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ABSTRACT

More than 100 individuals attended a 2-day conference on developing dental auxiliary utilization (DAU) programs. Presentations included in this report are: (1) "How the Dean Implements the DAU Program," by James English, (2) "Some Objectives of a DAU Program" by Charles Barr, (3) "Role of the Supervisor in a Dental Auxiliary Program" by Delores Riczo, (4) "The Development of a Manual of Procedures" by Sherry Byrne, (5) "Structural Learning and Training" by J.C. Galbreath, (6) "Expanded Functions for the Dental Assistants" by Paul Hammond, (7) "Iowa's Approach to the Challenge of Auxiliary Utilization" by Dale Redig, (8) "Introduction of the Sophomore Dental Student to Four-Handed Dentistry" by Alice Eder, (9) "Faculty Participation in the DAU Program" by James Collard, and (10) "DAU and the Total Oral Health Concept" by Ronald Occhionero. Also included are guidelines for evaluating DAU training grants. (JS)

TRAINING DENTAL STUDENTS *to use* CHAIRSIDE ASSISTANTS

PROCEEDINGS—SIXTH CONFERENCE

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service • National Institutes of Health

TRAINING DENTAL STUDENTS *to use* CHAIRSIDE ASSISTANTS

Proceedings of the Sixth Conference
April 16–17, 1968
Chicago, Illinois

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service—National Institutes of Health
Bureau of Health Professions Education and Manpower Training
Division of Dental Health—Bethesda, Maryland 20014

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ADDRESS OF WELCOME

DR. HAROLD HILLENBRAND*

I am indeed pleased to have an opportunity to say a few words of welcome to this Sixth National DAU Conference. It is gratifying that the meeting is being held here in the headquarters building of the American Dental Association. I hope [illegible] you attending this conference who have not previously visited the building will find time to tour our facilities. You will be, I think, as pleased with them as we are proud of them.

In speaking of the place where this conference is being held it is also noteworthy to point out that it is being sponsored by the Division of Dental Health of the Public Health Service. That combination of location and sponsor speaks well, it seems to me, of the sound relationship between the dental professional in private practice and the dental professional in public service. Quite obviously, our slightly differing perspectives give a meeting such as this a substance and a reality that would be lacking were we not to come together. While that may seem, at first glance, a statement of the obvious, I can assure you that such a cordial, working relationship does not necessarily obtain in all professions. Dentistry can congratulate itself on its good sense in making sure that it exists and will continue to exist within ours.

We have come some distance since the First National DAU Conference. Not perhaps, so far as many would wish in that the utilization of dental auxiliaries to the full scope of their potential is not yet so widespread as it should be. It has of late, however, been the cause of some controversy and while I am of too retiring a disposition to welcome controversy, I console myself with the thought that it is often the concomitant of progress.

It is a major part of your task, I would say, to make sure that future discussion continues to shed more light than heat on the problem. The challenge to the dental profession to provide even finer care to greater numbers of people is not going to fade away. Nor would we wish to do so. No health profession can be satisfied until its services are readily available to everyone in the population for which it is responsible.

Dental auxiliary utilization is a major component of such questions as delivery of care, cost of care and quality of care. I wish every success in the work you will be doing here in helping dentistry and the nation answer those questions properly.

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* Secretary, American Dental Association.

INTRODUCTORY REMARKS

DR. VIRON L. DIEFENBACH*

I bring to you the very good wishes of the staff of the Division of Dental Health and the Public Health Service.

It might be of interest to you if I describe the development of the DAU program and retrace the steps taken by the Public Health Service in dental auxiliary utilization.

In 1946, the Service established two community-based care programs—one in Indiana and one in Rhode Island. These two studies are now so well known that they are often referred to as the "Richmond and Woonsocket Studies." Among their notable contributions was the development of the concept of chairside dental assisting. We were seeking more efficient ways to use dental assistants.

When I first went to Richmond, Indiana as a project clinician, I was totally unmoved by the idea of four-handed dentistry; in fact, I frankly resented having an assistant hand me anything. Most new project dentists felt the same way. But after a few weeks, we changed our viewpoints altogether. These two projects, which ran for 5 years, were an unforgettable and invaluable experience.

In the early and middle 1950's we continued through short courses to urge practitioners to try these new methods. I regret we failed in most cases to convince them to change their ways.

And so, in the late 1950's under the leadership of Dr. Walter Pelton, we tackled the problem differently, and working with a few experiment-minded dental schools, began the prototype of what is now the Dental Auxiliary Utilization Program. In 1961, the present grants program was launched. Judging from the size of that initial appropriation, Congress was not wildly enthusiastic over dental auxiliaries. But starting with that modest budget, we received steady increases. It is encouraging to note that the amount of money appropriated for this fiscal year is $3 million. For fiscal year 1969, we have requested $4 million, and we hope that by 1970, the amount can be increased to $4.5 million. Yet, the appropriation is still less than the amount needed to operate this program satisfactorily. We need very much to strengthen the quality of individual programs and

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to extend to more dental students the experience of utilizing all types of dental personnel. I would caution all of the schools against taking for granted their DAU funds. As you know, these are *not* entitlement grants. They are competitive grants.

I am pleased to report that all of the 50 active dental schools are now participating in the DAU program. Even so, it has been very difficult in some schools to gain faculty acceptance of the concepts of four-handed dentistry. Faculty resistance has, in fact, been one of the major difficulties some schools have faced in regard to DAU.

At this meeting, you will discuss the Guidelines that were developed last fall by the Advisory Committee on Dental Student Training. Let me underscore one point: The guidelines are not meant to be the ultimate standard of excellence. To the contrary—they set forth the minimum criteria of acceptability, the basic essentials. If your training is missing any one of these elements, then you should correct the omission, and go on from there to build stronger and more effective teaching programs.

The "show and tell" part of the conference should give all of you new ideas. Response to these presentations was very good at the regional conferences. I understand that you also will have group sessions. The assistants will meet in their groups and program directors in other groups. This arrangement is intended to encourage free wheeling discussions.

Conferences such as this can do a great deal to teach and inspire. I hope this one does both and that you take home with you a new resolve to strengthen and to improve your programs.

IMPLEMENTATION OF DAU GUIDELINES

. . . the Guidelines speak to certain basic components-faculty, dental assistant, facilities. These are tangible assets and are all necessary for a good DAU program. Three of these basic components, represented on this platform, will very much decide the success, failure, or mediocrity of your program.

The Guidelines were developed by the Committee and staff as you have been told and I would like to underscore one thing. These are the basic minimum. We do not intend that these Guidelines promote national uniformity . . . .

JOHN J. SALLEY, D.D.S.
Dental Student Training
Advisory Committee

GUIDELINES
for evaluation of the
DENTAL AUXILIARY UTILIZATION TRAINING GRANTS

October, 1967

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service · National Institutes of Health
Bureau of Health Professions Education and Manpower Training
Division of Dental Health
8120 Woodmont Avenue · Bethesda, Maryland 20014

6/7

TO: DAU Program Directors

FROM: The Advisory Committee on Dental Student Training Division of Dental Health, Bureau of Health Professions Education and Manpower Training, National Institutes of Health, Public Health Service, U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

SUBJECT: Evaluation of Your DAU Program

The Advisory Committee on Dental Student Training is charged with: (1) assessing the merits of new and renewal applications for DAU grant support and recommending appropriate action on such applications; (2) reviewing the DAU training programs in all schools awarded grants to determine, among other things, whether the funds are being spent effectively and recommending appropriate action, if required; and (3) advising the Division of Dental Health on the general conduct and progress of the DAU program.

Because of some developments affecting those responsibilities, the Committee examined the DAU program in depth at its meeting on September 22–23, 1966. As a result, the Committee decided to send you a resume of the opinions expressed, suggestions for evaluating your program, and an explanation of how it will recommend the award of grants.

BACKGROUND

Dental manpower is in short supply and that situation is becoming steadily worse. Population growth of unusual and unexpected size has occurred. But the growth of the active civilian dentist work force has not kept pace with that of the population. The effect of the imbalance in the growth of population and dentists is reflected in the fact that the number of dentists per 100,000 population dropped from 58 in 1930 to 45 in 1965—a decrease of 22 percent.

One of the proven ways of extending available dental manpower is through the proper use of trained dental auxiliaries. And that is why the DAU program was inaugurated.

The great majority of schools participating in the DAU program applied for and were awarded training grants by fiscal year 1961. The remaining few schools that came into the program entered in subsequent years.

Each participant accepted the responsibility for structuring and conducting its program to accomplish the following statement of intent and

purpose and each was urged to apply inventiveness, experimentation and imagination to this task.

INTENT AND PURPOSE

The immediate intent of the DAU program is to assist dental schools, through the award of training grants, to develop continuing programs for teaching all dental students the effective use of trained chairside dental assistants. The other auxiliaries will be included in the program when feasible.

The purpose, or reason-for-being, of the DAU program is to prepare each newly graduated dentist for the proper utilization of well-trained auxiliaries in his practice. Such utilization will:

1. Substantially increase his productivity.
2. Make it possible for him to provide more services of equally high, or even higher, quality to more patients; and
3. Offer a partial solution to the problem of the growing dental manpower shortage.

COMMITTEE OPINIONS

The opinions expressed by the Advisory Committee on Dental Student Training at its meeting on September 22–23, 1966 were that:

1. The fiscal years prior to July 1, 1966 should be considered as development years for the schools' DAU programs.
2. Most problems in the schools' DAU programs should have been solved by now.
3. Most of the schools' DAU programs should now be operating on a sound basis, and should be reasonably productive; and that
4. The proficiency and productiveness of the schools' DAU programs should improve steadily.

The Committee also was of the opinion that a review of the basic components of each school's program, as listed on pages 4–6, will help:

1. The Program Director
   a. plan and direct operations of a school program that fulfills the intent and purpose of the DAU program.
   b. make certain that all the required basic components are included in his program to the degree necessary; and
   c. evaluate the progress made by and the proficiency of his specific program.
2. The Committee
   a. determine whether the intent and purpose of the DAU program are reflected in each school's program.
   b. evaluate the progress made by and the proficiency of each school program; and
   c. determine whether it is justified to recommend present and continuing grant support of each of the school programs, and if so, the dollar amount of each grant so recommended.

METHOD OF REVIEW

By the DAU Program Director

It is apparent from the Committee's opinion, as expressed immediately above, that two evaluations of your program's basic components are needed. One is a continuing evaluation by you as the DAU program director. The other will be an evaluation by the Committee.

As an aid to you there follows a list of basic components for a proficient, productive DAU program. Each is conspicuously present in the more successful programs. And, the absence of any component—partially or completely—seriously detracts from the effectiveness of a program.

The list was prepared for your use in evaluating your program. It is suggested that you use it periodically to assess the progress made toward your stated goals. Do not send your findings to the Committee. Rather, use them as starting points for such action as may be necessary in your program.

By the Committee

From information obtained during site visits and from your annual progress report, the Committee will make its evaluation of your program. The same basic components as listed on pages 4–6 will be used. And on the findings that result, the Committee will:

1. Determine if your program reflects the intent and purpose of the DAU program.
2. Determine the degree to which all the basic components are present in your program.
3. Determine the degree of progress made by, and the proficiency of, your program; and
4. Recommend award of a grant in support of your program, equated in amount to the findings under sub-paragraphs 1, 2 and 3, immediately above.

In other words, the Committee will determine whether it is justified to recommend present and continuing grant support of your program and if so, the dollar amount.

THE BASIC COMPONENTS

Listed below are the basic components which are to be used in evaluating your program.

General

The DAU program should have a formal place in your dental school's curriculum.

Your DAU program goals should be clearly defined and should be understood by the entire dental school faculty, students and dental assistants.

Faculty

There should be enough faculty instructors, skilled and experienced in the effective use of trained chairside dental assistants, to assure thorough instruction of each dental student in the technic. These instructors should utilize all proven and approved methods of teaching, including demonstrations, seminars and audio-visual aids.

The dental instructors assigned to the DAU program should be primarily concerned with teaching students to use trained dental assistants, rather than checking dental procedures.

Active instructions in, and demonstrations of, sit-down "four-handed dentistry" should be a part of the program. This concept also should include, as a *minimum*:

Utilization of modern equipment (suited to DAU needs).
Chair-positioning for patient, student and assistant.
Maintaining patient rapport.
Use of prearranged instrument trays.
Passing of instruments
Use of water, air and evacuating equipment.
Prepartion and delivery of filling materials.
Development of a manual of procedures.
Appointment control.

The Dental Student

Each dental student, before graduation, should be trained under your DAU program.

Students should be thoroughly oriented through didactics and demonstration, in the principles of utilization of trained chairside dental assistants, before getting clinical team assignments for the treatment of patients.

The bulk of the clinical phase of your DAU program should be devoted to teaching students the effective use of trained chairside dental assistants in restorative procedures.

The balance of the clinical phase of your program should be devoted to teaching dental students the effective use of trained chairside dental assistants in all other procedures.

The Dental Assistant

The duties of the trained dental assistant should be devoted primarily to chairside assisting so long as students are available for DAU training.

A dental assistant thoroughly trained in chairside assisting should be assigned to each student on a full-time basis during his DAU clinical training experience. She should be capable of anticipating the student's need and of helping him work with her at chairside.

Facilities

There should be a properly equipped clinical area designed specifically to teach dental students the effective use of trained chairside dental assistants.

There should also be an area especially equipped to demonstrate the sit-down "four-handed dentistry" technic to dental students.

HOW THE DEAN IMPLEMENTS THE DAU PROGRAM

JAMES A. ENGLISH, D.D.S.*

Dentistry has a moral obligation to the people to adequately meet their dental needs both present and future. We, as dentists, are obligated to do this in the most effective and efficient manner possible. You are all aware that our profession is endeavoring to meet this challenge in a number of different ways. In our schools we are doing this through research, through strengthening our programs in preventive dentistry and by teaching our students how to be more efficient in the practice of dentistry through the utilization of dental auxiliary personnel.

One of the responsibilities of a dean is to assign relative weights to such objectives and to implement each of these as thoroughly and as carefully as possible. This paper deals only with the latter objective—the implementation of the DAU program.

The philosophy behind providing dental assistants and dental hygienists in our educational institution is to thoroughly indoctrinate our students in the fact that they are more efficient when they are working with adequate assistance. Unless our students learn this as they receive their primary training in the clinic, they are liable to follow past practices of not having sufficient assistants when they are working in their own offices or in hospitals or public clinics. The Public Health Service of the United States has underwritten the costs of the National Dental Auxiliary Utilization Program and it is clear that well-informed people are convinced that this trend toward adequate staffing by ancillary personnel is a sound one. It is anticipated in the State University of New York at Buffalo that by 1974 when students reach the senior year they all will be working with a chairside dental assistant during most of their clinical experience. We also expect to have a small section of one clinic set up so that a percentage of the class can be working with more than one assistant to gain a special experience in using not only a chairside assistant, but a second person who does preparations of needed material, seats patients, and takes care of the general secretarial procedures.

The above statement of philosophy was submitted to and approved by our State budgetary authorities some four years ago. Thus, through the dean, the State is supporting the DAU program.

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* Dean, School of Dentistry, University of New York at Buffalo.

There are other ways the administration can support the program. The dean must project strong personal conviction and enthusiasm in an effort to convince the faculty of the importance of the program. Administrative funds should be provided to support faculty orientation programs with principal speakers or clinicians who are nationally known leaders in sit-down four-handed dentistry. Finally, realizing that it is difficult to convince some of the faculty who have practiced and taught dentistry in the traditional manner for many years, the dean, program director, and DAU Committee should decide the direction that the program will take and its specific relationship with all departments. If the dean is convinced, he must let others know it and project his confidence by establishing an inter-departmental appointment for the program director which gives him sufficient authority to execute the plans of the DAU Committee. This should effect a better working relationship with good communications between all departments and the DAU.

Since one or two individuals cannot continuously develop, invent, and evaluate new ideas, there should be a DAU Committee appointed by the dean. This Committee should involve several clinical department chairmen. This team should have as chairman, the director of Dental Auxiliary Utilization, and should include the co-ordinator of the dental assistants and at least one faculty member from each clinical department. Since department chairmen are presently over-burdened with administrative tasks and committee assignments, they should be permitted to appoint a mature representative to represent them in the Committee. This individual should have sufficient rank and authority to bring about departmental cooperation. He would, in turn, be responsible for demonstrating and teaching sit-down, four-handed dentistry to junior faculty members in his particular area. He would also be responsible for collaborating with the DAU director in the administration and direction of dental assistants, dental aides, and issue clerks assigned to that department. He would be the liaison between the director of the program and his respective department chairman.

The DAU program should have an identity of its own and have a specific area for administrative and personnel work. There is no doubt that with few exceptions, every dental school in the country faces the critical problem of a shortage of space; however, DAU programs need specific areas in which to locate. In Buffalo this program began in the Pedodontics Department, but now has extended to the Operative Dentistry, Prosthetics and Crown & Bridge Departments. Departmental clinics should have modern equipment or conversions of standard equipment which will enable modern concepts of dentistry to be practiced. The dean should establish an Equipment Evaluation Committee which will concontinually evaluate new equipment and, more important, new concepts of operating. This Committee should have an area where new equipment can be tested and it should work in close liaison with the DAU Committee.

It is most fortunate that the United States Public Health Service has

been financing DAU programs in all schools which have requested aid. This funding has been on a grant basis with very few strings attached. There is a need for other financial support for the DAU program. In most schools projected budgetary increases must be submitted two or three years ahead of time. Support from the Public Health Service has prevented an undue lag due to budgetary delays. School budgetary projections must adequately provide for numerical DAU staff increases. Every effort should be made to convince non-dental budgetary authorities that the graduating dentist must be capable of increased productivity and that the basic learning experiences must take place in the Dental School rather than after graduation.

The DAU program should have a formal place in the school's curriculum. The dean can encourage this by appointing the program director to the Curriculum Committee. He can charge the Curriculum Committee with the responsibility of planning for "total patient care" and utilizing the DAU program. He can encourage faculty participation in both the didactic and clinical phases of the program by allowing time for faculty members to actively participate.

Auxiliary utilization embraces every phase of clinical dentistry. Didactic courses of the various departments should also include the proper integration of effective auxiliary utilization. Finally, didactic curriculm time should be specifically allocated to the DAU program. To further implement the DAU program, the dean must enthusiastically support it outside the sphere of the Dental School. He can give the program publicity, especially noting its relationship to total patient care and national dental health. Since most practitioners are interested in new methods of effectively increasing their productivity, the postgraduate curriculum and continuing education program should include participation courses in auxiliary utilization. All DAU clinical staff and faculty should assist in these course presentations.

In summary, the responsibilities of the dean for implementation of the DAU program lie largely in the field of supporting the director of this program. This means giving him a degree of authority in carrying out the program in various departments, providing physical needs that are not made available through program funding, providing administrative help through hiring additional personnel, and where possible, providing staff personnel beyond the level of grant support.

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SOME OBJECTIVES OF A DAU PROGRAM

CHARLES E. BARR, D.D.S.*

It is still too early to evaluate in a reliable way the impact DAU programs have had on recent graduates since only 15,000 practicing dentists out of 96,000 active dentists have been provided DAU instruction in our dental schools though the 1966 graduating class. It has been estimated by the Public Health Service that by 1975 about 45 percent of all practicing dentists will have received DAU training through dental school programs. According to the U. S. Public Health Service, DAU oriented dentists will have the potential to treat up to 75 percent more patients than non-DAU educated practitioners without lengthening their normal work day. We are still in the dark as to what effect the DAU programs have had on the public in terms of helping to meet the demands for dental services since their inception in the late 1960's. We know there are statistics available relating to increased efficiency with the use of one or more assistants in combination with secretarial help and two or more operatories; these figures are merely of academic interest at the present time since there are no conclusive findings available yet to tell us what the graduates of DAU programs are doing. It would be most interesting if the ADA Bureau of Economic Research and Statistics were to compile records on auxiliary utilization and identify the statistics that apply to recent graduates who have participated in DAU dental school programs. I believe this information has been retrieved by some individual schools recently. Reports indicate that even from the small samples reporting that when a comparison is made between DAU oriented students and older graduates of non-DAU vintage—a greater number of the younger men are using auxiliaries more frequently than the older dentist *and* many in accordance with DAU instruction.

In developing the DAU program at any college of dentistry, a number of ingredients must be compounded together, and they must gel in order for the student to believe in and want to practice in the school's program. It is important for faculties to recognize that students react positively more often than not to stimuli provided for them while in school; therefore, if we desire that one of the over-all objectives of the curriculum be the inclusion of an excellent dental auxiliary utilization program, then

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undoubtedly we must do more than provide lip service to foster the development of that program. The program must do something, not only *for* the student, but I believe the program must do something *to* the student. One verb that is appropriate when referring to doing something *to* the student is—motivate. As an individual sensitive to the needs of the student on a day-to-day basis, and as the director of the over-all clinical program as well as responsible for student counseling, motivation represents to me *the* most important aspect of the dental student's education. We can be sure our students developed felt-needs before matriculating in dental school. They were motivated to do well in their colleges of liberal arts in order to gain admission to dental school. Those same students, after enrolling in the dental school, acquire different felt-needs to sustain them and drive them on, and these needs yearn to be realized. It appears to me that were we to capitalize on the greatest felt-need at the appropriate times in his dental education, we could develop attitudes in the student that would be beneficial to him, his profession, and his community. To be specific, what we must do is to motivate the dental student to *want to participate* as completely as he possibly can because this participation will help to satisfy strong needs after graduation. Obviously we cannot tailor an auxiliary utilization program to satisfy a different need for each student; however, I am convinced that by serious consideration of student needs in general we can make a strong case for the DAU program in our dental schools. Recognizing that the greatest source of motivation for the student is his need to graduate, we might and perhaps should demand successful completion of the DAU program as part of graduation requirements. At the present time there is usually little the student must do other than attend the DAU clinic when he is scheduled there. Since his participation has little to do with his need to graduate, the motivation for participation must be directed toward needs that will be meaningful *after* graduation when the student has become a practitioner in the community.

Before students participate in clinical application of auxiliary utilization principles they are entitled to a thorough introduction to the reasons for the program. They must understand the past, present, and especially the future needs of the population in relation to demands for dental care. They should be completely exposed to the concept of the dental health team and the capabilities and responsibilities of each member. Only when this understanding has materialized can the following objectives of a dental auxiliary utilization program be realized.

The first objective might be *altruism.* This can be interpreted as meaning his desire to use four-handed, sit-down dentistry to provide dental care to many more people than are now receiving it . . . his concern for the welfare of others. However, altruism, though probably of some importance to the students, does not overshadow his motivation for graduation and it does not receive too much attention, though of late through departments of Community Dentistry, Social Dentistry or the like, more

emphasis and repetition of the altruistic theme is in evidence, and its effects will eventually be felt publicly.

Another objective of the DAU program is one representing the whole purpose embodied in the student's attendance in dental school—acquisition of new knowledge. The auxiliary utilization program holds the promise of new knowledge for students where heretofore they have received no instruction. If the program is well planned, it represents something of which they will take advantage. Our responsibility is to produce a program that will have substance in it and one in which the student will be motivated to work harder and harder to master. You must have an operation that the student knows has something intrinsically worthwhile or you can forget about the student working at learning how to use auxiliaries either in school or long after graduation.

Another major objective of a good and thus a successful DAU program is to integrate that program into the mainstream of educational activities at the clinical level. In visiting DAU programs, as well as talking to program directors at various meetings, I have been struck at times by what appears as a separate operation that in some ways is not equal in importance to most other clinical activities that function as part of the "regular" curriculum. Ideally, the DAU program should not be set aside as an entity unto itself, but in principle and in fact it should function in concert with the general clinical program! The advantages of an operation that is not identified with one location within the school tends to engender a more willing acceptance by other departments and faculty members other than those assigned to DAU. The more one separates the DAU from the regular program, the more difficult it becomes for the student to utilize DAU principles elsewhere in school and especially later in practice. There is a tendency for the student to feel "I do it this way on DAU assignment and I do it the standard way on other days." As long as this feeling exists it is hard for DAU to have a significant impact on the school program. Though it is true that some clinical subjects are better vehicles for DAU instruction than others, students who are restricted to utilizing assistants in one area do not reap the benefits that can be accrued by "across the board practice." The objective of integrating DAU into the curriculum by performing clinically in multiple areas has great effect, and the impact is probably more lasting than instruction in just one area. In addition, when DAU instruction is on a general practice approach, clinical faculty members recognize the role of the auxiliary as she relates to his particular specialty. If for no other reason than curiosity, he will exhibit interest in auxiliary utilization. Once the seed has been planted, anything could happen. As the DAU program becomes more closely identified with numerous departments, it no longer enjoys the status of a "pilot program;" it becomes an accepted way of practice for students and faculty alike.

Now I wish to provide you with some of my thoughts on the most expedient time for introduction of the DAU program into the curriculum. It has been my experience that the ideas, objectives, and principles of the

program must be introduced in the freshman year and should be continued throughout the four years of dental school. It is inconceivable that students should be introduced to clinical dentistry without the advantage of information and knowledge of the role of the dental auxiliaries. It is equally inconceivable to me that we should expect students to practice "stand-up or inefficient sit-down dentistry" for two to three years and than tell them about the advantages of auxiliaries and subsequently place them in a DAU clinic and expect good performance in two weeks' time. I am not insisting that freshman and sophomore students have clinical experience using assistants, though one could make an excellent case for it. I do, however, feel justified in advising lectures, laboratory or TV demonstrations, and assignment to DAU clinics by these classes. Some will say that there is insufficient time for this and added to the already crowded curriculum, it is totally impractical. It appears that many have forgotten that besides the word "add" there is the opposite word--"subtract." It is time that we stop talking about "adding to" or "not adding to" and concentrate on changing and modifying and even subtracting. If schools accept the DAU grant funds, than they should see that these programs are given status and importance for the maximum amount of time necessary to fulfill the program objectives. Don't jam the DAU program somewhere between this or that because there may be some available time. Instead look carefully at your total efforts and see which is the most efficient way to organize your program for a "pay off" that will best prepare the graduate for "four-handed, sit-down dentistry." I have had the experience of directing a DAU program that initially involved only senior students. It was this way for one year only until numerous changes occurred in the Maryland curriculum which allowed us to introduce the remaining three classes to DAU. I don't want to dwell on our own experiences, but I wish to point out that the introduction of freshmen, sophomores, and juniors to DAU objectives and clinical practice involved not one single change in the physical makeup of any clinical area, laboratory, or lecture hall. These changes came about when the desire for self-evaluation and improvement of the general program were the catalytic agents.

Much of the above has centered around objectives that are broad and indefinite in character. Mostly I have been philosophizing. There are, however, other objectives that are more educational in nature, though they are frequently not well understood. In order to best delineate these behavioral objectives, it becomes necessary to answer several questions. As stated by Mager they are:

1. What is it that we must teach?
2. How will we know when we have taught it?
3. What materials and procedures will work best to teach that which we wish to teach?

Mager also notes that the order in which these questions are answered is

important. The first question must be answered before the other two. *What is it that we must teach?*

To properly answer this question, it becomes important for directors of DAU programs, faculties, and especially administrators to be able to identify the terminal behavior patterns they wish their students to exhibit. It is not sufficient to say to the student that you will render professional care and your assistant will do all other jobs to aid you. Instead, something like the following would be more in keeping with the behavioral objectives related to the student operator after he has participated in the DAU program:

> "When the student completes his assignment in the DAU clinic, he must be able to *demonstrate* the preparation of a Class II cavity for the reception of an amalgam restoration in a patient utilizing a full-time chairside dental assistant" or another example might be: "The student must be able to describe orally the correct operating positions in four-handed sit-down dentistry for the operator, the assistant, and the patient."

You will naturally expect him and his assistant to do more than stated above and these things should be spelled out in definite behavioral terms similar to my statements. A most important characteristic of the objective is to identify the kind of performance that is acceptable as evidence of the student having learned what you wish of him. To require that he "understand the concept of four-handed, sit-down dentistry" is a desirable objective, but it does not state in performance terms the behavior necessary to indicate he understands. As you consider the behavioral objectives, you will find the list gets longer and longer when you become more proficient in stating what you wish your students to be able to do.

The other two questions are to be considered after the first has been answered. You recall question number two is: *How will we know when we have taught it?* This becomes quite important and simply stated we must set up performance criteria against which the student's activities are judged. Clearly, the criteria must be valid in order for you to make the judgment accurately. It may be that you will insist that the student be able to perform something within a given period of time or by some other criteria easily identified. That is, unless you don't really care to know. Possibly you may desire to teach the DAU concept but do not wish to pursue it beyond the point of teaching it. It may be that you cannot define your performance criteria accurately enough at this stage. This, of course, becomes an individual concern. The ability to know when you have taught it is easier in tightly structured DAU programs than in the more "permissive" ones.

The third question relating to which materials and procedures work best to teach what it is we wish to teach is probably the easiest to pinpoint, though here again there will be individual differences. It is my opinion, however, that the past ten years of DAU have provided enough information concerning equipment, techniques, necessary personnel and the like

for us to have a good idea of what is necessary. In fact, probably more efforts have been devoted toward this question than the first two.

I would like now to digress from the questions raised in connection with definition of behavioral objectives and consider performance objectives in a general way. For our discussion I will refer to them as being between philosophy which we started with at one end of the spectrum and finite objectives such as I have just noted. The objectives I wish to discuss now should be an integral part of every DAU program. How they are realized is for each program director or dean to work out.

Briefly stated, the following activities must be part of a good DAU program. Students must be taught the procedure for instrument passage between the assistant and the operator. Students must learn to utilize their time in productive dental care while the assistant does whatever is necessary, presently within the law, to aid him and relieve him of duties that she can perform instead of him. It is mandatory, in my mind, that DAU programs revolve about full-time chairside assistants for each student while he participates in the DAU program. Dental assistants should not be utilized to fill in for manpower shortages. They should be specifically for full-time chairside duties as long as the patient is in the chair. They should not be used only for clean-up, errands, and the like.

I have felt from discussions with many people about DAU that the original purposes for the program's development have been overshadowed occasionally by the techniques used to convey these ideas. Much has been made of the type of equipment used to instruct students and much time and money is spent on cameras, TV, and other such equipment. It appears to me that the ability to convey the idea may be done any number of ways and the most expensive way isn't necessarily the best way. It also appears to me that if we stress adherence to the general rules of four-handed sit-down dentistry without excessive concern with time and motion that we will be assured that the student will be operating efficiently and comfortably. I do not feel that the exactitude of the operation is the *sine qua non* of the program. I am not concerned about the loss of a few seconds here or there. What impresses me is that the operator, assistant, and patient are comfortable. If this is the case, coincidental with the comfort will come increased efficiency and ultimately increased productivity. And I firmly believe this is the "pay off" we are seeking.

Another objective of the DAU instruction relates to a "spin off" from the original purposes of the program. Through DAU, students have been accorded the opportunity to use some of the newly conceived equipment designed for today's dental practice. It is true, parenthetically, that they have also had the opportunity to see how badly engineered some of it has been. To my way of thinking, this has merit. Students have often noted that they usually are not in a position at graduation to compare one piece of equipment with another. Their experience has been limited to what the dental school has made available to them. With an active program in DAU, equipment changes and modifications can be very useful to the stu-

dent. Judging from comments from our students, they are willing to put up with the inconvenience of change in return for additional in-depth knowledge of numerous manufacturers' products. In addition to learning about the equipment, they naturally learn to use the equipment and think more about purchasing the type of equipment that is conducive to the sit-down chairside assistant concept. I find it hard to reconcile the use of standard fixed units, fixed cabinets, and conventional chairs where one wishes to teach the team approach.

If you hope to create impressions and attitudes that will promote changes in dental practice, you should utilize whatever methods are now available rather than tell your students what you want them to learn and then put them in a situation that limits their ability to realize the objectives you have set forth for them. As you know, the Public Health Service permits the purchase of equipment under the DAU grants, and a percentage of the grant each year could be used to purchase equipment suitable for DAU instruction. It would be more in the spirit of the DAU philosophy to have more limited personnel in our programs and teach in theory and in deed what is necessary than to have larger programs employing many people that possibly are deficient in ability to teach due to lack of proper equipment.

As we further discuss the principles and objectives of DAU instruction to students, we must be sure that a negative attitude toward assistants does not evolve. The dentist (or dental student) is proud of his ability! When we tell him much of what he does can be done by auxiliary personnel he may resent this and refuse to turn to auxiliaries. There are ways of preventing this from happening.

1. The student should be told and examples provided to conclusively show that the top echelon of practitioners use auxiliaries and, in fact, it seems that the more highly respected the dentist is professionally, the more likely he is to employ a number of auxiliaries.
2. The second avenue is perhaps more cogent and stronger in attitude development. In the DAU orientation and later in clinic participation a strong appeal is made for the dentist to make the most of his highly specialized skills. It should be pointed out that as a well-educated and excellently trained practitioner he should not be involved with tasks that can be delegated to others. It should be made clear that DAU programs and subsequent practice according to DAU principles will allow him the opportunity to maximize his scientific knowledge and manual skills.

Each DAU program should have a means of measuring the effectiveness of that program. It is important for those responsible for DAU programs to have some idea as to how effective they are, not only in teaching the behavioral objectives and the general objectives already discussed, but also in measurement of student attitudes toward the program. We are measuring attitude changes at our school, and I am of the opinion that these changes are generally representative of all students. The study we

are doing has limitations and is only one approach. I'm sure there are others going on presently in your schools, the results of which will prove quite interesting.

The dental school designed and operated a "general practice clinic" three years ago with everything as modern and up to date as possible, except we did not employ dental assistants. In conjunction with the College of Education, we developed various attitude questionnaires. We had each student complete an *expectation* questionnaire prior to his experience in the clinic. At the completion of the two week period the student filled out a fulfillment questionnaire. The questionnaires were really a series of attitude statements about the physical set-up of the clinic, the general practice concept, their ideas as to how patients would accept the modern units and chairs, and, of course, about students and the use of dental assistants. The students reacted by scoring on an answer sheet SA, A, N, D, and SD (SA—strongly agreed; A—agreed; N—no opinion; D—disagree; SD—strongly disagree). Each response was given a numerical value ranging from 5 to 1. In addition, a questionnaire was given to the faculty relative to their teaching in this clinic, and each patient received a patient attitude questionnaire which compared treatment in the old style general open clinics with the type of care received in the new clinic, especially in regard to patient comfort and privacy. The mean score of 450 patients treated in both the conventional clinic and the DAU clinic was 4.63, indicative of overwhelming patients' acceptance to the principles of DAU. The results gathered in regard to student attitudes were quite interesting. Mean scores as well as individual item scores were recorded. In addition, standard deviations and correlations on an item basis and on a total questionnaire basis were carried out. Responses were also grouped as to student's standing in the class after three years, and it was found that the total mean average for each questionnaire was quartile 1—3.65, quartile 2—3.66, quartile 3—3.68, quartile 4—3.67. The average being about 3.67 for the total class. After two weeks without an assistant, the fulfillment tabulations revealed a mean score of 3.45. Testing revealed there was no significant difference between the attitudes before and after working in the clinic; any change would be the result of chance rather than working in the DAU program. This group served as a base line for groups which participated with the dental assistants at the chair full-time in the DAU clinic.

The average expectation for students who were the first to use assistants was quartile 1—3.50, quartile 2—3.81, quartile 3—3.42, and quartile 4—3.13. The average being 3.45. Compare this with an expectation of 3.67 for the first group with no assistant. It is difficult to explain why it was lower, other than I believe we did not do a good job of helping to develop favorable attitudes toward the use of auxiliaries in our orientation. Another reason may have been this being the first class to use full-time chairside auxiliaries and four-handed dentistry principles, they were wary of how well they could adapt. This class also did not receive the benefit

of three years' preparation for the DAU clinic as is now done at our school. Let me cite for you the fulfillment results of the second class who operated with dental assistants in the same area as the first group. It was 3.82 as compared to 3.45, indicating that the group actually realized a greater appreciation for their experience than they thought they would. This is only for one class, but it does give some information as to how well we are accomplishing our objectives insofar as attitudes are concerned. It is imperative that this type of information be collected and thoroughly reviewed since we are operating on assumptions rather than information that has not yet become available.

My comments have been general in nature, but I hope they will serve to introduce some new aspects of teaching in the DAU program. Perhaps they will serve to reinforce ideas the program director may have to make the teaching of DAU principles and objectives a meaningful and worthwhile dental school experience.

ROLE OF THE SUPERVISOR IN A DENTAL AUXILIARY PROGRAM

DELORES RICZO*

I have been asked to discuss my role as supervisor of the Dental Auxiliary Utilization Program at Indiana University School of Dentistry. This assignment covers a large area, so I can do no more than summarize what I believe are some of the important duties and responsibilities in the program.

One of my duties is to conduct the preliminary interview with the applicant. My initial impression of the applicant is given verbally to the program director, prior to his talking to the prospective dental assistant. If the program director believes, as a result of this interview, that the applicant has potential in our program, he asks me to administer the Wonderlic aptitude test. The program director and I discuss the results of the test and our observations during the interview and decide whether we should offer the applicant a position in our program.

Another one of my responsibilities is the orientation of new personnel. Policies regarding the length and style of hair, amount and type of make-up, style of uniform and skirt length, professional attitude toward students and faculty, is explained briefly at the time of the interview. All of these points are reinforced, however, when the dental assistant reports for work. I also explain, in detail, the purpose of our DAU program and the role she will be expected to play in the educational program of the dental student. The University policy regarding sick leave and vacation is again reviewed with the new employee, even though it was outlined previously by the program director during his interview with the applicant. It is appropriate that I review these points with the assistant, since it will be my responsibility to report absences each day and also coordinate the vacation schedules.

The majority of new employees in our DAU program come to us on referral from a dental assistant training program. We have one American Dental Association accredited training program in Indiana located at our Fort Wayne Regional Campus. Each year, one or two of the graduates express an interest in employment in our DAU program. A second training facility which provides replacements in our program is the Harry E.

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Wood High School. This vocational school has a one-year training program at both the high school and postgraduate level.

The remainder of the assistants come to us from private practice, often with only limited experience.

We currently have 12 assistants in our program, which is based in the Department of Pedodontics. During the past eight years, we have had a turn-over of 43 girls. This may seem to be a large number of replacements, but actually it is quite small, considering the age group of those employed in our program. The majority of our assistants are between 19 and 23 years of age. Four of these girls have been transferred, at their own request, to other responsibilities in the School, often to positions which are supportive to our DAU program. Only two assistants have sought employment in private practice; both eventually became dissatisfied working in private practice and asked to be reinstated in our program. Since they were exceptionally efficient assistants, they were re-hired and have proven to be two of our most hard-working and loyal employees. The majority of our assistants who have terminated their employment have done so because of marriage and motherhood.

The program director and I believe that it is essential to hold to a minimum the number of replacements each year. One way to retain assistants is to pay a salary which is competitive with private practice. This we have done, even though it meant reducing the number of assistants in the program in order to be able to provide at least a small semi-annual salary increase.

Another one of my major responsibilities is that of supervising the training of new assistants. One operatory in our pedodontic clinic has been designated as a "training area." One of our dental assistants has been chosen to work at this unit and instruct the newly employed dental assistant. I have given this assignment to one particular dental assistant because she is the most capable of teaching and demonstrating the proper instrument transfer technique and the use of prearranged trays. It has been our observation that the new employee feels at ease working with one of the assistants and we avoid the feeling of a supervisor "hovering over her shoulder." While assigned to the training unit, it is expected that the new dental assistant will become acquainted with all procedures which are carried out by the students during their assignment in the pedodontic clinic. The dental assistant-instructor and I work closely together and she makes daily progress reports to me, indicating any areas in which she feels the new assistant needs additional help. Although the dental assistant may come to us well-trained in chairside assisting, she must be re-oriented to our techniques. The new dental assistant usually works from one to three weeks at the training unit, depending upon her rate of progress. At the completion of this training period, she is assigned to her own unit, where she will assist the junior and senior dental students.

Another responsibility of mine is the daily assignment of dental students to the assistants. Since I believe that the students benefit from working

with different assistants, I endeavor to schedule assistants in such a manner that the student has the opportunity of working with each of our 12 dental assistants many times during the course of the year. In instances where I have noted evidence of a personality conflict, I try to avoid this same scheduling in the future.

In-service training is an important consideration in a DAU program, but since our assistants are assigned to the pedodontic clinic from 9:00 to 12:00 and from 1:30 to 5:00 each day, it is difficult to carry on a regular in-service education program. The 8:30 to 9:00 and 1:00 to 1:30 time is needed for preparation of units and instruments for the next clinic session. Therefore, we have had to utilize other time for in-service training. Student vacation periods are utilized for special lectures for the dental assistants. One-day continuing education programs, sponsored by the Dental School, are presented for the practicing dentists in the community almost every month. Our clinic will usually close that day to allow the students to attend this program. Frequently, the program is of interest to the dental assistants, so we ask them to attend as a part of their in-service training. These meetings also provide credit for the certified dental assistants.

I ask faculty members in the department of Pedodontics to meet with the assistants periodically to discuss topics such as new materials and new clinic procedures. This meeting also provides an opportunity for the assistant to question the faculty regarding specific procedures and techniques with which I may not be entirely familiar. When representatives of dental manufacturing companies are in the area, I attempt to schedule an hour when they can talk to the assistants. They often discuss topics such as maintenance of the dental handpiece.

I meet with the dental assistants periodically, sometimes as a result of the director wanting something brought to the attention of the assistants. At other times, I meet with them when I feel that a "general shake-up" is in order for the good of all concerned.

A considerable increase in the efficiency of our program has resulted from the modification of equipment. We have removed the dental units from our pedodontic clinic, the junior chair has been retained and we have added the Ritter light post adaptor. A work table which contains two shelves and a drawer, on which a golden arm has been mounted to hold the prearranged instruments, is positioned behind the chair. This arrangement affords the dental assistant two working surfaces: the table top and the tray. Also mounted on this table is the Kerr electric handpiece, the S. S. White three-way syringe, and an S. S. White AVS aspirating system. All instruments are furnished for the students in our pedodontic clinic and can, therefore, be prebagged for each procedure and autoclaved. When the student arrives in the clinic, the dental assistant has already checked out the tray set-up he will be using and he can immediately start the dental procedure.

I believe that because of the uniformity of the prearranged instruments for each clinical procedure, the modified units, and instrument transfer

techniques used by our dental assistants in the clinic, the students benefit greatly from the Dental Auxiliary Utilization Program.

I have found that the position of supervisor is, at times, a difficult one. However, the ease with which I may communicate with the director of the program and the members of the faculty who participate in the clinical instruction makes my job much easier.

DAU IN RETROSPECT

. . . retrospect—to recall, to review, to meditate upon the past events. I think that is a pretty good description of what we have asked the following speakers to do . . . one statement which I feel is important to each one of us whether we are a director or whatever—"The Sales Department is not the entire company but the entire company is the Sales Department" . . . .

CHARLES T. SMITH, D.D.S.
Dental Student Training
Advisory Committee

THE DENTAL ASSISTANT UTILIZATION PROGRAM IN RETROSPECT

THEODORE D. BENADERET, D.D.S.
Seal Beach, California

I have attempted during the past two years to apply the principles presented me, under the dental assistants utilization program, to my practice.

The program, as it existed two years ago, was four weeks in length. During that time groups of approximately ten students were assigned, along with a trained dental assistant, a specific dental unit and chair and a somewhat cubersome mobile cabinet from which to operate. The DAU area, as it was called, was located on the main clinic floor and the only physical barrier between it and the rest of the clinic consisted of several semi-permanent room dividers. These barriers were also used in an attempt to produce the effect of individual operatories. All phases of clinical dentistry, except oral surgery and oral diagnosis and radiography, were done in this area. Instructors were brought in to supervise the treatment. The dental assistants were arbitrarily assigned to students with no attempt to match personalities or individuals. It was evident after the first week that this factor would play an important role in the individuals receptiveness to the program. It was, however, the routine to rotate dental assistants after two weeks, to give the students the opportunity to work with at least two different girls.

Approximately six hours of non-clinical DAUP orientation seminars were held. Little was said about the duties of the dental assistant and specifically her role in the clinical environment. Principles such as the organized use of operating manuals, effective scheduling of patients and specifics of four-handed dentistry were mentioned and generally explained. Real clarification of techniques was omitted and often instruction in this area was given by dentists who had no particular knowledge of the DAU program and who apparently were not convinced of its advantages.

Grading in the program was done solely by the dental assistants at weekly intervals. This procedure seemed rather useless at the time.

In evaluating how extensively the principles learned in the dental assistants utilization program were applied to the ones in my practice

two areas will be discussed and the shortcomings and effectiveness of each phase will be reviewed as each is presented. The two areas are:

1. The designing, purchasing and organizing of the basic physical dental plant.
2. The selection, training and integration of a dental assistant into that environment.

In the DAU program I was exposed to the refinements of modern dental equipment and to a degree to the placement of that equipment within the operatory to permit efficient four-handed sit-down dentistry. This I used as a basis for the design of my office and for the purchase of the dental equipment therein. The advantages in the use of modern dental equipment was quite evident to me in school and I felt that except for the fact that exposure was limited, this aspect of the program was adequate. Specific concepts such as, proper use of tray set-ups, organization of procedures, efficient patient scheduling and actual techniques of four-handed dentistry were only mentioned and it is left up to the clinical situation to clarify their use. The interplay between them and the physical arrangement of the operatory was also vague. It was in this area where I made a great many errors in the design of my office. One of the ways to solve these problems would be to improve and extend the non-clinical instruction in DAU program.

The errors in the specific teaching of DA utilization are derived from misconceptions of two concepts directly related to the DA.

1. The role of the DA in the school environment.
2. The present and future potential of both the trained and untrained DA.

The role of the DA in the school environment is very important in the learning process. Generally it should not be one of a rigid teacher. Yet she does have information to impart to the young student. How can this be handled effectively? Personality plays an important part in this area. Some students will learn faster when a certain authoritative force i.e. the DA, is present. Some with dominating personalities will clash and learning will be inhibited. I feel this is a unique situation in the teacher-student relationship. Since it is impossible to match personalities perfectly in such an environment, a happy medium must be arrived at.

First, evaluation should be supervised by instructors in the program. Secondly, solid guidelines as to the duties and responsibilities of both DA and student must be established. Thirdly, there must be an attempt to see that students have the opportunity to work with as many different DAs as possible. Fourthly, a program should be started either as a part of the DAU program or as a dental assistant training program apart from DAUP. In this way a student will get the opportunity, after first working with a trained DA and knowing her potential, to train an unskilled DA. I would like to discuss this point for a moment.

The turnover in dental assistants in new offices is very high. Why? I feel the answer lies in the fact, first, that the student is never trained to

teach these girls out of school and secondly, the DA training programs, for the most part, are quite inadequate and give nothing more than a basic familiarization of dental assisting. The dentist is generally never seen and most of the training is done on a non-clinical hypothetical basis. How many times have I heard a recent graduate say, "I wish I can get a DA like the one I had in school." There is a need for a program to train these girls in a clinical environment along with dental students.

The DAU program has a unique defect that hinders its efficiency. The program is a segmented part of the general dental curriculum. For a four-week period certain principles are established and used. After this period they are, for the most part, forgotten.

The principles of a DAU program should be integrated into the general curriculum. They should not be thought of as optional. They are definitely an integral part of the dentistry of today. The program should be started earlier in the preclinical years, possibly in the sophomore year and carried all the way through into the senior year.

Guideline and principles should be stipulated, clarified and included in a comprehensive manual which should be given to the student early in the dental curriculum. Also all of the personnel associated with the program should be well informed, trained individuals in all aspects of the program. They should especially have an awareness of the need of the program in the concept of general dentistry.

SUMMARY

The DA program as it existed two years ago is not the same as the one which exists today. It has been improved and brought up to date. But much is still needed, especially in these areas of expansion of time available and further integration into the existing dental curriculum. Only then can the full value of the program be brought to the student's attention. With a special emphasis on the re-clarification of the roles of both the student and the DA under the program plus more emphasis on evaluation and utilization of trainee DAs. The knowledge and experience gained in an effective DAU program can, and does, make the difference for the new graduate between a productive and a non-productive practice, a successful and an unsuccessful practice, and frustration and running of a smooth, effective dental office.

DENTAL AUXILIARY UTILIZATION IN RETROSPECT

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Hyattsville, Maryland

As a dental student entering the clinics in my junior year, I first became aware that there was a special group of dental assistants by personal observation of them working in the Department of Pedodontics, and by word from other students, mostly seniors, that these assistants could be very helpful, "if you get to know them."

To the best of my recollection, when I was in Dental School, the Dental Auxiliary Utilization Program consisted of a group of seven or eight assistants assigned exclusively to the Department of Pedodontics. Two or three of these assistants spent their time in the twelve chair Pedodontics clinic within the school itself. These assistants were helpful to the student to the extent that they would obtain supplies such as local anesthesia, cements, restorative materials, etc., from the dispensing office of the main clinic, thereby saving the student from making these trips. However, the student was still responsible for seating the patient, preparing the tray, setting up instruments and all the other aspects of preparation that were necessary in any of the clinics in school. Occasionally, if the assistant was not busy with another student and his patient, she would operate the high speed evacuation equipment, mix cements or triturate the amalgam. On the whole, however, there was no real dentist-assistant-patient relationship developed, since there were, as mentioned above, only two or three assistants for the entire clinic. Never did an assistant spend more than half an hour at a time with the same student and patient.

The other four or five assistants were assigned to a four chair Pedodontic clinic operated by the Dental School and students in conjunction with the City Health Department. This program for indigent patients was conducted in a Health Department building about a block from the Dental School. There, we as students did learn a little about how helpful it can be to utilize a dental assistant. Only senior students participated, eight times during the year, for a total of forty hours of training. Each student and assistant team was assigned to a separate operatory and a feeling of private practice was supposed to be assumed. One assistant acted as secretary, keeping records and making patient appointments. In these clinics, conventional equipment and operating methods were used; no "four-handed sit-down" concepts were even discussed.

From this background it becomes obvious that I really learned very little about Dental Auxiliary Utilization as a student. There were no lectures, demonstrations, seminars or audio-visual aids of any type for the students, regarding the use of auxiliary personnel. No attempt was made in any department other than Pedodontics to use auxiliaries working directly with the students. Even there, the faculty seemed to be primarily interested in checking the students' dental procedures, rather than teaching the students the effective use of trained dental assistants.

I entered private practice immediately after graduation from Dental School. Within a very short time I discovered that I could not work efficiently by myself. I was extemely fortunate in obtaining an experienced dental assistant, who was in the process of completing her formal training at a local school for dental assistants. She was by far my greatest aid in learning how to utilize dental auxiliaries, as she taught me instrument transfer and other chairside techniques I had not had the opportunity to learn about in dental school.

We now have at the office a full-time chairside assistant, a full-time receptionist, a part-time hygienist, and a part-time dental technician. I know that I could not provide the services that I am now providing for my patients without the auxiliary personnel presently employed.

Recently, my assistant and I took a six-week, twelve-hour course given by the faculty and dental assistants at my alma mater, on the use of the dental assistant in "four-handed sit-down" dentistry techniques. In part, my opinions of the Dental Auxiliary Utilization program of three and four years ago were shaped by my observation of the program as it is now conducted. I was impressed by the fact that modern concepts can be learned in a short course, and wish that I had had the opportunity to learn more about Dental Auxiliary utilization when I was a student.

DAU PROGRAM IN RETROSPECT

George F. North, D.D.S.
Allison, Iowa

"I do not choose to work alone!" This is a title phrase presented by a very good friend of mine from Minneapolis, Dr. Samuel Oltmans. It expresses my feelings exactly. In this brief presentation I am going to examine the DAU program in retrospect.

In general, I will make an effort to answer these three questions:

1. What did I learn about dental auxiliary utilization as a student?
2. How am I presently applying this knowledge?
3. What was lacking and what was especially desirable in the DAU program in the school?

In an effort to establish a common base from which we can project our thoughts along similar lines and create a sound communication rapport, I will continue this introduction with this background statement. I graduated from dental college in 1960 and have practiced general dentistry in a small rural community (population 950) for the past eight years.

As I now reflect the five major factors that have influenced my practice career immeasurably are:

1. Precollege employment as an architectual draftsman.
2. Four years experience and maturation in USAF as a survival instructor.
3. A sound, practical course in dental practice administration.
4. Undergraduate exposure in a clinical DAU program.
5. Early introduction and attendance to post-graduate study courses and meetings.

Fortunately, the administrators of the school which I attended had the foresight early in the program to see the need for and value of DAU undergraduate training. To these men I will be eternally grateful.

The DAU program in our school was co-ordinated in the pedodontic department and was directed by the department personnel. DAU and pedodontic training involved a two weeks' block in the senior year. At the beginning, each student was paired with a qualified assistant who was asigned as DAU instructor, assistant, counselor, and general guardian angel during the entire period.

We learned by experience. This then meant that learning was directly related to the ability, knowledge, interest, and consciousness of the

assistant. As a group, these girls were well qualified. Essentially, we were taught sit-down, no-spit, four-handed dentistry. By working closely with trained chairside assistants, we were taught assistant utilization, work discipline procedures, and organization of equipment and instruments.

This taught me immediately that "I did not choose to work alone!" Many of the benefits of the program were indirect and not fully realized until after private practic was actually begun. The list of the advantages a well-trained auxiliary gives a dental office is long, but most fall into these five major categories:

1. They make possible an improved, more complete, and more thorough service.
2. A higher quality of dentistry is produced.
3. Strain, stress and fatigue to the patient and staff are decreased.
4. More free time is available.
5. Greater production is made possible.

A dental office office without well-trained auxiliary personnel is substandard. Today, most modern, thorough, complete, and total dental health service cannot be provided without adequate auxiliary personnel.

How have we applied the principles learned in the DAU program in our practice?

In nearly eight years of private practice, I have never worked without a chairside assistant. In that time, I have trained eleven different girls. The average length of employment has been approximately three years. We maintain a staff of at least two and one-half girls. The one-half is referring to a high school student whom we regularly keep in training as reserve replacement.

The auxiliaries in our office are cross-trained. This means that both of the full-time auxiliaries are trained to work at the chair and at the same time alternate, meeting general secretarial and laboratory responsibilities. Cross-training eliminates the communication barrier between the treatment room and the business office by keeping both girls alert to all duties. It also eliminates the problem created by illness of a chairside assistant or a secretary. I do not advocate this principle for all offices, but it does work for us.

The past four years we have enjoyed the services of a part-time dental hygienist. Applying the same principles of auxiliary utilization, the hygienist has a chairside assistant to help utilize her time more fully. This, of course, increases her productivity and creates more time for patient education and related duties. Our physical facilities, general office plan and, specifically, treatment rooms, are designed for optimum utilization of a full time chairside assistant for sit-down, no-spit, four-handed dentistry.

Finally, let us consider a critical analysis of the DAU program at the time I was in school. It must be remembered that this was from eight to ten years ago, when these programs were in their infancy. Our program consisted primarily of training by experience, actual practice, which

should still be an extensive part of the training. This involves preliminary instruction, demonstration, and practical utilization of these assistants.

Preclinical lecture courses in the DAU program did not exist. Audio-visual aids, operational outlines, procedure manuals, etc. were also lacking. The program was isolated in one department, which many times leads to erroneous concepts regarding auxiliary utilization.

Since almost all technical dental procedures are learned by experience, it is not realistic to allow students to form bad, inefficient work habits during two years of clinical training and then expect to undo all these habits in a two-week exposure in a DAU program. Many school clinics exhibit outlandish applications of work efficiency.

A major problem arises when one takes the time and effort to teach a student all these advanced techniques and procedures and then in actual practice he chooses not to utilize them. This is, in fact, the crux of the so-called manpower shortage today. There is not a shortage of dentists, but a shortage of dentists utilizing auxiliary personnel to a level that is legal. Unless we can bridge this utilization gap, the expansion of duties of the auxiliaries will have only minimun effect on the overall production picture.

The DAU program must cross all departmental barriers and instructors must have a thorough grasp of all general dental procedures so they can apply and teach these principles effectively. The experience factor cannot and should not be minimized; it is most important. The only way to learn to utilize the auxiliary personnel is through experience.

After one learns the technical aspects of auxiliary utilization and is aware of the benefits another problem is created—that of management and its accompanying problems of employment policies, employee hiring, testing, evaluation methods, and all the other management problems related to staffing an office. Through comprehensive practice-administrative courses coordinated with the DAU program, most of these problems can be solved so that a higher percentage of graduates will practice the way we know they should.

In the organization and management of a dental practice, there are three major component factors: organization and management, (this is usually the dentist's responsibility), adequate physical facilities, and the effective use of auxiliary personnel. As one examines in depth these factors, he realizes that they are all related.

One cannot be overly critical of practitioners who have never been formally exposed to DAU training. For these men, it is difficult to change, but there is little excuse for recent graduates who have had the benefits of this training not utilizing this knowledge to their utmost.

One area often overlooked as possible student DAU orientation, is the establishment of a preceptorship type program. In this program the student would have the opportunity to observe active practioners in their own environment. This is particularly necessary for the study of office organization as related to the utilization of auxiliary personnel. It should

be possible for them to do the following:

1. Observe a variety of physical facilities.
2. Study office philosophies.
3. To study office policies, etc.
4. Watch auxiliaries in action (observe teamwork).
5. Relate production to appointment control.
6. To observe application of principles learned in their formal DAU training in actual practice.

I should like to conclude by saying, I am enthusiastic about dentistry and the challenge that it provides, but if I were denied my auxiliary staff; I would have to re-evaluate and choose another of life's careers.

"I do not choose to work alone!"

DAU PROGRAM IN OPERATION

. . . The opportunity for DAU programs to move forward has never been greater than it is today. A wealth of knowledge and experience has been compiled since the first programs were initiated, and should serve as a base from which all programs expand and improve. Some of that information is contained in this document . . . .

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IOWA'S APPROACH TO THE CHALLENGE OF AUXILIARY UTILIZATION

DALE F. REDIG, D.D.S.*

Utilization of dental auxiliaries is perhaps first of all best viewed as a philosophy as we see it at the University of Iowa, College of Dentistry. This philosophy is to train the undergraduate dental student:

1. In the use of, and
2. To use the dental auxiliary

In our case under this program up to the present time, the auxiliary is the chairside dental assistant. *In the use of* and *to use* do not necessarily mean the same thing. *In the use of* is mainly a performance behavioral characteristic and *to use*, essentially an attitude. By this definition, there are two parameters touching different though inter-related behavioral aspects—performance and attitude. These parameters in turn open to many others.

If we train students in the use of the auxiliary, some very fundamental questions must be asked and answered.

1. What do we mean by training?
2. How can, and then, how will, it be done?
3. Who will do it?
4. What will be used?
5. Where will it be done?

There are many degrees of training in the use of an assistant ranging from the simplest of technical concepts to complex sophisticated routines involving near perfect timing and control. The degree attained by our students is better than simplest, definitely not highly sophisticated. All of our training does, however, center around 100 percent chair time utilization of assistant and emphasizes what we feel to be basic correctness of work habits.

How training can and will be done is best not left to be worked out as the program moves along. We feel that objectives, stated on paper then discussed with and approved by academic and support staff, should be translated into activity on a supervised basis—closely supervised.

Who will do it is surely the most critical point of all. The who of it is what the Dental Auxiliary Utilization Program is all about. No single

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approach relative to this is best, for all situations are different, yet there are common factors which seem to stand out.

1. The director should hold a position of authority in the school in order to deal effectively at department head level.
2. He or she must understand what the use of auxiliaries means and should be relatively expert in their use personally.
3. Control should be exercised by the director and it should be clear cut. Firm answers and directions are needed. It seems to me very much like the problem of managing children. One authority figure works, more than one generally creates chaos.
4. There should be a supervisor who handles the routine operational details and is directly responsible to the director. Because the assistants are female, there seems to be an advantage in filling the supervisor position with a female. Day to day problems are generally easier todeal with, the buffer of female between assistants and the director is often helpful.

What will be used for the program and where it will function are closely related and highly individual matters, requiring individual solutions. There are a few critical points.

1. If the program is centered in one area, control of its function is better accomplished.
2. Equipment should be available at each station where auxiliaries will be used, which will allow adequate function of this person.
3. If the operation is placed in a limited area, it should be contigious with other departmental or clinic areas and staff from those areas should function in it for routine instructional purposes. We must remember that students should have broad experience in auxiliary utilization and also that the instructional staff of many schools needs direction and involvement in the use of auxiliaries as well as the students.

Since the teaching space itself is critical to the use of auxiliaries and since the subject always seems to stir interest, heated even at times, I would like to discuss the matter in some detail.

We believe that a clinical space should provide the following:

1. Adequate space for two person team to work comfortably
2. Communication with support area
   a. visual
   b. audio
   } perhaps both
3. Uninterupted work area radius of 24 inches around patient's head
4. Functional unit for both operator and assistant
5. Unit flexibility for right or left hand operation
6. Access for instructional staff without interuption through work area
7. Adequate lighting
8. Adequate seating of patient, operator and assistant

Our operation at present does not meet all those requirements, but we

think about it a lot and in our planning for a new dental building, which we hope will not be another monument to obsolesence, as unfortunately I feel some of our new or recently rennovated schools are, we hope to make adequate provisions for each of those "shoulds."

Three aspects of the clinical teaching cubicle are of major concern to us at this time:

1. The space—this eventually resolves into a square foot battle but before this occurs the space needs should be analyzed and digested.

   a. work space for two people
   b. support availability
   c. flexibility

   We have not looked at the problem in its entirety but the slide which you see shows the strong preliminary direction which we have taken. You will see an actual mock-up of this on the clinic floor.

   Discuss: 1. 30″ work space
   2. 25″ chair width $9'4'' \times 8'6''$
   3. 18″ or less work counter
   4. support space

2. The "Unit." We have not looked at this completely either, but again we have a strong preliminary orientation.
   1. We want a clean unit
   2. A functional unit
   3. A flexible unit

   That is a big order. If the word "want" is changed to *must* it becomes bigger still.
   We propose:

   1. No floor embedded utilities
   2. A control template at each operating space—preclinical and clinical
   3. A unit which is flexible in multiple situations

3. The chair:
   We are using the most glorified barber chairs conceived by man's infertile genius, ala Strato-Lounger adaptations. For many years the head of the patient has not been our main concern but rather it seems, his bottom. To date we seat the patient in the chair with a fixed concavity for the buttocks and adjust everything else relative to it. It seems to me that our concern would better be the head and establishment of a fixed position for it—adjusting the rest of the patient to it. We are working on this problem also.

I have not meant to digress too far from my subject area and in fact I have not for all of what I have said bears important relation to the philosophy of Dental Auxiliary Utilization. It refers to the parameter of

performance which controls or so markedly influences the other behavioral factor mentioned earlier, attitude.

If we can in fact commit ourselves and our colleagues to the goals of Dental Assistant Utilization I have outlined, we will in fact produce doctors of dentistry so well-trained that there will not be an attitude of negativism or indifference relating to the factor of attitude in "to use." The student will, I believe, feel the need for dental auxiliaries to be an imperative one, nearly outside the arena of question.

THE DEVELOPMENT OF A MANUAL OF PROCEDURES

SHERRY BYRNE*

At the University of Maryland the opinion prevails that a well-organized DAU program can best be maintained if all those who participate in the program are aware of its background and objectives. For this and other reasons, a manual has been developed for our DAU program that we feel will be of immeasurable value.

One of the prime goals in the development of our DAU manual was to insure that students, while participating in our DAU program, continue to carry out procedures consistent with the highest ideals of clinical dentistry that they were taught in the preclinical sciences. With this in mind, the students' time can be spent predominantly on the principles of DAU. By reading the manual before coming into the clinic, the student is provided with an orientation to the DAU program. The manual informs the student of his role in the program and explains what will be expected of him as a participant. We feel that the manual is a good reference for teaching students to perform clinical procedures according to the principles of "sit-down four-handed" dentistry. In this light our manual serves as a supplement to the students' texts.

Besides being of benefit to the students, our manual is also helpful in orienting dental assistants to the DAU program. Not only are the assistants' general duties listed, but also specific information on the various departmental procedures is included. Since the manual is designed to be kept up to date on any changes that occur, the assistants will be assured that procedures are being carried out according to the most current techniques in patient care and DAU principles.

Developing a manual is not necessarily difficult, but it requires time and group effort. Initially, the basic objectives and goals of the DAU program should be decided upon, followed by a description of the program. The DAU program director is the one most qualified to do this.

Obtaining information for the manual can be done in a most orderly fashion by utilizing the right sources for the required references. A representative from each clinical department was consulted. We solicited their assistance in guiding the students and the dental assistants as to equipment necessary and procedures to be followed in performing the disciplines of various clinical departments such as Operative Dentistry, Endodontics,

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Pedodontics, Periodontics, Fixed and Removable Prosthodontics. By doing this we were assured that the manual accurately describes what is expected of the students. More importantly, we were involving other department members in our DAU program. After receiving the information from each department, the dental assistants supplement it by stating their responsibilities during the procedures and how they may be of more help to the students.

The dental assistants in our DAU program contributed to the compilation of the contents for the manual. Since they maintain the DAU clinic and assist chairside, the assistants offer information based on their own knowledge and experiences.

One salient point should be kept uppermost in mind when preparing a manual for DAU. Ideally, it should be a working manual, constantly undergoing change with new ideas being added and old ones being deleted. A loose leaf cover best serves the purpose of keeping the manual up-dated without incurring a large expense to make the necessary changes.

The contents of our manual have been catagorized using four main sections:

Section One contains an introduction to the University of Maryland Dental Auxiliary Utilization Program stating its background and objectives. The role of the dental assistant is described in detail and compared to that of a teacher. Rules and regulations of the dental assistant in our program were enumerated, especially those concerning conduct and ethics, as well as appearance and personal hygiene. Also included in this first section is information on the basic positioning of the patient's chair. The positioning of the student and dental assistant are also discussed. Illustrations and photographs are used to explain positioning in the fullest detail.

The Second Section of the manual is concerned with specific duties and procedures as they are performed in the DAU clinic. Basic movements in transferring instruments are explained. Photographs and illustrations showing hand positions for passing as well as receiving instruments are utilized.

To be sure that all necessary daily preparations are completed, the manual enumerates the steps to be followed to prepare for the day's patients. This includes obtaining supplies for cabinets, the patients' charts and preparing tray set-ups and general cleaning of unit and cubicle.

During the charting procedure, the assistants can be very helpful to the students. Information on charting and treatment planning is kept in the manual for the students' reference as well as for assistants' use. Such procedures as preparing for and administering anesthesia is explained in conjunction with the assistants' duties. Positioning of the evacuation tips for use of high velocity evacuation is illustrated along with the correct grasp of the suction tip and hose.

Instructions for cleaning instruments and other materials are contained in this second section as well as the steps to follow in preparing instru-

ments for sterilization. Methods of sterilization for various instruments are also discussed.

In the third section of the manual the mobile cabinet and accessory storage cabinets are described. Since all mobile cabinets are arranged similarly, a layout of each drawer is included. This uniformity of arrangement enables an assistant to work in any cubicle without difficulty in locating supplies or instruments.

Tray set-ups receive considerable attention in this section because of the departmental information depicted by the variation of the tray arrangement by the different departments. Clinical procedures performed in each of the departments are listed along with the necessary tray set-ups. Each step of a procedure is explained along with suggestions intended to help the dental assistant be more useful to the student.

Teaching aids are useful in training dental assistants and orienting them to our DAU program. For this reason we have devoted our Fourth Section of the manual to them.

We have included information on Dental and Oral Anatomy using illustrations to augment written material. A rather comprehensive listing of Dental Terminology is included. Information of this sort serves as supplementary teaching aid to the assistants who have not had formal training, and also as a general reference for both trained assistants and students. The dental materials used in DAU are also listed in this section along with instruction on proper manipulation and storage.

Classification of instruments and burs are included with illustrations for easy identification. Various areas of information are included here, such as methods of sharpening various instruments, the utilization of instruments, as well as the use of the various dental burs, and instructions on both the Tofflemire and Ivory matrix retainers can be found in this section.

Eventually we hope our manual will include every aspect of the functions of our DAU program. Each dental student is to receive a copy beginning in the junior year since this is when he receives the first major assignment to the DAU clinic. Orientation and some participation occurs in the freshman and sophomore years, however, through lecture, television demonstrations, movies, role playing and observation and critique in the DAU clinic.

As a sidelight, I might mention that each faculty member will also receive a manual to better acquaint him with the operation. It is hoped that each dental school graduate will accept and practice the principles of DAU which we are encouraging him to develop. Furthermore, we would hope that he sees fit to use the manual in his practice. By altering the manual to accommodate his own personal techniques, the manual should be made to encompass every phase of his practice, just as our manual encompasses our DAU program. If this is accomplished he will have the ideal manual for training his own auxiliaries as well as orienting a newly trained graduate dental assistant to his method of operation.

INTRODUCTION OF THE SOPHOMORE DENTAL STUDENT TO FOUR-HANDED DENTISTRY

(A SLIDE SERIES)

ALICE EDER*

Evaluation of the Dental Assistant Utilization Program at the Temple University School of Dentistry discloses that the junior and senior students appreciate what they are learning. In concurrence with the present trend in dental education, we plan that students will be brought in contact with the clinic during the freshman and sophomore years. With this in mind, the Program Director, Ernest F. Ritsert, D.D.S., simulated a clinical experience for the sophomores. At Temple, we believe, that the sooner the student learns the story of "four-handed sit-down" dentistry, the smoother will be his clinical experience when he enters the clinic for operation procedures on patients.

Using ingenuity and a plastic skull called the "Thinking Man Skull," a procedure was developed which enables the student to complete a class I amalgam restoration, utilizing the services of a trained dental assistant. In order to keep the experience on a one to one teaching basis, only four students are brought into the clinic at a time.

The program begins with the showing of a series of slides to the four students in the clinic proper on four-handed sit-down dentistry through a complete operative procedure before they begin the operation on the dentoform tooth. The slides shown at the conference, were of the performance by the students, the dental assistants, the program director, the supervisor, and the Associate Professor of Pedodontics in the Pedodontic Clinic as each student prepared and completed the class I amalgam restoration.

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STRUCTURAL LEARNING AND TRAINING

J. D. Galbreath, D.D.S.*

A look at our times warns us to expect mandatory innovation. Current problems such as rapid expansion of knowledge forces attention on new ways to instruct and more efficient ways to learn. Many are more concerned with the frequency in which knowledge doubles each year. But we can't sincerely be concerned with the frequency because it is impossible to teach coverage. In 1965 chemistry alone had 280,000 new abstracts accessioned by the Library of Congress. These represent one-fourth million pieces of new information. It would have been next to impossible to have included all of the new material in the coverage of chemistry.

Recognizing both the explosion of knowledge and the needs of society for well prepared dentist, we at The University of Texas at Houston Dental Branch are reexamining our instructional commitment in order to determine the student dentist's real needs and reorganizing content to meet the needs. This short presentation is offered as our attempt to share one way we are going about the experimentation with teaching methods. This method is referred to as SLATE.

SLATEs are classroom facilities where students pursue structured lessons on their own time and at their own pace. They are multi-media utilizing either audiovisual equipment, programmed materials and displays in a room which has a carrel setting or dial select equipment and materials stored and received from a remote source.

SLATE is a new kind of instructional facility which means *structured learning* and *training environment.* The student has a specific learning task; he knows what the learning task is and how he is to proceed; and he knows how effectively he is performing and learning through built-in self evaluation.

Four steps are involved in preparing of lessons: (1) determination of the objectives, (2) specification of the knowledge or skill needed, (3) design of multi-media self-instructional materials and, (4) evaluation of the SLATE material.

Our experiment with SLATEs is to develop instructional methods and media which will enable the student dentist to properly and effectively use

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* DAU Program, The University of Texas at Houston.

chairside dental assistants and for the dental assistants to learn more effectively and efficiently "four-handed dentistry" by:

1. Reidentifying content to be included in the programmed units of study;
2. Developing the behavioral objectives identifiable with conceptual, factual, attitudinal and developmental tasks;
3. Programming units of desired learning experiences utilizing all available resources and producing additional resources;
4. Providing an opportunity for the student as an independent learner to pace his/her learning experiences according to his/her ability to assimilate and to achieve the prescribed behavior.

The basic units to be developed are (1) anesthesia, (2) rubber dam, (3) amalgam, (4) gold inlay, crown, and, (5) surgery. Other basic units of a more general nature will include (1) dentist, dental assistant and patient relationship, (2) basic principles involved in an acceptable DAU program and (3) variations in space and equipment facility.

We are in the process of putting together an instructional team composed of professional and technical personnel. A faculty planning and programming area is being equipped for the teachers or professors to have immediate access to instructional resources.

From the beginning the staff had a need for agreement on the definition of working terms. The definitions include:

A unit of study:	to be defined in terms of length of time to be spent in the independent study laboratory.
Behavior:	refers to any visual (or audible) activity displayed by a learner.
Exit or terminal behavior:	refers to the behavior desirable for the learner to be able to demonstrate at the time the specific learning experience ends.
Objective:	explicit formulations of the ways students are expected to be changed by the educative process (objectives should prepare the student to meet the terminal behaviors previously identified and should be written in behavioral terms that are measurable).
Task Analysis:	defined in terms of (a) what must a person be able to do in a specific situation and (b) what must he do to accomplish this.
Flow chart:	a schematic drawing of the steps of a task analysis.

There are to be six major steps in making curriculum development decisions. These are: (1) problem analysis, (2) contact for work agreements, (3) instructional strategy, (4) production, (5) evaluation, and (6) revision. The sequence which we are following in developing the lessons in four-handed dentistry starts with problem analysis. The great danger is to move too fast. Most of us are inclined to start producing before we

diagnose the learning problem. Our plan for implementing the methodology is to:

1. Re-examine the proposed units and add or delete.
2. Select the content to be included.
3. Plan the sequence.
4. Write the objectives (in behavioral terms).
5. Identify entry behaviors.
6. Select the media.
7. Produce and/or purchase the media.
8. Initial test of each unit of study against stated objectives.
9. Revision of SLATEs.
10. Evaluation of students exit behavior measured against the stated task analysis.

This plan for teaching and for learning assumes a new frame of reference in that its emphasis is on the learner and the learning act rather than on the teaching act. By organizing content in modules for SLATE learning the student is encouraged to assume more responsibility for his own learning. In doing so the learner will develop greater understanding and synthesize more fully because he has the choice of redundance and review and of moving at his own rate, and even more important, the modular units and the individualized study facility (multi-media carrels) are always available. Their view and study the second time through will be exactly the same presentation as the previous one. The student can evaluate his own accomplishments.

What does a lesson plan look like? Attached is a work sheet that shows the content objectives, entry and exit behaviors, media treatment, and evaluation decisions reached in the planning for teaching and for learning rubber dam sit-down four-handed dentistry. The lesson will be paced by audio tape. Multi-media materials include 2″x2″ color slides, super 8 mm film loops, objects, and templates. There is built in self evaluation with the final evaluation being clinical performance.

We are attempting to conform to the following criteria in developing SLATEs:

1. Be limited to 30 minutes.
2. Possess simplicity of operation.
3. Not require the presence of a professor.
4. Be available at times convenient to the student.
5. Be flexible enough to allow the treatment of a great variety of subjects with clarity and brevity.

Also attached is a table showing the respective duties of each team member in four-handed sit-down dentistry applying the rubber dam. The lesson will begin with this duty chart followed by a quick overview of what is to be studied.

The final phase of this instructional systems development effort will be to field test the lesson and to make necessary revisions before including it in the learning experiences of the student dentist.

RUBBER DAM—DENTAL ASSISTANTS AND SENIORS

Content Objective	Behavior		Media Treatment	Evaluation
	Entry	Exit		
	Dental Assistant			
A. To know function of each instrument and why it is needed.	A. Can recognize name and state the primary cubicle and contents of cubicle.	1. Can state the duties of the dental assistant and the student dentist.	2x2 slides, tape, objects (tray, instruments, supply for rubber dam)	1 and 4 paper and pencil test
B. To learn what skills needed to be of most help.	1. instruments	2. Can set up for application of rubber dam.		2 Set up basic three with special tray for rubber dam (self check against slide showing proper arrangement).
1. when to use air, water, and suction.	a. hand instruments			
2. when to retract cheek, tongue, etc.	b. rotary instruments	3. Can pass and receive instruments correctly.		
3. how to provide a clear view for operator.	c. surgical instrument			
C. To know each step in application of rubber dam.	d. miscellaneous	4. Can list in order the steps in application of rubber dam.	2x2 slides, tape, template, rubber punch	
1. in what order to place instruments on tray.	2. Equipment	5. Can mark and punch rubber dam.	2x2 slides and tape	5 Mark and punch rubber dam.
2. in what order to pass instruments.	3. Supplies	6. Can use water, air and suction correctly.	2x2 slides, tape, film clip	3, 6
D. How to handle instruments.	B. Can use with understanding dental anatomy terminology.	7. Can properly retract cheek and tongue.	2x2 slides, tape and film clip	7, 8 } Clinical Exercise
	C. Can use correct dental terminology.	8. Can anticipate the	2x2 slides and tape	9
	D. Can identify all instruments and supplies used in the			

1. pass to operator 2. receive from operator a. finger positions used to accomplish 1 and 2 alone. E. To know minimum length of time required for procedure. F. To know importance of anticipating operators every need. G. To learn variations to applying a rubber dam. 1. pedo 2. Class V clamp 3. Young's frame 4. endo.	application of a rubber dam. E. Can state the reasons for using a rubber dam. F. Can identify and state use of a Young's frame and a Class V clamp.	students needs for instruments and can receive and pass properly. 9. Can keep a clear view for operator. 10. Can explain variations and can change procedured to comply with: a. pedo b. Class V clamp c. Young's frame d. endo	2x2 slides and tape Super 8 mm color film loops.	

RUBBER DAM

TEAM MEMBER	TEAM DUTIES
Dental Assistant	A. Report to student's cubicle prior to patient arrival. B. Check patients chart and note any buck-slip messages from student dentist. C. Mark and punch dam and cut out mouth on napkin. D. Arrange armamentarium on tray (as used in sequence). E. Anticipate each step and proceed without verbal direction. F. Accept each instrument or item from student dentist and place on tray. G. Always maintain a clean field—if you leave cubicle wash hands upon return.
Student Dentist	A. Have patients chart available for assistant before patient arrival. B Buck slip attached to chart with work outlined. C. Ask ahead of time for any extra instruments. D. Assistant delivers all items from tray to student. E. Assistant accept all instruments and return them to the tray. F. Maintain clean field—wash hands (if you leave cubicle) upon return.

FACULTY PARTICIPATION IN THE DAU PROGRAM

JAMES COLLORD, B.A., D.D.S.*

We in the dental profession are in no way unique in the aspect that we are trapped by changing technologies. We are caught up in a manner of working which is in reality less healthy, less productive and less attractive than the more recent innovations which have entered the field of dental operation. Seeing and hearing of these new environmental attractions and concepts such as sit-down dentistry, four-handed dentistry, "orthopedically sound" positions, comfortable and healthy team operations, longer and more productive practice life, are enough to catch our interest, but for many not enough to motivate an individual change.

We inaugurated the DAU program at the School of Dentistry because we felt that it was in effect one way to stimulate motivation to solve the transitional problems created by these technological changes, and even more important, to graduate a dentist who is accomplished in the "new" method of operation, and who will comfortably produce far more dentistry during his some 78,000 hour practice life.

Historically, we initiated our DAU program late in the fall of 1961. It began as a very small team consisting of a program director, one full-time dental assistant and later three part-time dental assistants. Here we were, in reality, in a position very similar to that of the Wright Brothers at Kitty Hawk. We got the program off the ground, and this made news, but there were few people, with the exception of our new dean, who felt that it would be of any real and lasting significance. Those of you who have been with DAU programs for any length of time will remember the faculty comments such as: "sounds great, but it will never work here"; "that's fine for your department, but we don't want any more staff in ours"; "Dental assistants would only interfere with our teaching mechanisms and the students learning processes"; "I don't need any more headaches," and so forth. We still have a few faculty members who insist that they cannot change. I'm sure that none of you have this problem.

The aims and objectives that we had late in the fall of 1961 still remain the most important, however, we are currently more capable of defining and effectively attaining them than we were in those early years. To reiterate, we endeavored to design and activate, for our particular school's

* School of Dentistry, State University of New York at Buffalo.

curriculum, a program which would teach the student the value of dental auxiliaries in all phases of dental practice, and in all methods of team operation. It was our strong intent that the faculty and staff be aware of the significance of the DAU program. It was also our intent that they should actively participate in the DAU areas in their respective clinics. AU is for all areas. It is to faculty participation that the remainder of this paper is directed.

We selected the Pedodontic clinic to establish our first AU area. This was and still is, our home base. This department was selected because of its physical nature, small and isolated, and not because of any particular faculty interest. To be frank and realistic, I'm sure that at that time, the department was happy to have a number of mother figures present and also, a number of "gophers" to run errands. It was also decided that in order to structure the student's special assignment to this department, it would be better to schedule patients on a block basis one each hour per student. We then added a part-time receptionist to our staff, installed five new units funded by the University, put in a central suction system, and quote "we were in business." Interestingly enough this did not stimulate or motivate any faculty members in the area of efficiency and increased productivity. The faculty were checkers and when they did demonstrate it was in the manner of how they had always practiced, usually in a poor position and with little or no acknowledgement that the dental assistant was even present. The idea of evaluating and grading a student's ability to effectively utilize a chairside dental assistant was not even a point of discussion.

Things did begin to change. Our home base department had visitors from other clinical areas. The Pedodontic clinical faculty began to take pride in the fact that this was the only department with chairside dental assisttants. Other departments began to see that the Pedodontic clinic was more efficient, that the clinic had a dignified professional aura, and that students could learn and produce more in this atmosphere. With faculty interest at a high level, it was time to establish DAU areas in other departments. In the initial move, we were not concerned about the size of the new staff, or the number of operatories, or having the best equipment available, but rather initially getting our foot in the door. The next phase was to improve the equipment in these AU areas so that sit-down dentistry could be performed. It didn't take too long for the faculty members in these newly established AU areas to really be convinced. It then became a minor crisis if some of the dental assistants were absent. Since that time the frequency of requests for more dental assistants in all areas seems to have multiplied by the sum of the squares. It was at this stage of our programs development that the dean requested the clinical department chairmen to take a more active role in the investigation and improvement of teaching sit-down dentistry. The chairmen, in turn, requested assistance from their faculty. This stimulated interest in manuals of procedure, specific tray setups, and, in turn, a more active participation. Equipment was individually

improved and tailored for these areas. When this equipment was not being used by the students, members of our Faculty Group Practice were encouraged to use these facilities. They were aided by state funded chairside dental assistants. Incidentally, while a faculty member is in a transitional phase of learning sit-down dentistry, every effort is made to enthusiastically support the change. Criticism is offered only at their request. They are also encouraged to discuss specific problems encountered so that solutions may be found. With this motivation they are trying, learning and also finding that it doesn't hurt a bit.

All chairside dental assistants at our school have the same basic training no matter how their salaries are funded. They are required to participate in all in-service continuing education programs. Interest and enthusiasm for the DAU program is increased when a faculty member is asked to lecture to the assistants on topics within the scope of his teaching discipline.

To further challenge faculty interest and skills in sit-down four-handed dentistry, we are establishing a number of postgraduate courses for the practicing dentist. These will be participation courses for both the dentist and his assistant, and all clinical faculty will be urged to contribute to the program.

I might add, and not incidentally, that our dean has been a great motivator. He has backed up the DAU program, and the program director's efforts in every area. Among other things he has located funds with which to hire additional personnel, continuously purchase new equipment, and to equip and staff an evaluation area where, besides doing sit-down dentistry, we are constantly evaluating different equipment, operatory size and shape, and operating concepts. He endorsed and supported apportioning a good percentage of time at the last two-day faculty retreat for the discussion of dental auxiliaries and the role they play in dental education.

If there is regression in a segment of our program in a particular department, the mere mention of possibly moving the assistants to another area seems to work wonders. Our dean wholely supports the concept that if the chairside dental assistants are not being properly utilized, they must be transferred to an area where they will be.

At the present time there are sit-down AU areas staffed with chairside dental assistants in Pedodontics, Operative, Fixed Prosthodontics, Periodontics, Admissions and Records and a recently added single operatory in Removable Prosthodontics. The area in Admissions and Records is currently being used for selected senior dental students who are engaged in a program of comprehensive care with the exception of surgery. We are realizing our goals because the faculty has become involved. We are bringing the mountain to Mohammed.

In conclusion, since motivation is the essence of participation, there is little doubt in my mind that within ten years, nearly 80 percent of the dentistry accomplished in our school will be done with the patient in a supine position, with the operator in an "orthopedically sound"

seated position, and much of the time with a seated chairside dental assistant present.

At that time all the clinical faculty will be able to teach, to demonstrate, and to practice correctly the proper sit-down dentistry of that time secure in the knowledge that it is the ideal way, the only way in which a dentist can accomplish a maximum amount of dental treatment in a minimum amount of time.

DAU AND THE TOTAL ORAL HEALTH CONCEPT

RONALD L. OCCHIONERO, D.D.S.*

Dental Auxiliary Utilization

At Case Western Reserve we are in the midst of changing from our rather antiquated facility to a long over due new plant.

The academic year of 1967–68 is the first year that the Dental Auxiliary Utilization Program has become a credit course for sophomores, juniors, and seniors at Case Western Reserve University.

Our Dental Auxiliary Utilization staff consists of a director, assistant director, dental assistant supervisor, educational psychologists and four dental assistants and four preceptors.

Briefly, the primary objective of our program is to teach and train dental students in the effective and efficient utilization of dental auxiliaries and above all to motivate them to practice what we preach.

We provide lecture material for second-, third-, and fourth-year classes and clinical assignments for third and fourth year. Our fourth year program in Dental Auxiliary Utilization provides eight hours of lecture, demontions, training films and panel discussions in the training of a dental assistant.

Blocked clinical assignment for seniors in the cubicle area consists of 60 hours with a trained assistant. This 60-hour segment is divided into two 30-hour sessions—one early in the fourth year and one at a later period. Prior to any clinical assignment senior students meet with the director and assistant director for an indoctrination session area. Here the student is exposed to and participates in concepts of four-handed sit-down dentistry as he will practice it with his assistant.

We have determined that both the student and the patient derive the most benefit when we performed restorative dentistry procedures during their assignment with a dental assistant. All cubicles are equipped with different unit design but geared for sit-down dentistry as opposed to our general clinic design. The use of instructor-call lights and preset sterilizable trays and individual cubicle total supply have eliminated considerable wasted motion.

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Prior to a DAU assignment our students submit a request form to their dental assistant indicating the procedures to be performed for the day and all items necessary. This enables the assistant to be completely prepared for the student.

We have weekly meetings with our staff in which we discuss techniques in Dental Auxiliary Utilization and pertinent problems to our program. Our psychologist participates in these meetings and aids the dental assistants in the problem of working with 57 different student doctors. Evaluation of the student's response to a dental assistant program and dental assistant's evaluation of the student's performance have primarily been carried out by our educational psychologist.

We are also developing a manual that will be useful for new assistants in our program, the dental student and the graduate in establishing his own office procedure.

Total Oral Health Concept

In 1966–67 we initiated a pilot study with 13 senior students who had met minimal departmental requirements in all areas of General Dentistry. In this group, unit requirement as such was de-emphasized and total patient care was practiced. These students surpassed previous clinical requirements in all departments and maintained quality.

The total Oral Health concept of clinical instruction for senior student 1967–68 is in full operation. Students in groups of 12–14 operate under the guidance of preceptors and provide complete dental care for their patients in what closely approximates the actual situation in private practice. Transfer of patients from student to student is not practiced. Consultations are held as indicated with specialists on the dental faculty in particular areas of dental practice. Periodic proficiency examinations are administered and graded by faculty other than the preceptors.

Under the unit system we felt patients were being exploited by students to meet their own requirement need and not the total dental needs of their patient. Students were treating teeth and not patients.

The total Oral Health concept enables the student to concentrate in diagnosing, treatment planning and the execution and completion of his plan; thereby, achieving a sense of accomplishment and confidence.

All of the preceptors in the total Oral Health Program are private practitioners who employ one to three dental auxiliaries. Under the circumstances of continuous contact between preceptor, student and patient the use of dental auxiliaries becomes a more meaningful and an integral part of Oral Health Team Concept.

The integration of DAU program and the total Oral Health concept therefore has proven to be mutually beneficial. As a director I coordinate the instructional efforts of the other preceptors in the DAU area.

A unique opportunity is offered to augment the proficiency of instruction in the cubicles by the indoctrination of the full complement of the

preceptors into the DAU philosophy. These individuals of necessity supervise their trainees in dentistry within the cubicles and it is natural to anticipate that they can accept certain concomitant duties in DAU training.

The preceptors coordinate the restorative treatment to be performed so that student, patient, and dental assistant derive the most from the experience. It is the preceptor's responsibility to help reinforce the DAU concepts.

To summarize, we have a director and assistant director and dental assistant supervisor who provide didactic on clinical instruction and our group of preceptors who augment our instruction by emphasizing DAU principles.

EXPANDED FUNCTIONS FOR THE DENTAL ASSISTANT

PAUL E. HAMMONS, D.M.D.*

Although performance of expanded functions does not require that the dental auxiliary have a scientific background comparable to a dentist, it is essential that she receive training consistent with the responsibilities delegated to her. If the auxiliary is expected to appreciate the importance of sterilizing instruments this concept can best be conveyed by permitting her to culture some organisms taken from an apparently clean instrument and observe them under a microscope. Such training was provided in microbiology and similar training was provided in the other basic science courses.

Particular emphasis was placed on dental anatomy because of its importance in clinical procedures and value in developing digital dexterity. For these trainees, carving exercises were as detailed as for dental students.

Prior to beginning the training program a special dental materials manual was prepared. This manual included experiments designed to demonstrate the important physical properties of the various materials which would be used in preclinical and clinical operative procedures. It was felt that the auxiliary would be more inclined to use a material properly if she had seen the results of improper manipulation and incorrect proportioning of that material clearly demonstrated. As each material was studied, experiments related to its clinical application were performed and discussed. For example, experiments were designed to measure the flow of amalgam when the specimen was placed under a given load for a specific length of time. The mercury-alloy ratio was varied in different specimens and the amount of flow measured. Using similar tests, various trituration and condensation technics were studied. The final quality of an amalgam filling is influenced by condensation technics, therefore comparisons were made of the commonly used procedures. In addition to revealing some of the physical properties of the material, these experiments required that scientific methods be followed and demonstrated the importance of close attention to fine detail. Since amalgam is the most commonly used filling

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material it seemed important to give special attention to the characteristics of this material. Usually the experiments were performed independently by each auxiliary. After an experiment was completed however, the results were compared and discussed. In addition to the dental materials lectures and laboratory exercises, courses in sterilization, periodontology, instrumentation, operative dentistry technic and professional ethics were given.

After learning the manipulation of materials and developing proficiency in filling the dies, the trainees next worked on manikins in the laboratory. In doing this they simultaneously applied their knowledge of dental materials, technic, and dental anatomy. For realism and training, they were taught to apply rubber dams before working on the manikins. To prevent them from developing undesirable work habits, the manikins were attached to the laboratory benches at a level which discouraged them from trying to operate from a standing position. After the trainees had become proficient in the laboratory, the manikins were moved to the clinic and mounted on reclining chairs. At this time the specially trained auxiliaries were taught to work with a conventional dental assistant. Throughout training all procedures were supervised by the dental faculty. It should be emphasized that at this time the girls were completing their eighteenth month of training. The first year was spent in basic sciences and preclinical technics which included both lectures and laboratory exercises. This year was followed by six additional months in advanced preclinical instruction which included operative technic, application of rubber dams and other related clinical procedures. Partitions were intentionally omitted to permit an unobstructed view of the entire clinic. During the final period of training on models particular attention was given to matrix application for complex amalgam restorations.

Although the film deals mainly with amalgam the girls received comparable training to prepare them to place silicate and temporary cement restorations in previously prepared teeth. After thorough training on manikins in the clinical environment the auxiliaries progressed to operating on patients under the direct supervision of a dentist. Those operations requiring professional knowledge and skills were done by dentists. These were administration of anesthetic agents, diagnosis and treatment planning and severance of hard and soft tissues. The design of the preparation is a critical factor in the quality of the restoration . . . therefore, particular attention should be given to this procedure. Whenever a liner, base or pulp capping was indicated the dentist made the decision and completed the treatment as indicated. The operations of the auxiliaries were limited to those procedures directed by the dentist which were reparable and could be corrected or redone without undue harm to the patient's health. You may recall that partitions were intentionally omitted from the clinic . . . this was part of the plan to simulate an office in which a dentist performs those operations which *only* he is qualified to do while supervising the specially trained auxiliaries. After six months of

clinical training . . . quality evaluations were made of all procedures performed by the auxiliaries. Control patients who had been treated by advanced undergraduate dental students came from a clinic in the same building. All patients were directed to the evaluation room from a common point. The evaluator had come to the evaluation room through a corridor to the outside without being able to see into operatories or reception rooms. The evaluators were prominent dentists who were not members of the faculty and who were highly respected by their colleagues. Before entering, patients were instructed not to converse with personnel in the evaluation room . . . another precaution to keep the evaluators from knowing whether the work was performed by students or auxiliaries. All observations were recorded by a clerk on forms which were referenced to a manual of criteria. These criteria had been reviewed with the evaluators before they participated in the program. Time will not permit any discussions of the various procedures evaluated, however they were reported in the Journal of the American Dental Association. Upon completion of each evaluation the record was verified by the evaluator and the patient returned to the record clerk's desk. The record was placed then in a locked file.

After a two year training program . . . data were collected for approximately one year at which time sufficient information was available to make defensible conclusions about the qualitative performance of the auxiliaries as compared with advanced undergraduate dental students.

GROUP DISCUSSION

Each person in attendance was assigned to one of four discussion groups. Two groups were composed of directors and other dental faculty members and the other two were composed of dental assistant supervisors and chairside assistants.

Areas of common interest were suggested for discussion. Topics discussed were:

1. Orientation to the DAU program—the optimal when and how for dental students, dental assistants.
2. Space design and equipment utilization as it affects working conditions for the dental student operator and the chairside assistant.
3. Evaluation procedure—the methods for evaluating the effectiveness of the total program, dental student performance or chairside assistant performance.
4. Personnel qualifications—the type of person who makes the best assistant, the abilities sought, the amount and kind of training provided including the areas of dentistry in which competencies are developed.

*5. Changes made in dental school curriculum to include DAU training.

*6. Programs of in-service training for faculty.

**7. Tray set-ups.

**8. Technics of instrument management.

**9. The role of the assistant as an instructor.

Discussion was open and everyone was encouraged to comment. Many points were raised and many opinions were stated. In most instances no consensus was obtained. Some opinions expressed by participants are listed below for your information and careful consideration.

1. Freshmen students should be taught to use a manikin in the proper position.
2. Educators should consider using the clinic as a laboratory for teaching students.
3. All faculty members should be considered part of the DAU teaching team.

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* Program directors and dental faculty members only.

** Dental assistant supervisors and chairside assistants only.

4. The proper DAU environment needs to be instituted in the freshman year.
5. Before four-handed dentistry can be done right we must make the equipment hurdle and get to the place where the whole school is equipped properly.
6. The proper kind of equipment is the kind of equipment that will effectively train dental students to use chairside assistants.
7. Communication between the student and assistant is a most important factor.
8. Most faculty members do not know how to teach four-handed dentistry.
9. We must reach all faculty members and must go into the area of training the practicing dentist.
10. It does little good to give a student a few weeks of DAU and then when he goes into another area to be told, "Forget that, that was DAU."
11. Names of job categories and titles are important if the dental assistant is to have proper status and command the respect of the dental student.
12. The position of dental assistant supervisor should be a bona fide clinical faculty appointment.
13. Program directors should consider selecting dental assistants from graduates of junior/community college programs.
14. In-service training programs for dental assistants is valuable as a means of improving techniques and procedures.
15. It is important to orient the dental student to the role of the dental assistant as an instructor in chairside assisting.
16. The shortage of instruments is a factor which precludes the use of preset tray systems in some schools. Half of the schools represented in one group state they have adopted the preset tray system.
17. Practice sessions utilizing a manikin head is an effective method of introducing the student to the use of a chairside assistant.
18. It is the policy of some schools to employ only certified or certification eligible dental assistants.
19. One group reported that when assistants are not employed on a yearly basis about one-third do not return.

SUMMARY

WALTER J. PELTON, D.D.S.*

In certain respects, the performance of dental schools in the last eight to ten years has been remarkable. In other respects, it has been considerably less so. The DAU program is related closely to the dental manpower problem, but oftentimes dental educators are so involved in the minutiae of training clinicians that they seem to lose sight of the larger picture.

In the mid 1950's, the dental manpower situation became known through a series of studies that the Public Health Service did with the cooperation of the ADA and the AADS, and, in several instances, with financial support from the Kellogg Foundation. As you know, the number of dentists was not increasing in proportion to population growth. Furthermore, incomes as well as educational levels were rising, an indication that demands for dental services would also rise substantially. The dental profession was obviously heading for trouble unless trends toward shortage could be halted or reversed.

To accomplish such a reversal, more dentists would have to be produced. The Congress understood the implications of the health manpower crisis, and it was only a matter of time until it acted. The Health Professions Educational Assistance Act was passed in 1963. But the HPEA, essential though it was, did not in itself provide the total answer. We not only needed more dentists, we needed to use them to the fullest advantage.

In light of the substantial public investment represented by the HPEA, the dental profession was in an indefensible position if it could not show that it was making the best use of available dental manpower.

The Public Health Service had anticipated this problem, and for several years prior to the passage of the HPEA, we had all been concerned over the need to find ways of treating more people with the resources we had. We came to the realization that the average dentist could become more productive by making better use of chairside assistants—and by making increased use of all other types of dental auxiliaries. Practitioners had to re-train themselves in order to use subprofessional personnel efficiently.

The opportunity to put this philosophy to work in a practical way presented itself when a $90,000 windfall came to the then Division of Dental Resources. Dean Simon of the University of Iowa was invited to

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Washington to help plan a program involving student training. At that time, no grants authority existed in the Division. It was not even known whether dental students were sophisticated enough to use assistants, but six dental schools were interested in trying to work out the details of a training program. Later, the ADA was successful in obtaining additional support for the program.

About that time (1960), Canadian dentists began to feel pressures from a dissatisfied public. You may recall that in the late 50's, the western provinces of Canada modified their practice act to make it legal for subprofessionals to practice without supervision by dentists. The upshot was that, at the request of the Board of Trustees of the ADA, the Board of Trustees of the Canadian Dental Association met to consider the serious state of affairs. Some few months later, a resolution was passed by ADA House of Delegates (1960) that encouraged dental schools to conduct research on the functions of auxiliaries with the intent of expanding the productivity of the dental profession. You may recall that the resolution passed with scarcely any discussion. Several dental schools planned such research projects but could not get the required approval from the respective licensing boards and associations. The profession simply wasn't ready for such advancements. Eventually, the University of Alabama School of Dentistry, along with the Public Health Service and the Navy, conducted studies related to auxiliary function. Initially, the Alabama project produced a rather violent reaction among the profession in the State. However, even before Dr. Hammons published his paper in September 1967, Alabama dentists appeared pleased with the leadership their school had exhibited.

Meanwhile, the projected increases in demands for dental services have begun to manifest themselves—and the rate of increase seems certain to intensify in the future. In the early 30's, for example, only about 25% of the population was supposed to be receiving regular care by dentists. Thirty years later, the figure cited was 40%. Then along came Federal legislation whose potential impact on the practice of dentistry is tremendous. The 89th Congress, in effect, reshaped the future: almost all the public, through legislation now on the books, may soon be entitled to dental care.

The ADA has successfully promoted the "Kiddie Care" program—The Child Health Act of 1968 contains provisions for such a dental care program for children. When that particular program is to be implemented is still uncertain, but the fact remains that organized dentistry has taken a positive position concerning care for disadvantaged groups. Another proposed dental care program relates to military personnel. There is a bill in Congress that proposes to make dental care available to military dependents.

It should be evident to all of us that the supply and demand situation with respect to dental care is becoming critical and that dental schools are not moving fast enough in the DAU program. The DAU pro-

gram, as initially conceived, meant utilization of all dental auxiliaries. Given enough funds it could be expanded to cover much more than the utilization of chairside assistants. The granting mechanism could make it possible for the program to do many things. There is much research that should be done with the use of therapists in private offices. For instance what will be the economical impact of therapists on dental practice? Will the dentist net more or less than he does now? Are therapists really an economical way of extending the services of a private practitioner? These types of projects ought to be supported from DAU funds.

The Committee has enumerated the essentials of a good DAU program in the Guidelines. They consider the developmental period of the DAU program ended, and, since most of the problems should have been solved, dental schools should now be operating on a sound productive basis.

DAU funds are not meant to be used to train assistants for non-dental school use. Neither are they to be used to supply assistants for graduate students working in dental schools. There are post-graduate courses of instruction on four-handed dentistry being conducted in six schools. Refresher courses ought to be encouraged, but since they are usually self-supporting no support from DAU funds seems necessary.

One of the things that has been lacking in DAU conferences is any discussion of how the prosthodontist or orthodontist will use an assistant. If it had not been for Dr. North's last slide at this meeting, there would not have been any note of the periodontist using assistants. I think the intended objective of DAU is to convert all clinical activities in every school to four-handed dentistry as soon as possible.

In passing, DAU faculties of dental schools were alerted to the Manpower Report that came out in December 1967 which stated that there is a crisis in the professions supplying health care to the public. The Report said that the crisis is bigger than Government and that help must come from all sectors, especially teaching institutions.

How long before the present concepts of DAU programs expand? Where do we go from here? When do we tackle the problem of increasing production by teaching dental students how to use a therapist? Who is going to do research on auxiliaries other than Alabama and, more recently, Minnesota? What will happen to dental schools if suddenly continuing education courses are demanded because of relicensure provisions? Suppose that, all of a sudden, each dental school had to be concerned with providing four-handed training to only the dentists in its state? Do you feel that this is somebody else's problem?

The possibility of having more funds during the coming fiscal year seems good. Dr. Diefenbach was to testify this morning in the Senate, and he reports that the possibility of increasing the DAU program by $1 million looks promising. If divided equally among the 50 dental schools, that would mean $20 thousand to each school. However, the DAU program, unlike the Basic Improvement Grants, is not an entitlement type of program under which funds are allotted to schools by formula. The DAU

program is competitive, and it demands that funds be justified, well expended, and well used. Because of the Fountain Committee and other Congressional Committees concerned with the way public funds are expended, it is necessary that the Public Health Service closely supervise the DAU program. For instance, travel to these meetings and other DAU programs is authorized but travel to ADA, ADAA or AADS meetings is not. It is important that program directors watch their expenditures closely and use the money as planned. It is wise, almost mandatory, that you keep an accounting of your own expenditures.

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