscribers that the HMO's will pay all the medical care needs of their patients after their patients have paid small token payments. Patient treatment typically is conservative and features less rather than more care. It is **in** an HMO's economic interest to hospitalize patients as little as possible. Also, it is to their benefit to have their patients discharged as rapidly as possible from a hospital. Actually, the less care HMOS provide for their patients the more profit they make.

Just as hospitals are trying different ideas under the DRG system, HMOS also are investigating new approaches. One HMO in New Jersey offered to provide home care for its clientele at 95% of what Medicare/Medicaid **patients** paid the preceding year. Naturally the state accepted. Consider, however, that HMOS at this time have no **licensure** or certification audits similar to VNAs. **While** VNAs must prepare for periodic examinations which are time consuming and costly, **HMOS** at this point in time do not. Consider also, the

unfortunate patients who need care but lack insurance. If VNAs lose patients who have insurance to pay for services, how can they survive? **VNAs** typically have sliding fee scales for services, charging those who can pay to help offset costs incurred against those who are unable to pay. While VNAs receive charitable monies, those amounts diminish as fewer contributions are made by the public. Personnel in VNAs are concerned not only for patients without insurance but also for the growing elderly population. Health problems of the elderly are chronic and debilitating. Are the elderly to be forgotten in the move to cost effectiveness? It may be several more years before the **full** effect of DRGs on patients will be clearly identified.

Conclusions and Implementations

Few people question that cost containment was needed in health care. Costs were excessively high and increasing each year. Obviously some change was needed, so a cost containment program was begun. Any cost reduction mechanism may have some undesirable **aspects**. Some undesirable aspects of DRGs are evident. True, the system **still** is relatively new, but some concerns seem valid. Perhaps some questions about DRGs should be asked, such as: Will health care be governed with minimum consideration for patients? If small community **hospitals** become unable to survive under **DRGs**, will patients in remote areas be able to locate facilities to provide health care? How will hospitals maintain or update equipment? Will patient care be reduced to a profit orientation? Who will pay for indigent or poor patients who are unable to pay for service? **The** questions are easy to ask, but the answers seem non-existent. In health care the human factor should always be the highest priority. Health care providers have humanistic orientations and interests in how DRGs impact on the people being served.

DRGs need **to** be examined regarding their effectiveness and their impact on patients. Change can be fearful because of the uncertainty in causes. High quality health care is far too important to accept a poor quality solution.

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Johanna Austin, Director, **Plainfield** Visiting Nurses Association;

Betty **Kimmel**, Vice-President, **Health** Services, **Healthways**, Inc. (HMO);

Norma Madsen, Gerontology Specialist, Richard Hall Community Health Center;

Jane O'Brien, Vice-President Nursing Service, St. Peter's Medical Center.

HISTORY OF LICENSURE IN **SEVERAL** OCCUPATIONS
IN THE HEALTH PROFESSIONS

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Abstract: The origin of **licensure** in the medical professions is outlined beginning in Europe around the first century with the examination of potential physicians by the most respected physician in the land. Guilds developed and licensing bodies became university medical faculties. Prussia was the first country to require specific courses for license eligibility whereas state control first developed **in** Germany. Americans fluctuated among various licensing methods until the 1700s when state boards were established, Professional standards, including **licensure**, for **allied health** professions have typically followed the lead of physicians. The origins, advantages and disadvantages of **licensure** in several of these occupations are reviewed **also**.

Historians have recorded the revered status of physicians beginning from the first century B.C. in Rome under the reign of Julius **Cesar**. In the book

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of Vendidad, from the Parsis collection of sacred books known as the Avesta, the oldest known set of regulations for physicians (specifically surgeons) is recorded. In 931 **A.D.** the ruler of Arabia required that all potential physicians undergo examination by the most respected physician of the land, Sinan ibn **Thabit** of **Harran (Sigerist, 1935)**.

Licensure of physicians, as a means of protecting the vulnerable public, began in the European Middle Ages **during** a time when crafts and professions of all kinds were organized into guilds. From guilds came strict standards and regulations regarding the quality of professional services. The paramount importance of developing standards for the medical profession was evident to the structured medieval society. Regulated training was designed as the means whereby society considered the physician to be "legal" (**Sigerist, 1935**).

Surgeons were **considered** craftsmen and therefore were allowed to form their own guild. The guild was responsible for governing itself and setting strict standards for its members. In order to practice surgery, a surgeon was required to be a member of the surgeon's guild. Physicians, on the other hand, were not allowed to form a guild due to the generalized nature of their skills. Therefore, "physicians organized, and their licensing body became the medical faculty of the universities" (**Sigerist, 1935, p. 1058**) . The school of Salerno became the first such university to be empowered as a regulatory entity by Norman King Roger in the year 1140. Under the Hohenstaufen ruler Frederick II, very strict detailed laws were established during the period 1231 to 1240. Licenses were issued by the emperor or his representative. Heavy penalties threatened those practicing without a license. Other countries throughout Europe adopted these policies. In addition, physicians were required to renew their license each time they relocated. The

relicensure process involved a presentation of appropriate diplomas held by the physician to the faculty of the local university for approval (Walsh, 1935) . Since many cities in England were not fortunate enough to have a univeristy, a medical society known as the **Royal** College of Physicians was established in London on September 23, 1518. Scotland became a charter member of the college in 1681. Thus, in these two countries, licenses were granted by a medical society rather than a school (**Sigerist**, 1935).

In 1725 Prussia was the first country to require specific academic courses for license eligibility, but the license examination was conducted by a state board of health. After the unification of Germany, responsibility for licensing physicians was returned to the universities so candidates would not have to take two examinations--one from the university and one from the state. Unfortunately, a **law** passed in 1869 required those using the title "physician" to hold a license but allowed anyone else to practice medicine without a license. Austria, on the other hand, combined licensing practices of Prussia and later Germany so that a state official controlled examinations given 'by the university faculty (**Sigerist**, 1935).

Medical practice was controlled in America until after the Revolution. America then repeated the same sequence of events concerning **licensure** that had taken place in Europe during the previous 2,000 years. But, as with other developments in this country, the entire sequence took Americans only 300 years to complete (Sigerist, 1935). State boards of examiners had begun to be appointed by the **1760s** with a state appointed board in New York (**Shryock**, 1967) . Due to increasing demand for physicians during the nineteenth century, medical schools tended to relax standards in order to supply the country with needed physicians. As a result, the university degree could no longer be

regarded as a symbol of competence. State boards soon became the regulatory agencies. Medical **licensure** statutes in the various states were widely divergent (Derbyshire, 1969). Only with the advent of a **mobile** society did interstate **licensure** conflicts become a seemingly insurmountable problem that still exists.

Origin of Allied Health Professions' Licensure

In the 1930s, other groups of health professionals sought **licensure**. (Dental hygienists established **licensure** in Colorado in 1889). The first medical support groups to obtain **licensure** were nursing and medical technology in 1938. A nursing **licensure** law was first passed in New York to register nurses **to** ensure a standard level of care. The statute was not enforced, though, until 1947. Today, all states require nurses to be licensed in order to practice (Lesnik and Anderson, 1947).

Medical technologists also obtained **licensure** in 1938 in California. Since that time, only four other states (Tennessee, Florida, Hawaii, and Nevada) have passed **licensure** legislation. Most states regulate certain laboratory procedures and/or require **licensure** of the laboratory director (Daley, 1984).

In 1968, radiological technologists and occupational therapists became regulated through **licensure**. Radiological technologists were first licensed by the state of New York. Almost 10 years elapsed before any other states followed with **licensure laws**. The federal government, recognizing the need for regulation of all radiation handling professions, mandated that all states must have **licensure** legislation by January 1, 1985 (Consumer Patient Radiation Health and Safety Act, 1981).

Occupational therapists were first licensed in Puerto Rico in 1968. Not

until 1975 did the continental United States have established **licensure** in the state of Florida and New York. Currently, 27 states and two territories license occupational therapists (Information handouts, American Occupational Therapy Association (**AOTA**), 1985).

California was first to license respiratory therapists in 1982. New Mexico followed in 1984. Today, almost every state in the nation is in some stage of **licensure** consideration (Brown, 1984).

Conclusions and Implications

Proponents of **licensure** in the health professions will list the major advantages as: (a) legal safeguard of the public's interest, (b) formal establishment of the occupation as a profession, and (c) proof of licensee's attainment of a minimum competency level (**Shimberg**, 1981). Opponents to occupational **licensure** propose that **licensure** is merely a means of controlling the job market, thereby raising salaries.

The present system of providing medical care has been so restricted by the intervention of occupational **licensure** that it is almost impossible to demonstrate what things would be like if the free market had been allowed to prevail The customer himself should be the supreme judge of **who** is competent to perform the services he requires. . . . One also receives scant assurance **of** competence under a licensing system. . . . We are never sure that a test has been devised to determine the abilities of individuals to perform certain tasks. (**Barger**, 1975, pp. 197-199)

Kane (1982) argues "that **licensure** examinations should be interpreted as measures of specific abilities that are critical for professional practice . . ." (p. 911).

Wilensky (1964) examined the history of eighteen occupations including dentistry, medicine, nursing, optometry, and pharmacy. He determined that crucial events in the advent of professionalism occurred in the following order:

1. People start working full-time performing groups of related tasks.
2. A training school is established.
3. People with like occupations combine **to** form a professional association.
4. Incessant political agitation requires passage of a **law** to protect job territory and to enforce a code of ethics.
5. A formal code of ethics is developed containing various rules addressing issues surrounding unqualified or unscrupulous practitioners, internal competition, and client protection and service (pp. 142-145).

Licensing is the most restrictive of all forms of regulation. No regulation should **be** more restrictive than what is necessary to protect the public. In many cases, certification or registration are better alternatives (**Shimberg**, 1981).

Disadvantages **of** licensing include limited interstate mobility, high costs of **licensure** administration, limited reciprocity, increased expenses incurred in policing the profession, limited scopes of practice, and restricted entry to jobs and training (**Shimberg**, 1981). The major issue facing licensing boards today is "How do we assure the public of an individual's continued competence?*" Many state legislators **may** be addressing this issue in the months to come.

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SECONDARY HEALTH OCCUPATIONS: IMPLICATIONS
FOR PROGRAM DEVELOPMENT

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Abstract: The purpose was to determine interest in a secondary health careers program and in a health career by tenth and eleventh grade students in **Nebraska**. Relationships between interest and sex, grade, and and grade average were examined. Interest in a health career was expressed by 20% (1,326) of the 6,640 respondents and 2,375 indicated they **would** enroll in a **health** careers program if it were available. Attitudes reflecting sex stereotyping of careers were prevalent among sophomore and junior students and to a significantly higher degree among males than among females.

General secondary vocational health occupations programs, commonly called

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Health Careers, provide high school students with exposure to a variety of health careers. Students may also learn basic skills for entry-level jobs as assistants. Nationally, 214,652 students are enrolled in secondary vocationally reimbursed health occupations programs (Golladay & Wulfsberg, 1981, p. 25). In Nebraska, however, only 165 students are participating in such programs (Annual Plan for Vocational Education in Nebraska, 1982, p. 93).

The need for Nebraska's high school students to acquire employable skills is evidenced by the fact that 25% will not graduate from high school and only 50% of those graduating will enter any **type** of post-secondary or collegiate program (Report of the Governor's Task Force, 1983, p. 22). Five of the **28** fastest growing jobs through 1990 identified by the U.S. Department of Labor (Nardone, 1980, p. 4) are vocational health occupations which require training below the baccalaureate level.

Elimination of sex stereotyping could greatly increase the supply of vocational health occupations personnel for the health care industry. Secondary health careers programs would allow males, as well as females, to identify the technical, humanistic, and financial aspects of various health occupations. However, only .07% of secondary students enrolled in the health careers programs in Nebraska are males.

Purpose

The major purpose of this study was to determine the number of tenth and eleventh grade students in Nebraska who would enroll in a health careers program if **it** were offered at their high schools. An important consideration was perceptions of sex stereotyping of careers by these students. The following questions were formulated:

1. How many students are interested **in a health** career?

2. What factors tended to influence the career decisions?

3. Are respondents influenced by traditional sex stereotyping of careers?

4. How many students would enroll in a secondary health careers program if it were offered at their high school?

5. Are there significant differences in the responses of students when grouped by sex, grade average, and class for questions 1, 3 and 4?

Results of the **study could** be used by school officials as justification for recommending additional health careers programs in Nebraska. Data on factors influencing career decisions and sex stereotyping could provide information to **be** used by teachers and counselors in recruiting students for health careers programs.

Review of the Literature

Historically, career guidance literature reinforced sex stereotyping of careers. Planning guides for males or for females, not both, were prevalent. In earlier career literature for males, the position of nurse was not listed (Vocational Guidance Research, 1945). Currently, reference to sex is generally omitted. However, one more recent career information book contained the statement that men could become nurses but no reference to the sex of individuals was made in information on other areas (**Hawes**, Hawes, and Fleming, 1977) .

Sex-role attitudes are apparently a major contributing factor to the hesitancy of males to enter traditional female occupations. Males tend to have significantly more stereotyped perceptions of occupations than females (**Basow**, 1980, p. 146; **Mackie**, 1983, p. 130). Basow cites other studies which indicate that traditional female occupations are not highly valued by either

sex, but male occupations are (p. 257); that undergraduates have a more negative perception of **males** in sex-appropriate or sex-inappropriate occupations (p. 247); and that males prefer to be regarded as superior to their female co-workers (p. 247). These sex-role attitudes are critical considerations since, **universally**, men tend to view themselves in terms of their occupation (**Basow**, 1980, pp. 258, 266; **Mackie**, 1983, p. 101).

Methods

Population

Data were obtained from 6,640 students representing 26 public secondary schools across the state of Nebraska. The respondents were 3,318 tenth grade students, 3,249 eleventh graders, and 73 students who did not identify grade level. Only 1% (65) of the students did not identify their sex, resulting in a known population **of** 3,089 females and 3,486 males. Females comprised 48% of each grade. The ethnic mix of the group was not determined. Reported grade averages were: **16.0%** A, 40.4% B, 35.4% C, 5.3% D, 0.4% F, with 2.5% not reported.

Instrumentation

A questionnaire with four sections was designed to accomplish the objectives **of** this study. The first section requested personal data about sex and grade average. The second section determined students' interests in health careers and why they were or were not interested in a health career. The third section contained a list of 13 careers, and students were asked to indicate the sex of the person they felt would do the best job in each career. Five of the careers were traditional female careers and eight were traditional male careers. The 13 careers were selected on the basis of wide recognition responsibilities associated with each career. Masculine or

feminine determination was based on sex predominance in the **labor** force (U.S. Bureau of the Census, 1980, pp. 418-420) and from a study of occupational sex stereotyping by children (Nemerowicz, 1979, Chapters 3 & 4) . The last section provided a brief description of a secondary health careers course and asked if the students would take such a course if it were offered at their high school. Responses to all questions were forced-choice.

Validity of the Instrument

The content of the items was identical to the content used **by** other researchers (see Basow, 1980, & **Nemerowicz**, 1979) and is available from the author. The instrument was field-tested **on** 50 students. Results of this process were used to clarify instructions and determine attributes of the instrument for obtaining information to meet the objectives of this study.

Procedure

The questionnaire was administered by classroom teachers. Standardization of administration was accomplished by having the teacher read the instructions.

Data Analysis

Aggregated frequencies of response values were obtained for each of the items. Responses to interest in a health career were examined using 2 (male or female) by 2 (yes or no) **chi-square** contingency tables, controlling for class and grade average. Also, 2 (male or female) by 3 (man, woman, or either) chi-square contingency tables, controlling for class and grade average, were used to analyze responses to gender assignment of who would do the best job for each of the 13 careers listed in the third section of the instrument. The fourth section, which sought to determine number of students who would take a health careers course if it were offered at their high school , was investigated using 2 (male or female) by 2 (yes or no) **chi-square**

contingency tables, controlling for class (10, 11) and grade average (A, B,..). The **SPSS^X** program was used.

Results and Discussion

Interest in a Health Career

Interest in a health career **was** expressed by 20% (1,326) of the respondents. Over twice as many females (881) expressed interest in a health career as did **males** (403). (The discrepancy between the total number of respondents **interested** in a health career (1,326) and the totals listed by sex (1,284) resulted as a missing data accommodation for those who did not identify their class, sex, or grade average.) **Chi-square** contingency tables revealed no significant differences between a positive or negative interest in health careers based on class (**10th** and **11th**). Students with B average from both sexes and classes constituted the highest number (575) of students interested in a health career. The next largest group was students with **C** average followed closely by students with A average.

Students were asked to mark all reasons for their interest in a health career. Of the 20% expressing interest in a health career, 73% (973) indicated they were interested in a health career because they had read about it, 64% (851) were interested because they had observed a person with that career at work, and 34% (453) were interested because they felt their families **would** like them to have that career. Of the 5,204 respondents not interested in a health career, (a) 39% (2,030) had no career interest at this time, (b) 61% (3,174) indicated they had decided on another career, (c) 29% (1,509) indicated lack of knowledge about the kinds of health careers, and (d) 12% (623) indicated that a health career was not what their family wanted for them.

These results indicate that an examination of current career awareness activities and an evaluation of the amount and type of health career information available to students is needed. The fact that 46% of the students related their decision regarding a health career to their family's desires for them is consistent with the importance of parental expectations in career decision-making found by Howell and Frese (1982, p. 321).

Sex Stereotyping

The third section of the survey contained 13 careers for which students were to indicate sex of the person (man, woman, either one) they felt would do the best job. Over 50% of the students had the opinion that men were best suited to be farmers, truck drivers, auto mechanics and airline pilots, while women would do the best job as dental assistants, nurses, and secretaries. X-ray technicians, doctors, respiratory therapists, and lawyers, respectively, showed the least amount of sex-stereotyping by students. Female respondents indicated that either a man or a woman would do the best job in each of the 13 careers at a significantly ($p < .05$) higher rate than did males.

Careers were then separated into categories of traditional male and traditional female. Chi-square contingency tables for each category by sex, controlling for class (10, 11) and for grade average (A, B,...) revealed that sophomore and junior male students, regardless of grade average, were more likely to identify men as doing the best job in traditional male careers than were female students. Except for A and D average sophomore males, the differences in responses by male and female students were significant ($p < .05$). In contrast, there were no significant differences ($p < .01$) in the responses of male or female students of either class or any grade average in choosing women for the traditional female careers.

The strong influence of sex stereotyping of careers was **evidenced by** the students' tendency to equate job ability to traditional gender dominance in a career. A six state study of **high** school students (Howell & Frese, 1982, pp. 316-320) also identified a high level of traditional sex-role influence on career decisions. Because males indicated significantly more **career** sex stereotyping, it is unlikely that they would voluntarily seek information on careers which they feel women perform best. However, studies of high school and college students indicate that a **high** level of occupational information gathering tends to increase career decisions and to decrease sex bias in career choices (Hurwitz & White, 1977, pp. 149-156) . A significantly higher number of males held the opinion that males would do the best job in traditional male careers, so it is doubtful that they would be accepting **of** females with these careers. These findings support the desirability not only for structured gender-neutral career awareness activities for **all** students, but also for "destereotyping" activities for current high school students.

Interest in a Health Careers Course

In response to the last question, 33% of the students, 1,468 females and only 832 males, indicated they would take a health careers course if it were offered at their high school. There were no significant differences between male and female students of either class or of any grade average in responding positively to this question.

Conclusions and Recommendations

Vocational health career programs are not available to a large number of students in Nebraska who desire and could benefit from them. Attitudes reflecting sex stereotyping of careers were very prevalent among sophomore and junior students and to a significantly higher degree among males than among

females.

Health Occupations personnel responsible for developing secondary health occupations programs should be concerned with the type and amount of information on health careers available to students prior to their sophomore year and with career awareness activities offered in the schools. Information for parents on health careers **is** warranted as a result of parental influence on career decision making.

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EFFECTS OF COMPRESSED SPEECH THEORY APPLIED TO
HEALTH OCCUPATIONS EDUCATION INSTRUCTION

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Abstract: The purpose of this study was to investigate (a) normal, (b) 40% compressed, and (c) 80% compressed speech presentations of conceptual data for the "Burns" chapter from the Multimedia Standard First Aid book. The material was presented to randomly assigned intact groups of health occupations education 9th, 10th, **11th**, and 12th grade students from two country school systems in a southern state. There were overall differences among posttest scores attributed to presentation method adjusted, in an analysis of partial variance, for reading level and pretest score.

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High school and college students enrolled in **health** occupations programs are faced with increasing demands to learn more subject matter in shorter amounts of time. One way to cope with this problem is to use more efficient presentation and study techniques. Variable speed playback recorders, as a means of presenting slowed or speeded recorded speech, have been available as technical devices to educators and researchers.

For decades it has been known that a person could think far more rapidly than speak. Swanson (1984) revealed that the average person speaks at a rate of approximately 150 words per minute (wPm) ; while the average listener can listen at a rate of at least 450 **wpm**. He also reported that 54% **of** students enrolled in elementary school, 67% of high school students, and 90% of college students spend most of their instructional time in listening to teachers.

Sullivan (1982) reported that speed listening has been employed with different levels of students in a variety of learning modes such as individualized and independent study, for different purposes such as reading improvement and conceptual instruction. **No** studies were found using compressed speech as an instructional methodology with primary focus on either high school health occupations students or their curricula. However, a number of investigators have studied increases in other areas. Myers (1978) utilized varying rates of compressed speech with blind high school students and concluded that the amount learned per unit of time was significantly improved for those students listening to higher rates of compressed speech regardless of their intelligence, grade, placement, or sex. She reported that blind students reading braille normally cover only one-third of the material covered by sighted peers in the same time frame. However, by listening to a normally spoken recorded version, blind students increased their coverage to two-thirds

of the material. Sullivan (1982) found the compressed speech technique resulted in reading comprehension and reading rate gains that were comparable to those made with the traditional visually paced group while studying adult university students. Reading disabled students, ages 9 and 10, also showed marked improvement under the compressed auditory condition; with performance identical to that of the normal group (Marlowe, Egner, and Foreman, 197'9) .

Research with compressed speech or speed listening for the past five years has suggested that the compressed auditory mode of learning may lead to greater opportunities to learn and to achieve academically for many HOE students, including those with reading or other learning problems. The primary purpose of this study was to examine relative performance of three intact groups of health occupations students at the high school level who were randomly assigned to (a) normal speech, (b) 40% compressed speech, and (c) 80% compressed speech treatments. Specific focus was on conceptual content of a chapter on **burns from the common textbook designated as background for the first-aid competitive event for health occupations students. The index of effectiveness of treatments on student achievement was labeled "posttest."** Covariates were levels of "reading" (obtained from the California Achievement Test [CAT] and "pretest" burn scores. Independent variables were labeled "rate" of speech compression, "school" of enrollment, "grade" in school, "sex" and "race" of student. The hypothesis tested with the statistical model was. that there were no differences among **covariate** adjusted posttest means for the three different speech rates, based on **an** error mean squares corrected for systematic differences due to school conditioned by rate. Data also were collected for determining perceptual (affective) responses of subjects to treatment experiences and **will** be published at a later date because of space

constraints.

Method

Subjects

Participants were students enrolled in health occupations programs of four schools in two school districts of a rural southeastern state. Participants from each school were selected because they had not completed the required first aid unit of instruction which included a section on burns. Administrative constraints mandated that the study be conducted with intact groups previously established in scheduling classes at the beginning of the academic year. There were 105 students in 9 classes (3 classes randomly assigned to each treatment rate). Not all rates were applied in each school. There were 33 students assigned to the normal speech group (125 to 150 wpm), 39 students to the 40% compressed group (175 to 210 wpm), and 33 students to the 80% compressed group (225 to 270 wpm). There were 19 male and 86 female, 44 black and 61 caucasian; 13 students were 9th, 39 were 10th, 33 were 11th, and 20 were 12th graders.

Materials

Textbooks. Multimedia Standard First Aid Student Workbook ([MNSFA], American National Red Cross, 1978) and Standard First Aid and Personal Safety (American National Red Cross, 1979) containing chapters entitled "Burns" were the textbooks providing conceptual content for constructing audio tapes at normal rate and at compressed speech rates of 40% and 80%.

Cassette tape player. The original tape, and all tapes played back during treatment, utilized a Bell and Howell (Model 3085) cassette tape player.

Speech compressor. The Varispeech II Audio Tape Compressor, produced and

marketed by **Lexico** Corporation, **Waltham, MA.** , was used for 40% and 80% compressions of normal speech.

Instrument. The supplemented 31 item test of core questions from the MMSFA Workbook was the resource used, with permission, as pretest and posttest in the present study. The first item on the instrument (*not* one of the MMSFA items) tested suitability of each student for the study by validating that each had not previously completed a course in first aid. The 31 core questions (MMSFA items) followed. Ten additional items (demographics and student perceptual reactions) were added to the end for purposes of soliciting personal data and judgments believed *to* be relevant for interpretation of results. Three of the 10 added items did not appear in statistically models and are not considered in this report. "The content of . . . [MMSFA] is based on information provided by the Division of Medical Sciences, National Academy of Sciences, National Research Council. . ." (MMSFA, Acknowledgments, 1978). Validity and reliability results were not presented in MMSFA reports but were determined for the present sample and are reported below.

Six teachers rated the burn related conceptual content of the research instrument on each of four dimensions of content validity. The dimensions rated were (a) "The items represent the content," (b) "The items stress the most important areas in the content," (c) "The items are appropriate in format for the content," and (d) "The items proportionally sampled all major topics in the content." The rating scale ranged from 1 to 100 for each dimension.

Procedure

Calibration. An audio technician provided technical assistance for developing the compressed tapes. A professional drama and broadcasting personality read the script for taping at the normal rate to insure clarity,

normal rate, and standard diction. One of **the** authors, after appropriate instruction, used the **Varispeech** II Audio Tape Compressor to compress the normal rate to 40% and 80% of the time required for normal delivery. The normal rate ranged between 125 and 150 words per minute for the 15 minute "normal" tape. With "40%" compression the delivery time was 9 minutes; with "80%," **it** was 3 minutes.

Treatment. Intact groups of subjects were randomly assigned to treatment rate: normal, 40% compression, and 80% compression. After randomized assignment of groups to treatment, the treatments were administered on a scheduled day within each school in classroom settings monitored by the authors and the respective classroom teachers. Validating demographic items" and the "retest" were given by the principal investigator two weeks prior to administering treatments.

A 5 minute orientation tape designed for practice in the conceptual area of "poisoning" **was played** immediately preceding each treatment. After the orientation session a practice examination similar to the burn test, but in the content area of **posioning** as presented on the orientation tape, was administered. The monitors explained that the treatment would be administered in the same manner. All questions **were** answered and the treatment was begun. The treatment tape was played, and "**posttest**" demographic, and perceptual responses were collected.

Beyond random assignment of group to treatment, there were no further direct controls. There were, however, statistical controls for sex, race, grade level, and school. Additional control of concomitant variation was effected through sequential analysis with reading level and pretest scores entered first into the statistical model. There wae no attempt to control for

variations in hearing acuity among the subjects.

Statistical analyses. An interrater reliability coefficient was used to determine similarity in ratings profiles among six teacher reviewers on four dimensions for burn related items of the research instrument. An interitem consistency reliability coefficient for the 31 items composing the "posttest" also was computed for the 105 subjects.

The posttest model utilized principles of change data analysis presented in Cohen and Cohen (1983, pp. 414-423). **Covariates** in the posttest scores model were "reading" and "pretest." Demographics were "sex," "race," "grade," and "school." The manipulated variable was named "rate." "School" was nested within "rate." The final model used for analysis of **"posttest"** scores conforms to Cohen and Cohen's conceptualizations for "analysis of partial variance" with covariates entered in the first two positions, "rate" in **third position, and "school (rate)" in last** position. This model represented a second stage analysis after determining that the demographic variables "sex," and "race," and their interaction, as well as other two way interactions accounted for only chance amounts of variation in "posttest." "Grade" was deleted because of demonstrated statistical redundancy with the covariates.

Results

The Instrument

Reliability and validity. The interrater reliability computer for similarity among 6 teacher rating profiles on four dimensions of content validity was .52. An interitem consistency reliability (**Cronbach** Alpha) of .66 was computed for the 31 burn items administered to 105 subjects. Factor analysis was applied to the 31 item burn test producing a varimax-rotated,

principal-factor solution for construct validity of five factors explaining 28.3% of observed variance in the 31 items. The analysis showed an overall Kaiser measure of sampling adequacy equal to .50. Factors were named (a) timeliness of treatment, (b) principles of treatment, (c) anatomy, (d) signs and symptoms, and (e) types of burns. Sixteen items loaded above .40 on at least **one** of the five factors, no item loaded **on** two or more factors. These data indicate that **items** of the burn test **are** not very homogeneous, and that variability is restricted in the right-wrong sense across all items. I items seem to be **too** simply stated with too few choices adequately to test conceptual knowledge.

The Posttest Model

Analysis of partial variance (**APV**) was the method of choice for accommodating **multicollinearity** (high **intercorrelations** among independent variables in **the** model) due to unequal **n** in various cells of the posttest model. Means for the treatment variable, compressed speech 'rate,' are reported in Table 1 as unadjusted and adjusted cell means. Significance tests for adjusted means are also reported in Table 1. By **Scheefe'** tests, the adjusted posttest mean for the normal speech group was significantly higher than the adjusted means for both speech compression groups which do not differ from each other. There were school differences, but these were confounded with treatment rate.

School nested within rate produced significant simple school effects for both compressed rates of speech. Within the normal group, adjusted posttest means differed by at most 1.7 units; within the 40% group, the difference was 6.3 units; and within the 80% group, the difference was 8.6 units. The complete APV model accounted for 1107 out of 1722 units (64.3%) of observed

variability in posttest scores.

Table 1

Analysis of Bums Test Data

Mean Scores Broken Down **by** Independent Variable Values

Independent Variable and Values	n	Read Mean	Pretest Mean	Posttest Mean	Posttest Mean
				Unadj	Adj
Rate of Speech					
Normal	33	9.56	27.58	32.52	33.44
40%	39	8.95	25.33	29.00	28.39
80%	33	8.23	26.39	18.24	27.70

Analysis of Variance of Posttest Scores

Score	df	Type I SS	F	P
Reading level (CAT)	1	642.08	98.23	0.00
Pretest score (burns)	1	117.99	18.05	0.00
Rate	2	157.54	12.05	0.00
School(Rate)	6	190.05	4.85	0.00

Discussion

The Posttest Model

Observed differences between adjusted posttest scores for the three treatment rates suggest a clear superiority for normal speech over compressed rates. However, the highest scoring classes within the compressed rate groups [School 1 (40%) and School 3 (80%)] have adjusted means that closely approximate overall mean performance for classes experiencing the normal rate. There appear to be unknown school specific influences that bear additional investigation. Potentially contributing variables uninvestigated in the present model were (a) hearing acuity, (b) listening skills, and (c) amount of practice with compressed speech.

Limitations

The limitations of the study were: (a) the intact group design externally imposed for school administrative reasons prohibited random assignment of subjects to groups, (b) routine administration of the CAT is only to 8th and 10th graders in the participating schools and reading levels of the students may have differentially changed, and (c) reliability and validity data for the Burns instrument were not published by American Red Cross.

Conclusions and Recommendations

High school health occupations education students were able to learn new material from audio taped presentations. Present data indicate that compressed rates of 40% and 80% may be equal to the normal rate for presenting health occupations concepts to some high school students. Although Swanson (1984) reported the "average listener" can listen at **450 wpm**, some students in this study had difficulty with the maxima of 210 and 270 wpm. If audio taped

presentations are utilized for instruction, it is recommended that teachers allow students the opportunity to develop listening skills at compressed rates. This may increase their acceptance of these faster rates and reduce the time involved in learning new information, especially in individualized Study .

Drake (1984) recommended use of compressed audio tapes with individualized instruction but only after practice with compressed speech tapes. It appears that further study is needed with repeated practice of compressed audio tape presentations. **This** technology has the promise **of** being effective with less time invested in learning new information and is worthy of continued investigation.

One concludes that further study of the potential of compressed speech in the area of health occupations education should continue. This method of instruction seems to be a natural technique for students with learning problems or for students **who** are involved in individualized study.

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Body Structures and Functions, (6th ed.), Elizabeth Fong, Elvira B. Ferris and Ester G. Skillely. Delmar Publishers, Inc., Albany, N.Y., 1984, 312pp.

Body Structures and Functions provides a thorough and concise view of basic anatomy and physiology. The text may be used by students in practical nursing, allied health fields, and high school programs.

The book is divided into ten sections of four to eight units each and includes sixteen pages of full-color anatomical illustrations which enhance the understanding of the system being studied. The units consist of three to eight pages of information preceded by key words which introduce the unit material. Also, a self-evaluation **at the** end of each section enables individual assessment.

A strength of the text is the "Further Study and Discussion" **section**. **This** section provides additional experiments, questions **to** explore, and projects that can be give further insight. The length of the units and listed objectives should also asaist students to learn the information **easily** in a short period of time.

Instructors may criticize the soft-bound cover which might not withstand repeated use. However, the text has a very unique writing style that provides interesting subject matter which is understandable and easily readable.

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