AD-A128 272 A STUDY TO EVALUATE AN AUTOMATED BAR CODE READER AND ELECTRONIC TRANSMITT..(U) ACADEMY OF HEALTH SCIENCES (ARMY) FORT SAM HOUSTON TX DENTAL S.. W A PARKER 1/1

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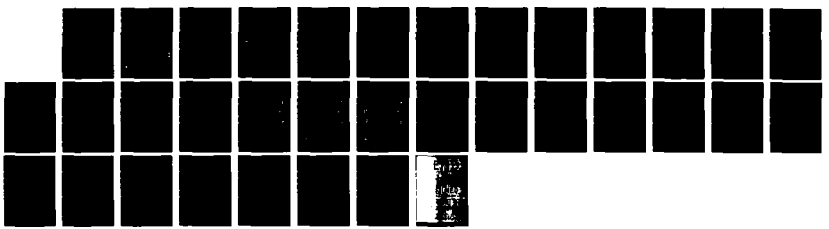

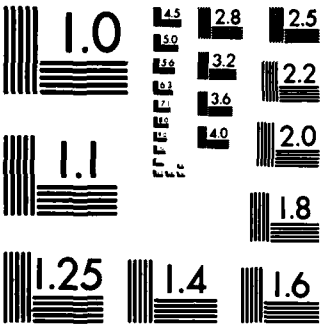

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DENTAL STUDIES OFFICE REPT #80-006

A Study to Evaluate an Automated Bar Code Reader and Electronic Transmitter Device for Workload Reporting from DENTAC to Central Processing Facilities (Bar Code-Den)

by

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Fort Sam Houston, TX 78234

November 1980
Final Report

Prepared for:

UNITED STATES ARMY HEALTH SERVICES COMMAND
Fort Sam Houston, TX 78234

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The overall purpose of this study was to evaluate the accuracy and effectiveness of an automatic bar code reader and transmission device. An existing Uniform Chart of Accounts bar code medical system operating at Fort Sill, Oklahoma, was modified to accept dental workload by the Health Care Systems Support Agency (HCSSA). A three month test was conducted of the test system and compared to the manual dental workload system for time required to prepare reports, accuracy, and user acceptance. The bar code method required 27 percent less

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SUMMARY

The overall purpose of this study was to evaluate the accuracy and effectiveness of an automatic bar code reader and transmission device. An existing Uniform Chart of Accounts bar code medical system operating at Fort Sill, Oklahoma, was modified to accept dental workload by the Health Care Systems Support Agency (HCSSA). A three month test was conducted of the test system and compared to the manual dental workload system for time required to prepare reports, accuracy, and user acceptance. The bar code method required 27 percent less time than the manual method and was very well accepted by users. There were tremendous discrepancies between reports and an on-site audit revealed that the manual system was more accurate than the bar code system. The exact reason for the consistent underreporting error was never found. It was recommended that the bar code system tested not be adopted for use in the dental care system.

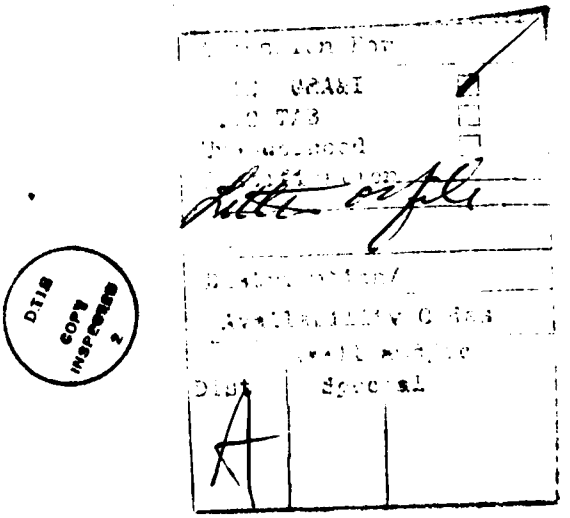


TABLE OF CONTENTS

I. INTRODUCTION.

A. Purpose. The overall purpose of this study was to evaluate the accuracy and effectiveness of an automated Bar Code Reader (BCR) and transmission system for dental workload reporting at the DENTAC level.

B. Background.

(1) The Bar Code Reader is a fairly recent application of computer technology. It is being used extensively in the retail grocery and department store industries where speed and price accuracy are important. The BCR is also being widely used to facilitate inventory control in many areas. Bar Code Readers have been in use at Reynolds Army Hospital, Fort Sill, Oklahoma, to record pharmacy and medical laboratory workload. Since the system was available for use, it was decided to conduct a test to determine if it could be used by the Dental Activity to record and compile workload reports.

(2) The administrative and clerical burdens placed upon dental clinic managers, particularly the dental treatment facility (DTF) Non-commissioned Officer in Charge (NCOIC) have been significantly increased with the implementation of a new Dental Service Report effective 1 October 1979. Daily workload must be summarized using more than 300 different dental procedure codes. A Dental Service Report must now be prepared monthly instead of quarterly. These increased requirements have impacted heavily upon clinic staffs which will not be increased. In addition to the increased time required to prepare the new workload reports, the manual method involves greatly increased chances for arithmetic errors and other inaccuracies because of the necessary, lengthy daily computations. It was thought desirable to explore the feasibility of easing the workload reporting process while simultaneously enhancing the accuracy of the report.

(3) In August 1979 representatives from the Directorate of Dental Services, Health Services Command (HSC), the Health Care Studies Division, Academy of Health Sciences (HCSD, AHS), and the Health Care Systems Support Agency (HCSSA) visited Reynolds Army Hospital to observe the Bar Code Reader system in operation. They reported that the BCR system was favorably accepted by the users. The level of user acceptance was directly related to the accuracy and completeness of data organization for input into the system and the accuracy of the resulting reports. Two important problem areas were noted. Firstly, there was some distortion of data transmitted over the non-dedicated telephone lines; and secondly, there were significant breakdown problems with the reader/transmitter devices.

II. OBJECTIVES.

A. To compare the time requirements for the preparation of dental workload reports by clinic administrative personnel using the manual, non-automated mode and by the test (BCR) mode.

B. To compare personnel requirements for the same purposes.

C. To compare workload reports from both sources for the same reporting period to identify potential or actual differences.

D. To evaluate user acceptance of the BCR system.

E. To gather information upon which recommendations could be made to the Directorate of Dental Services, HSC, regarding the advantages and/or disadvantages of the BCR system for dental workload reporting.

III. METHODOLOGY.

A. Overview.

(1) The study (test) was conducted at the DENTAC, Fort Sill, Oklahoma, using the Bar Code Reader system installed in Comptroller Division, Reynolds Army Hospital, MEDDAC, Fort Sill. Equipment was available at no cost to this study. Modification of existing UCA program software was performed by Health Care Systems Support Activity (HCSSA) personnel. A "menu" of bar codes representing system entry clinic identification, dental procedure, and frequency was also developed by HCSSA. Examples of bar codes are at Appendix A. The Fort Sill DENTAC provided a dental assistant and operating space for the recording and transmission of the workload data. The overall study plan is at Appendix B.

(2) All dental procedures accomplished by the DENTAC during the study were reported using the usual manual system and via the BCR system. No changes were made in the methods used by clinic personnel to report their workload. They simply supplied the same raw data which they used for their reports to the individual responsible for the input of the data to the BCR system. During the three-month test phase, on-site visits to Fort Sill were made by AHS and HCSSA personnel to monitor the test.

B. Data Collection.

(1) At each dental clinic the individual who was responsible for manually collecting workload data and preparing the monthly Dental Service Report was asked to record the time expended daily for accomplishments of these tasks.

(2) The individual who was appointed to input data to the BCR was also asked to record the time required to do the same task daily.

(3) Data was to be recorded on a daily basis by the clinics and the BCR system. Due to human frailty the former wasn't always done. Because of various technical problems the latter couldn't always be accomplished. Therefore, the use of inferential statistical tests for analyses of these data was precluded.

(4) Workload reports for each of the three months of the study were prepared from data submitted via the BCR. Workload reports prepared by the usual (manual) method were obtained from HSC. Examples of workload reports are at Appendix C.

(5) BCR workload reports were prepared by the Health Care Systems Support Agency (HCSSA) from tapes produced at Fort Sill and also from input tapes transcribed from data produced at Fort Sill.

C. Data Analysis.

(1) Because the data was not obtained in a format which could be used for other than descriptive statistic analysis, this was the only type of analysis accomplished. The reason for this is explained in 3b(3) above.

(2) Workload reports from each operating DTF in the Fort Sill DENTAC which were prepared from BCR data were compared to reports from those same DTF submitted to HSC and prepared in the usual, manual method.

(3) Monthly reports for the Fort Sill DENTAC (consolidated DTF) prepared from the BCR data were compared to reports for the same month prepared in the usual method and submitted to HSC.

IV. FINDINGS.

A. The findings presented were collected from special reports generated specifically for this study, routine operating reports, and observations by project officers. Data collection occurred from February thru April 1980. Descriptive statistics were used in data presentation.

B. Time. Table 1 shows a comparison of the time required for compiling daily workload data by the manual and the BCR test systems. The BCR test input was accomplished by one individual at a central location for all clinics while the manual system data compilation was performed at the clinics where the treatment was rendered by the clinic NCOIC or his designee. The bar code method took 27 percent less time than the manual system during the overall three-month test period. During February, the first month of the test, both methods required essentially the same amount of time. However, during the next two months a 37 percent and 38 percent time savings was recorded respectively for the bar code method.

C. Accuracy. Table 2 contains a summary of selected procedures for comparing the methods in terms of the workload reported. In every instance, except Code 08420 (Feb), the manually reported workload exceeds the bar code derived frequency of performance counts. This was found throughout the entire report. A trend of improvement from February to April was not detected.

D. In order to verify which system represented the valid workload report, an audit of the April data was performed by project officers from the Dental Studies Office (DSO). The manual system was shown to be the valid report when compared to the bar code reader generated report. The range of difference between the audit and the manually prepared reports for four selected procedures ranged from four to 12 percent, while the range of difference between the audit and the BCR for the same procedures ranged from 32 to 61 percent.

E. Tapes of the April data were rerun at HCSSA and the ensuing reports were essentially the same as the original April bar code report.

F. Acceptance. The use of a device such as the bar code reader was universally accepted by the DENTAC personnel. The clinic NCOICs felt that a centralized input in automated format was good and relieved them of a sizeable administrative burden. The DENTAC Commander, Executive Officer, and Clinic Chiefs all felt that such an approach was worthwhile in terms of making the UCA workload report less burdensome. The comments were solicited during the test prior to any feedback on the accuracy of the system. The impressions of SP5 Watkins, who served as the bar code reader operator, are at Appendix D.

V. DISCUSSION.

A. General. The test was beset with continuous problems throughout the period of data collection and transmission. The problems were more extensive and prolonged than anticipated from the feedback received during system modification conducted by HCSSA. In retrospect, perhaps the dummy data used to verify the system modifications was not typical of actual data input and therefore did not truly verify readiness of the system to accept and process actual data input, transmittal, processing, and tabulation. Although problem solving occurred continuously during the DSO field test, the basic error-producing element was never found. However, a second run of the April data tapes by HCSSA personnel produced a report essentially the same as the original April report. The inaccuracy could have resulted from human error, because of equipment malfunction prior to or during recording on tapes, or due to software problems not detectable when the original UCA software was modified to accept dental input. If human error were the source, one would expect that the errors would be randomly spread, that is, consistent underreporting would not be expected to occur. The electronic portion of the system which seems to be indited is the process that reads the symbol from the menu board and transmits it to the cassette tape. This accusation cannot be substantiated or documented without a further series of tests. Shortage of personnel at the Fort Sill DENTAC made continuation of the study impractical.

B. The possibility of software modification problems cannot be totally dismissed, but further investigation of the modified software is not deemed practical or worthwhile by HCSSA personnel.

C. The differences in the overall time required to prepare monthly data summaries definitely favored the use of the bar code method. Error correction during the first month reduced the time savings somewhat in February, but March and April appear to represent a time reduction that was of practical significance. The bar code method, as tested, employing one operator for the entire DENTAC, utilized fewer personnel than the control or manual methods in which each clinic NCOIC tabulated his respective monthly workload. In reality, if such a system (bar code) were implemented the clinic NCOIC would still be responsible for verifying the accuracy, completeness, and legibility of daily worksheets before submission

to the bar code operator. Therefore, an extra person is entered into the system. However, the operator used in the test was only involved as a bar code operator on a part-time basis and was utilized for other duties as well. The time saved by the clinic NCOICs in tabulation and preparing monthly summaries appears to offset the additional new duty of bar code operator. The inaccuracy of the bar code method tested during the project has been verified by audit. The specific cause(s) of the inaccurate data can not be identified without an exhaustive investigation and retest. At the present time neither personnel nor financial resources are available to the HCSSA or the Dental Studies Office (DSO) to perform such a critical analysis and retest of the system. In summary, the bar code system as tested did not provide an accurate workload report.

D. User acceptance of the bar code method was very favorable from the clinic NCOIC and DENTAC level staffs but was less totally acceptable according to the bar code operator whose after-action report may be seen at Appendix D.

E. The inability of the system to provide a hard copy of data input into the computer made it impossible to track the source of error during the project. In addition, multiple days of workload were stored on single tape cassettes making identification of a single work day, by clini impossible. The inability of the on-site computer to produce a printout for each day's input by procedure code was an important factor when it became obvious that the bar code system was not producing reports similar to the manual system. If this capability had been present, an audit trail could have been established from the outset of the test.

F. Interviews with the MEDDAC Comptroller, who operates the UCA pharmacy and pathology programs, did not provide additional information for identifying the source of the problem in the dental system. The error listing produced for the dental system was found to contain fewer errors than typically found with the other operating systems. This observation tends to support the opinion of the project officers that the source of the problem was not operator error.

G. In view of the problems associated with this field test and the inaccuracy of the resulting workload reports, the current UCA bar code system as tested at Fort Sill cannot be endorsed as one that is readily adaptable for dental use. Although the concept has merit, and the approach was time efficient and well received by potential users, the system would require additional in-depth study, modification, and extensive retesting before it could be supported for a worldwide dental workload reporting application.

VI. CONCLUSIONS.

A. The use of a centralized bar code reader and transmitter device was shown to reduce the amount of time required to manually tabulate the Fort Sill DENTAC monthly dental procedure workload clinic reports by 27 percent during the overall test period.

B. The bar code method of accumulating workload data was acceptable at the DENTAC and clinic levels.

C. The workload report generated from tne use of the bar code reader and transmittal device was not accurate compared to the actual dental procedures accomplished during the report periods.

D. Overall, the bar code system tested at Fort Sill did not provide an improved method of workload report preparation and is not considered to be a readily adaptable improvement over the manual system currently in use.

VII. RECOMMENDATIONS.

A. Recommend the bar code system tested at Fort Sill DENTAC not be adopted for use in the dental care system.

B. Recommend that any future modifications to the current UCA system that involve dental workload reporting be thoroughly tested by DSO, Directorate of Combat Developments and Health Care Studies, before implementation and/or proliferation throughout the dental care system.

TABLE 1

TIME REQUIRED FOR COMPLETION OF WORKLOAD REPORTS
FOR MANUAL REPORTING SYSTEM, AND BAR CODE READER

HOURS REQUIRED PER MONTH (HR:MIN)

MONTH	BAR CODE ALL CLINICS	MANUAL REPORTING SYSTEM CLINIC #2	CLINIC #3	CLINIC #4	ALLEN CL	WEEKS CL	TOTAL
Feb	93:45	25:00	5:40	19:30	25:20	18:10	93:40
Mar	66:10	27:20	2:00	23:45	38:45	13:20	105:10
Apr	63:10	24:10	7:40	26:35	36:10	12:45	107:20
Total	222:55	76:30	15:20	69:50	100:15	44:15	306:10

TABLE 1

COMPARISON OF FREQUENCY DISTRIBUTIONS FOR SELECTED PROCEDURES
COMPARING THE BAR CODE READER (BCR) METHOD WITH
THE MANUAL REPORTING SYSTEM (MRS)

UCA CODE NO	SYSTEM	FEBRUARY	MARCH	APRIL
00120	BCR	1111	1755	2591
	MRS	2544	2685	2793
01110	BCR	462	648	200
	MRS	954	967	1049
02140	BCR	703	1331	673
	MRS	1769	2317	2423
04210	BCR	26	21	12
	MRS	48	26	55
05110	BCR	13	15	5
	MRS	19	23	24
06130	BCR	6	14	12
	MRS	16	35	32
07110	BCR	337	511	268
	MRS	802	888	876
08420	BCR	227	96	53
	MRS	216	180	380
09972	BCR	1736	2755	876
	MRS	4719	4083	4378
TOTAL PROC	BCR	27109	42124	22432
	MRS	65726	69613	74531
TOTAL PT TRTD	BCR	4183	6481	5534
	MRS	9620	9998	11473

APPENDIX A

BAR CODE SCANNING AND TRANSMITTING

Bar Code scanning consists of passing a pencil-like light wand over a series of thick and thin lines. Each series of lines represents a specific administrative, frequency, or dental procedure code data point. A barely audible beep indicates the system has received the entry.

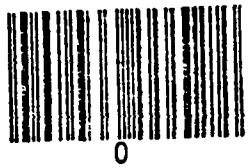
Each bar code is unique. Neither the bars nor the spaces between the bars are uniform. Each entry or code number is encoded as a series of wide and narrow lines with wide and narrow spaces between them.

The light wand is a laser beam which measures the width of each bar and space as the wand is passed over the bar code. This information is then entered onto a magnetic tape and a beep occurs to inform the operator that the bar code has been entered. Data may also be manually keyed in if a beep fails to verify registration of data.

When the tape has either been filled or contains the desired data, a telephone is used to dial the computer terminal and the tape is played into the headset of the telephone. If the data transmittal is interrupted for any reason the sender is notified and resubmission must take place from the beginning of the tape.

Once the data is received by the computer an error listing is prepared and submitted to the sender for correction. The error listing is in code and does not represent a decoded summary of the data sent. In other words, it cannot be used as an audit to check if all the data intended for entry was actually received. The corrected data is then stored and placed on a magnetic tape for processing. Attached are examples of menu boards similar to those used for this test.

FREQUENCY MENU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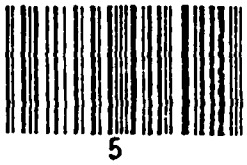
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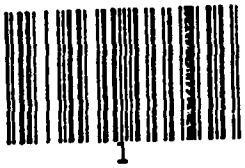
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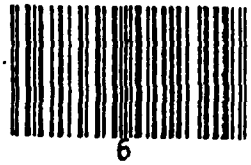
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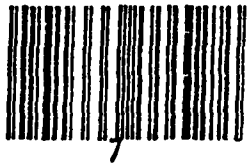
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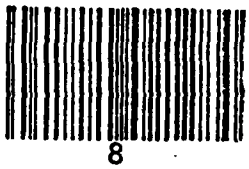
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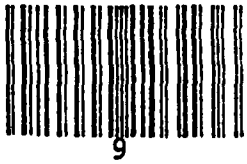
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ADMINISTRATIVE DATA

DENTAC AND CLINIC UIC CODE

Fort Sill OK 00
WZNVIA

Weeks Dental Clinic 01

Dental Clinic No. 2 02

Dental Clinic No. 3 03

Dental Clinic No. 4 04

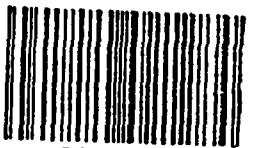
Allen Dental Clinic 05

BENEFICIARY TYPE

ARMY

NAVY/MARINE

AIR FORCE



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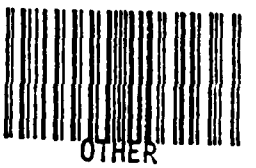


OTHER

02100 Amalgam Restoration


02140
Amalgam - One Surface


02150
Amalgam - Two Surface


02160
Amalgam - Three Surface


02161
Amalgam - Four or more Surface

02300 SILICATE RESTORATION


02210
Silicate Cement

02300 RESIN RESTORATION COMPOSITE


02320
Resin, Simple


02336
Resin, Complex

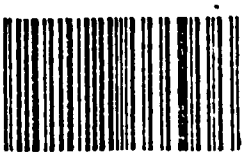

02340
Acid Etch


02341
Glazing, Composite


02342
Sealant, Operative

02400 GOLD FOIL RESTORATION


02410
Gold Foil Class I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APPENDIX B

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGCEN.

REFERENCE OR OFFICE SYMBOL	SUBJECT
HSDS	Automated Bar Code Reader/ Transmitter Test

TO DDS FROM C, Res Mgmt & Clin Anal Div DATE 9 Oct 79 CMT 1 LTC Mills/oor/5531

1. This is a decision paper.

2. PURPOSE. The purpose of this decision paper is to provide information upon which to base a decision to conduct an Automated Bar Code Reader/Transmitter Test at the DENTAC, Fort Sill, in support of the Dental Service Report System (Modified), (DSRS(M)).

3. DISCUSSION.

a. Problem Identification. With implementation of the DSRS(M) on 1 Oct 79, the administrative burden for the daily accumulation of dental workload by clinic administrative personnel increased significantly. Workload must now be accumulated daily from forms completed by care providers in the clinic, utilizing 319 reportable codes compared with only 48 codes under the previous system, and a running total for the month maintained on a daily basis. In addition to the increase in time required by the manual method, the possibility for arithmetic errors caused by the tedious daily computations is greatly increased. The application of the automated bar code reader/transmitter concept could potentially reduce the administrative time required in the accumulation and reporting process as well as possibly reduce errors.

b. Background. Bar code readers are currently being utilized at Reynolds Army Hospital, Fort Sill, to record pharmacy and laboratory procedures in conjunction with Uniform Chart of Accounts implementation. On 9 August 1979 a team consisting of COL Parker, HCSD, LTC Mills, HSDS, LTC Shulman, TRIMIS, CPT Magill, HCSSA, and Mr. Garcia, HCSSA, visited Fort Sill to observe that system. Generally, the system was perceived to be favorably accepted by the users. The degree of acceptance appeared to be directly related to the degree of organization of data for recording into the system. Most users indicated time savings and acceptable error rates. Problem areas observed included distortion of transmitted data by normal telephone line transmission (requiring dedicated lines) and maintenance problems with reader/transmitters.

c. Test Approach. A six-month study test (1 October 79 - 31 March 79) will be conducted at the DENTAC, Fort Sill to compare the present manual method of compiling clinical and laboratory workload with the use of the automated bar code reader/transmitter. The study/test will be conducted by the representative from Health Care Studies Division, AHS, and the Health Care Systems Support Activity in two phases.

DA FORM 1 FEB 67 2496 REPLACES DD FORM 96, WHICH IS OBSOLETE. ☆ U.S.GPO:1977-0-765-124 152

(1) Phase 1. (1 Oct 79 - 31 Dec 79) This phase will consist of the development of a formal study evaluation document by HCSD/HSDS and a visit by HCSD representatives to Fort Sill to document the manual collection process. HCSSA will prepare bar code menus for entering all data, a dental input edit program, and user manuals for all software and equipment. Reader/transmitter operator training will be provided DENTAC personnel by HCSSA prior to the beginning of the automated phase.

(2) Phase 2. (1 Jan 80 - 31 Mar 80) During this phase the DENTAC will use bar code readers to record dental clinical and laboratory procedures. The data will be entered into the reader through a light pen, utilizing bar code menus, or by a numeric keyboard. A cassette deck built into the reader will store the data. Each clinic's procedures will be stored daily on tape and transmitted daily from the reader/terminal at the clinic or DENTAC to the UCA computer located at the Comptroller Office, Reynolds Army Hospital. Daily data from all clinics will be accumulated for the reporting month on the computer. At the end of the month the data will be dumped to a magnetic tape and mailed to HCSSA where it will be utilized as input to the Dental Service Report System - Modified. Three bar code reader/transmitters will be provided by the OTSG UCA test program director. Computer time will be provided through the UCA computer at Reynolds Army Hospital.

The HCSD, AHS, will conduct the field test to develop data for use as a basis for comparison with the manual system. COL Parker recommends the formation of a Study Advisory Group to monitor the study.

d. Study/Test Milestones. See TAB A.

e. Study/Test Projected Costs. See TAB B.

f. ADPE System Implementation Cost Estimate. See TAB C.

4. RECOMMENDATIONS.

a. That the study/test be conducted at the DENTAC, Fort Sill, during the period 1 Oct 79 - 31 Mar 80).

b. That the study/test be requested as an unprogrammed study requirement for the Health Care Studies Division, AHS, for the FY 80 program.

HSDS
SUBJECT: Automated Bar Code Reader/Transmitter Test

c. That the formation of a Study Advisory Group be requested to monitor the study.

3 Incl
1. TAB A, Study/Test Milestones
2. TAB B, Study/Test Projected Costs (TDY)
3. TAB C, ADPE System Implementation Cost Estimates

C. PETER PAUL
LTC, MSC
Chief, Resource Management and Clinical Analysis Division

5. COORDINATION.
DMIS _____
HCSSA _____
HCSD, AHS 100ct79

STUDY/TEST MILESTONES

EVENT	EST COMPLETION TIME	RESPONSIBLE ACTV
Test Plan	10 Oct	HSDS
Bar Code Menus	20 Oct	HCSSA
Develop Software	24 Oct	HCSSA
Test Software (WBAMC, Ft Bliss)	4th wk Oct	HCSSA
Develop Study/Test DOC	2nd wk Nov	HSDS/HCSD/HCSSA
Load & Test Software Train DENTAC Personnel (Reynolds AH & DENTAC, Ft Sill)	3d wk Nov	HCSSA
Document Manual System Introduce Study/Test Techniques (DENTAC, Ft Sill)	3d wk Nov	HCSD
Test Initiation	1st wk Jan	HSDS/HCSD/HCSSA

STUDY/TEST PROJECTED COSTS (TDY)

EVENT	LOCATION	PERSONS INVOLVED	TOTAL DAYS	EST COSTS	EST DATES
Test/Dvlp Software	WBAMC	3 (HCSSA)	5	$1,089	4th wk Oct
Load/Test Software & Train DENTAC Pers	Reynolds AH & DENTAC, Ft Sill	2 (HCSSA)	5	$758	3d wk Nov
Document Manual System	DENTAC, Ft Sill	2 (HCSD)	5	$758	3d wk Nov
Test Initiation	DENTAC Ft Sill	2 (1 HCSD) (1 HCSSA)	3	$518	1st wk Jan
Test Follow-up	DENTAC, Ft Sill	2 (1 HCSD) (1 HCSSA)	3	$518	1st wk Feb
Test Follow-up	DENTAC Ft Sill	2 (1 HCSD) (1 HCSSA)	3	$518	1st wk Mar
Test Follow-up	DENTAC Ft Sill	2 (1 HCSD) (1 HCSSA)	3	$518	last wk Mar
		TOTAL		$4,677	

ADPE SYSTEM IMPLEMENTATION COST ESTIMATES

EQUIPMENT	NUMBER	UNIT COST	TOTAL COST
Bar Code Reader/Transmitter	89*	$ 3,000	$267,000
Microcomputer System for Receiving Bar Code Reader Input at HCSSA	1**	$10,000	$ 10,000

* Computed 2 per DENTAC + 10 for satellite clinics + 5 HSC Maintenance Float

** Dedicated Microcomputer at HSC would permit dumping and storing data at HSC. UCA computer support at other than Ft Sill, WBAMC, and Ft Huachuca will not be available for some time, pending approval of funding.

APPENDIX C

DENTAL PROCEDURES AND SERVICE REPORT

PREPARED 05/29/80 — MONTHLY DENTAL PROCEDURE REPORT FOR APRIL FY 80 — RCS MED-376 — PCN RSA-MO 1

US ARMY HEALTH SERVICE COMMAND FORT SAM HOUSTON, TEXAS — PAGE 1

FORT SILL. OK
WEEKS DENTAL CLINIC

CLINIC REPORT

ARMY	NAVY MARINE	AIR FORCE	TOTAL MILITARY	MILITARY WEIGHTED	DEPENDENTS	DEPENDENT WEIGHTED	ALL OTHER	ALL OTHER WEIGHTED	ALL TOTALS	ALL TOTAL WEIGHTED	CTV	ECP
I. DIAGNOSTIC (00100-00999)												
00120 ORAL EXAM (ANNUAL OR PERIODIC)												
364	0	0	364	291.2	139	111.2	58	46.4	561	448.8	.8	11
00130 OTHER EXAMINATION												
284	0	0	284	113.6	136	54.4	89	35.6	509	203.6	.4	50
00133 SCREENING EXAMINATION												
16	0	0	16	6.4	2	0.8	3	1.2	21	8.4	.4	12
00140 COMPREHENSIVE EXAMINATION												
81	0	0	81	291.6	55	198.0	60	216.0	196	705.6	3.6	15
00150 DENTAL CONSULTATION												
16	0	0	16	11.2	12	8.4	14	9.8	42	29.4	.7	4
00160 BLOOD PRESSURE RECORDING												
7	0	0	7	1.4	0	0.0	19	3.8	26	5.2	.2	4
00210 INTRAORAL SERIES												
3	0	0	3	4.2	8	11.2	8	11.2	19	26.6	1.4	
00220 INTRAORAL FILM												
764	0	0	764	152.8	463	92.6	143	28.6	1370	274.0	.2	
00330 PANORAMIC FILM												
72	0	0	72	28.8	42	16.8	27	10.8	141	56.4	.4	
00340 CEPHAOMETRIC FILM												
5	0	0	5	2.0	22	8.8	0	0.0	27	10.8	.4	
00460 ENDODONTIC DIAGNOSTIC TEST												
33	0	0	33	26.4	12	9.6	4	3.2	49	39.2	.8	2
00471 DIAGNOSTIC CLINICAL PHOTOGRAPHY												
0	0	0	0	0.0	1	0.5	0	0.0	1	0.5	.5	

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FORT SILL. OK
WEEKS DENTAL CLINIC

CLINIC REPORT

	ARMY	NAVY MARINE	AIR FORCE	TOTAL MILITARY	MILITARY WEIGHTED	DEPENDENTS	DEPENDENT WEIGHTED	ALL OTHER	ALL OTHER WEIGHTED	ALL TOTALS	ALL TOTAL WEIGHTED	CTV	ECP
I. DIAGNOSTIC (00100-00999)													
00120 ORAL EXAM (ANNUAL OR PERIODIC)	606	1	0	607	485.6	227	181.6	113	90.4	947	757.6	.8	16
00130 OTHER EXAMINATION	403	1	0	404	161.6	182	72.8	116	46.0	701	280.4	.4	87
00133 SCREENING EXAMINATION	36	0	0	36	14.4	5	2.0	0	0.0	41	16.4	.4	22
00140 COMPREHENSIVE EXAMINATION	109	0	0	109	392.4	81	291.6	121	436.6	311	1119.6	3.6	33
00150 DENTAL CONSULTATION	24	0	0	24	16.8	14	9.2	18	12.6	56	39.2	.7	6
00160 BLOOD PRESSURE RECORDING	6	0	0	6	1.2	2	0.4	15	3.0	23	4.6	.2	4
00210 INTRAORAL SERIES	3	0	0	3	4.2	11	15.4	8	11.2	22	30.8	1.4	
00220 INTRAORAL FILM	964	0	0	964	192.8	563	112.6	174	34.8	1701	340.2	.2	3
00330 PANORAMIC FILM	87	0	0	87	34.8	57	22.8	36	14.4	180	72.0	.4	
00340 CEPHAOMETRIC FILM	6	0	0	6	2.4	24	9.6	0	0.0	30	12.0	.4	
00460 ENDODONTIC DIAGNOSTIC TEST	52	1	0	53	42.4	30	24.0	8	6.4	91	72.8	.8	3
00471 DIAGNOSTIC CLINICAL PHOTOGRAPHY	0	0	0	0	0.0	1	0.5	1	0.5	2	1.0	.5	

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BAR CODE READER SUMMARY

APPENDIX D

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGCEN.

REFERENCE OR OFFICE SYMBOL	SUBJECT
ATZR-DDS	After Action Report : BCR System

TO: Cdr
USADENTAC
Ft Sill, OK 73503

FROM: SP5 Watkins
BCR Testor
USADENTAC

DATE: 6 Jun 80 CMT 1

February: BCR Test started out nicely. Only a few errors (mostly date range errors), and a bad BCR Machine which put a lot of Paraody Errors on tape. This machine was turned in for repairs and started using back-up unit.

19 Feb: Was informed that on a run-off of February only Weeks Dental Clinic and Allen Dental Clinic (Clinic's 1 & 5 in System) were on file. The rest of the clinics were lost (2, 3, & 4). I was informed to start from the first day of February again.

27 Feb - 5 Mar: Tried putting information into Computer and the machine would dump. I didn't know why and Comptroller personnel didn't understand either. A false Location Code appeared during this week on a Dump Print-out, but wasn't on tape.

6 Mar: Decided to forget about February and go on to March. First two weeks of March went along fine; then there was a Dump received from the Computer for no apparent reason. This was resolved and March started going smoothly again. The last of March started working at OST from 0530 till 1000 and worked the remainder of the time on BCR Daily Workload Reporting System. First thru 4th of April was sick and this resulted in March Report being late by four days. This upset the Major at Comptroller. Couldn't transmit three days this month.

11 April: Started month of April with a better knowledge of system. On 14 April, my residence on Post caught on fire and I had to spend most of my time the 15th and 16th of April taking repair bids and contacting people for miscellaneous services for personal goods that was damaged by smoke. The rest of May, information went in fine. In time I had left for Input, except for 4 days, I couldn't Input due to equipment failure (i.e., bad BCR Unit, computer down, two days of electrical storms). Finished April second week in May and captured what I felt was missing from February.

February and last six tapes of May were carried to Fort Sam by a Lieutenant Smith on or about the 26th of May.

CONCLUSION: With the type of equipment used and the System used to capture information I would not recommend this reporting system to be considered for future use. My reasoning is:

Unreliability of the MSI 2000 SYSTEM to perform. This impulse to tape and vice-versa is a weakness in itself as it allows paraody errors, false location codes,

and transmission failures. The machine itself is unpredictable. One day it will work fine and the next day it will eat a tape or put fifteen paraody errors on a 18 hundred bit tape. Terminal used was inadequate for storage space and uptime was unreliable.

SUGGESTION: Arrange Bar Code Menu in each section to be in order of Work Sheet, then put one's from Supplemental Sheet after them in same section. Delete Silicate Cement. This was not used in three months and Bar Code could be used for one of Orthonatic Surgery Procedures not on Menu before. Operation instructions should include better and factual information along with information on how to use Search Mode.

GATHERING OF INFORMATION: A sharp duty driver of average intelligence and motivation could collect the necessary information to make this system work in a timely and efficient manner by reducing the man hours required to tally the Work Sheets that are received two days after completion.

I have been informed about a System that I would recommend to be used with this method, but have no information on its reliability. This unit was in use at Fort Huachuca, Arizona. If information on reliability is needed contact the Dental Department at Fort Huachuca.

for Larry D. Ellis CPT MSC XO

KIMBERLY E. WATKINS
SP5, BCR Test
USADENTAC, Ft. Sill, OK

DISTRIBUTION:

HQDA (DASG) (1)
HSDS HSC (1)
HSOP-S HSC (1)
HQ 7th MED CMD (1)