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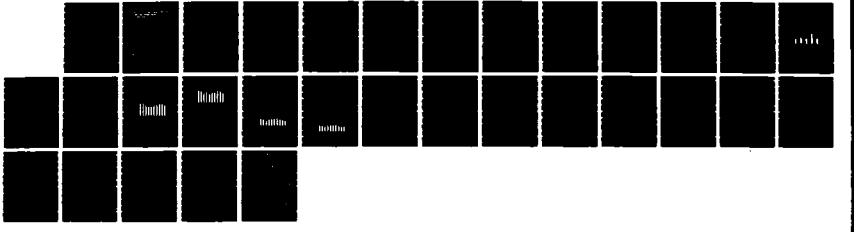

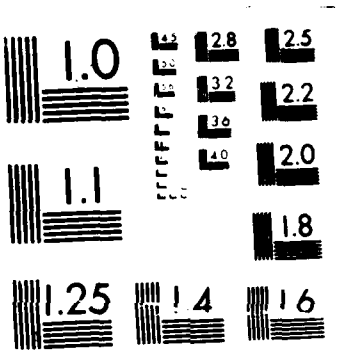

ADVANCED HOSPITAL CORPS SCHOOL CURRICULUM RELEVANCE AND TRAINING EMPHASIS: PERCEPTIONS FROM THE FLEET

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REPORT NO. 87-3

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Advanced Hospital Corps School Curriculum Relevance and Training Emphasis: Perceptions from the Fleet*

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*Report Number 87-3, supported by the Naval Medical Research and Development Command, Bethesda, Maryland, Department of the Navy, under research Work Unit No. 65152N M0106.002-0008. The opinions expressed in this paper are those of the author and do not reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U. S. Government.

The author would like to acknowledge the work of LCDR T. F. Hilton, MSC, USN and Dr. D. S. Nice in developing the database used in this study.

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Summary

This study was a follow-up and partial replication of a prior survey of Advanced Hospital Corps School instructors and students that examined the relevance and adequacy of the Independent Duty Corpsman (IDC) curriculum. In this study, however, data from a sample of experienced shipboard IDCs were analyzed. The objectives of the present study were: a) to appraise the perceived relevance of IDC curriculum topic areas, b) to evaluate perceived classroom and practical/lab training emphasis for meeting fleet requirements, and c) to assess differences in curriculum relevance and training emphasis between Atlantic and Pacific fleets, and between surface ships and submarines.

The findings provide support for the overall relevance of the IDC curriculum. However, differences were found between IDCs aboard surface ships and submarines in several curriculum areas. These results suggested that additional tailoring of the IDC curriculum, dependent on assigned ship-type, may be warranted. With regard to perceptions of training emphasis, none of the curriculum areas were seen as grossly inadequate. Aggregate results, however, indicated that shipboard IDCs felt there was room for improvement in training in the classroom and especially in practical applications. Particular emphasis should be placed on examining the training emphasis in topical areas pertaining to shipboard Medical Department Management, Dental Fundamentals, and MEDEVAC Procedures.

As noted in the prior training study, it is recognized that the IDC curriculum is continuously being updated and revised to meet changing requirements and methodologies. Therefore, the results of this study should be viewed as supplementary information regarding the efficacy of the IDC curriculum and used only in conjunction with other indicators suggestive of curriculum modification.

With the advent of Personnel Qualification Standards (PQS) for IDCs, substantial progress has been made toward enabling more rigorous fleet evaluation of IDC training. It is essential, however, that the PQS be shown to be valid as a performance measure. Also, methods and procedures should be

identified to facilitate mass data collection and integration to exploit the information to be gained through PQS for training program modification. Only then can the data be interpreted on a large scale and fed back to training administrators and higher authority. Future research in operational medicine could profitably focus on evaluating the implementation of PQS for IDCs.

Advanced Hospital Corps School Curriculum Relevance and Training Emphasis: Perceptions from the Fleet

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Introduction

Functioning as the sole health-care provider aboard a majority of Navy ships, the Independent Duty Corpsman (IDC) is responsible for all aspects of shipboard medical department operations. He performs independently of a physician and in most instances with no support staff. The job of the IDC has been well documented as requiring extensive medical and administrative skills as well as an ever broadening knowledge of specialized program requirements (e.g., Navy Occupational Safety and Health, Radiation Health, Quality Assurance) (Hilton & Hilton, 1986; Nice & Hilton, 1986). Given this breadth of responsibilities and required expertise, the investment of resources in training corpsmen for the role of IDC is considerable, yet necessary.

Technical Training Objectives

The ultimate objective of IDC technical training is to enable corpsmen to perform job-relevant tasks that satisfy the demands of the shipboard environment. The success of this training is dependent upon numerous factors, however. Aside from the appropriate selection of students, one of the most fundamental determinants of the effectiveness of any training program is the degree to which the training curriculum is representative of the actual tasks to be performed on the target job. In this case, the IDC curriculum must be developed to facilitate and shape crucial behaviors that will be performed later by IDCs aboard surface ships and submarines.

To the extent that a training curriculum covers the domain of knowledge and skills required on the target job, the training problem becomes one of maximizing the transfer of skills from the training environment to the job environment. Thus, the training curriculum content must not only be relevant but must also contain an appropriate mix of emphasis in both the didactic phase and in the practical/lab phase. Ideally, the training environment

should closely simulate the target job environment and facilitate the incremental acquisition of job knowledge and skill (Goldstein, 1974).

Evaluating Training

Given the substantial investment of Navy resources in preparing corpsmen to operate independently in the fleet and the potential costs of error or failure in the performance of IDC duties, training program evaluation is virtually a mandatory evolution. One of the most valid and direct methods for evaluating the efficacy of a technical training program is to measure behavioral competency later on the job (Goldstein, 1974). Successful performance of essential job tasks provides reasonable support for the adequacy of a training program. Unfortunately, until the recent development of the Personnel Qualification Standards (PQS) for IDCs, no specific, objective, standardized criteria have been available to systematically evaluate IDC clinical and administrative competency in the fleet (NAVEDTRA 43427, 1986).

Prior Studies

Additional, but somewhat less direct criteria for evaluating training program adequacy can be found in "outcomes", such as the extent of IDC reliefs for cause (and the nature of such reliefs) or crew member perceptions of IDC competency. Such criteria were recently employed in a one-time study of factors contributing to IDC job failures (Hilton & Hilton, 1986). In a retrospective analysis of the service records of a sample of IDCs, reliefs for cause were estimated to approach 7% annually. The leading cause of job failure was identified as inspection failure (38%), followed by disciplinary infractions (32%), and, finally, problems in dealing with superiors (30%). The study concluded that implementation of better pre-training performance screens and application of more stringent criteria for IDC shipboard assignment could potentially reduce the incidence of job failure. These results, however, shed little light on specific elements in either training content or process that might require modification to improve IDC success on the job.

In 1984 a survey of instructors and students assigned to Advanced Hospital Corps School for IDCs was conducted. The purpose of that survey was threefold: 1) to identify perceptions of the relevance and training adequacy

of the curriculum, 2) to identify perceptions of the quality of the occupational training environment, and 3) to assess overall satisfaction with IDC training and with the occupation of Navy Corpsman (Hilton, 1986). Pertinent results from the survey indicated that both instructors and students perceived the curriculum to be generally above average in relevance, and both classroom and practical training were judged to be adequate. These results were informative for the purpose of assessing the effects of perceived training relevance and adequacy on student motivation, receptivity to learning, and occupational goals. However, there were several limitations in the generalizability of the study due to the nature of the population surveyed. First, because the corpsmen surveyed were primarily students who lacked prior shipboard IDC experience, the findings had limited validity with regard to the training requirements of IDCs in the fleet. Second, despite proven expertise in the subject matter, training staff evaluations of the curriculum were potentially subject to bias (Bass & Vaughan, 1966).

Study Objectives

The purpose of the present study was to partially replicate the methods of the previous training study using a sample of experienced shipboard IDCs rather than instructors and students. Utilizing data from experienced IDCs would increase the credibility of results when applied to evaluating Advanced Hospital Corps School curriculum relevance and training emphasis independent of other factors. The specific goals of the present study were: (a) to appraise the perceived relevance of IDC curriculum topic areas, (b) to evaluate perceived classroom and practical/lab training emphasis for meeting fleet requirements, and (c) to assess differences in curriculum relevance and training emphasis between Atlantic and Pacific fleets and between surface ships and submarines.

Method

Sample

Data for the present study were derived from a 1985 Navy-wide survey of all shipboard IDCs (N = 415) serving as senior medical department representatives (SMDRs) (Hilton, Nice, & Hilton, 1986). A total of 355 (86%) individuals provided useable responses. Mean age of the respondents was 34

years. Distribution of respondents by paygrade was 39% E-6, 55% E-7, and 6% E-8. The average number of years since obtaining the independent duty NEC was six years. The number of tours as shipboard SMDR were: one tour - 69%, two tours - 23%, and three tours - 8%.

Measures

The measures employed in this study were similar to those used in the previously discussed survey of instructors and students at Advanced Hospital Corps School (Hilton, 1986). In addition to general demographic data, measures of curriculum shipboard relevance and training emphasis were analyzed. To evaluate shipboard training relevance, respondents rated 46 separate IDC curriculum elements on a five-point Likert-type scale with anchors ranging from (1) "not relevant" to (5) "extremely relevant". Perceptions regarding the degree of training emphasis for each of the IDC curriculum elements were also assessed for both classroom training and practical/lab training. A three-point response format was used with the following verbal anchors: (1) "too little emphasis", (2) "just about right", and (3) "too much emphasis".

Analyses

Perceptions of curriculum relevance and training emphasis were evaluated using composite scale mean scores derived through a principal components (PC) analysis of relevance ratings for the 46 original curriculum elements. The purpose of the PC analysis was item reduction (i.e., to identify a more general set of topical areas) and criteria development for further comparative analyses. Two-way multivariate analyses of variance (MANOVA) were computed to test for differences in curriculum measures between surface ships and submarines, between the Atlantic and Pacific fleets, and for a possible interaction between fleet and ship-type.

Results

Curriculum Element Relevance

An initial inspection of the means of the 46 curriculum element relevance ratings revealed that only three curriculum elements (Service Records, Diet & Nutrition, Flight Physiology) were rated considerably below the scale midpoint by both surface and submarine SMDRs. Two additional

curriculum elements were differentially rated below the scale midpoint, dependent on ship-type. Submarine SMDRs rated Nuclear, Biological, and Chemical (NBC) Warfare as relatively low in relevance, and surface ship SMDRs rated Atmosphere Control as relatively low in relevance. Figure 1 graphically depicts the relative ratings of shipboard relevance for the above five curriculum elements for both submarine and surface ship SMDRs. See Appendices A through C for a listing of shipboard relevance and training emphasis means and standard deviations for all 46 curriculum elements broken down by surface ship versus submarine.

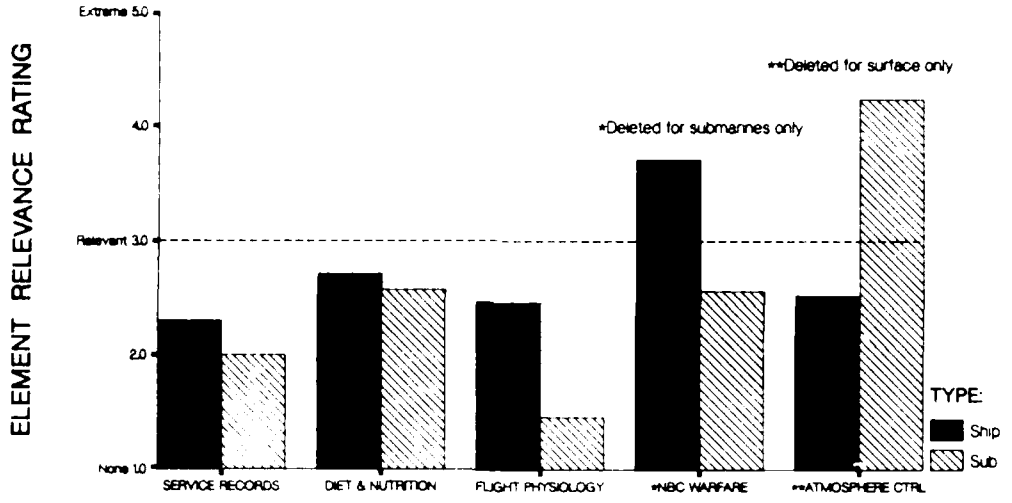

Figure 1. NBC curriculum elements deleted from PC analysis

Curriculum Composite Scales Development

To identify more general criteria for evaluating curriculum relevance and training emphasis, all curriculum element relevance ratings (except the five previously described low ratings) were factor analyzed using a principal components (PC) technique. The five curriculum elements identified with low relevance ratings were deleted from the PC analysis because evaluation of the training emphasis ratings for these elements was considered a moot issue. All components with eigenvalues > 1.0 were rotated to the varimax criterion. Nine interpretable factors emerged accounting for 69.1% of the total

variance. One item, MEDEVAC Procedures, did not load highly on any of the derived factors but was retained as a tenth component because of its high relevance rating. Based on the results of the components analysis, separate composite scales were formed for curriculum relevance, classroom training emphasis, and practical/lab training emphasis by computing the mean of the elements loading $\geq$ .45 on each component. Table 1 lists the ten derived curriculum scales, the elements included in each scale, and Cronbach's alpha, an estimate of reliability, for each scale.

Table 1

Element Content of Curriculum Composite Indices With Reliability Estimates

Patient Care: (alpha = .95)
- Cardiopulmonary Resuscitation
- Dermatology/Skin Disorders
- Gastrointestinal Disorders
- Laboratory Procedures
- Medical Interview & History
- Mental Disorders
- Musculoskeletal Disorders
- Neurological Disorders
- Physical Examinations
- Principles of Pharmacology
- Treatment of Wounds

Radiation/Atmosphere Health: (alpha = .87)
- Atmosphere Control
- NBC Warfare
- Radiation Biology
- Radiation Health Program
- Radiological Fundamentals

Patient Disposition: (alpha = .86)
- External Resources
- Health Education Principles
- Patient Disposition

Health Fundamentals: (alpha = .68)
- Anatomy & Physiology
- Medical Ethics
- Substance Abuse

Preventive Medicine: (alpha = .91)
- Entomology & Pest Control
- Food Sanitation
- Industrial Hygiene & NAVOSH
- Potable Water
- Waste & Sewage

Department Management: (alpha = .86)
- Equipment Management
- Fiscal (AMAL, OPTAR, etc)
- Inventory Management
- Training Records
- 3-M System

Records/Inspections: (alpha = .74)
- Departmental Logs
- Health Records
- Medical Department Inspections

Shipboard Orientation: (alpha = .69)
- Communication
- Shipboard Orientation
- Senior IDC Responsibilities

Dental Fundamentals: (alpha = NA)

MEDEVAC Procedures: (alpha = NA)

Curriculum Composite Relevance

A two-way MANOVA was performed to assess differences between surface ships and submarines and between the Atlantic and Pacific fleets. The results of the MANOVA, presented in Table 2, show significant effects for both fleet and ship-type but not for an interaction between the two factors. Inspection of the univariate statistics summary reveals differences in curriculum relevance between surface ships and submarines for the following curriculum areas: a) Preventive Medicine, b) Department Management, c) Radiation Health, d) Patient Disposition, e) Shipboard Orientation, f) Health Fundamentals, and g) MEDEVAC Procedures. In addition, significant differences between the Atlantic and Pacific fleets were found for the areas of Patient Care and Department Management.

Table 2

MANOVA of IDC Curriculum Relevance Ratings

Multivariate Summary Statistics:

Effect	Wilk's Lambda	F-Ratio (10,339)	Significance Level
Ship-type	.5009	33.77	.000
Fleet	.9193	2.98	.001
Interaction	.9652	1.22	.274

Significant Surface vs Submarine Comparisons:

Curriculum Area	Surface Mean (SD)	Submarine Mean (SD)	F-Ratio (1,348)	Signif. Level
Preventive Medicine	4.20 (.69)	3.47 (.78)	68.44	.000
Department Management	3.73 (.80)	3.07 (.79)	42.87	.000
Radiation/Atmos. Health	3.31 (.89)	4.30 (.81)	90.58	.000
Patient Disposition	3.34 (.95)	2.95 (.89)	9.25	.003
Shipboard Orientation	3.66 (.74)	3.33 (.78)	13.54	.000
Health Fundamentals	3.73 (.87)	3.40 (.81)	6.56	.011
MEDEVAC Procedures	3.63(1.06)	3.10(1.13)	15.00	.000

Significant Atlantic vs Pacific Comparisons:

Curriculum Area	Atlantic Mean (SD)	Pacific Mean (SD)	F-Ratio (1,348)	Signif. Level
Patient Care	4.05 (.72)	4.18 (.71)	3.84	.051
Department Management	3.43 (.85)	3.68 (.84)	4.53	.034

Figures 2 and 3 present the ten curriculum area mean ratings for ship-type and for fleet, respectively. With the exception of the five specific curriculum elements identified previously in Figure 1, the two figures indicate that mean IDC curriculum ratings, in general, range from "relevant" to "very relevant". Figure 2 graphically reveals that surface ship IDCs, with only one exception, view all curriculum areas surveyed as more relevant than submarine IDCs.[1] Submarine IDCs perceived the area of Radiation Health as significantly more relevant than surface ship IDCs.

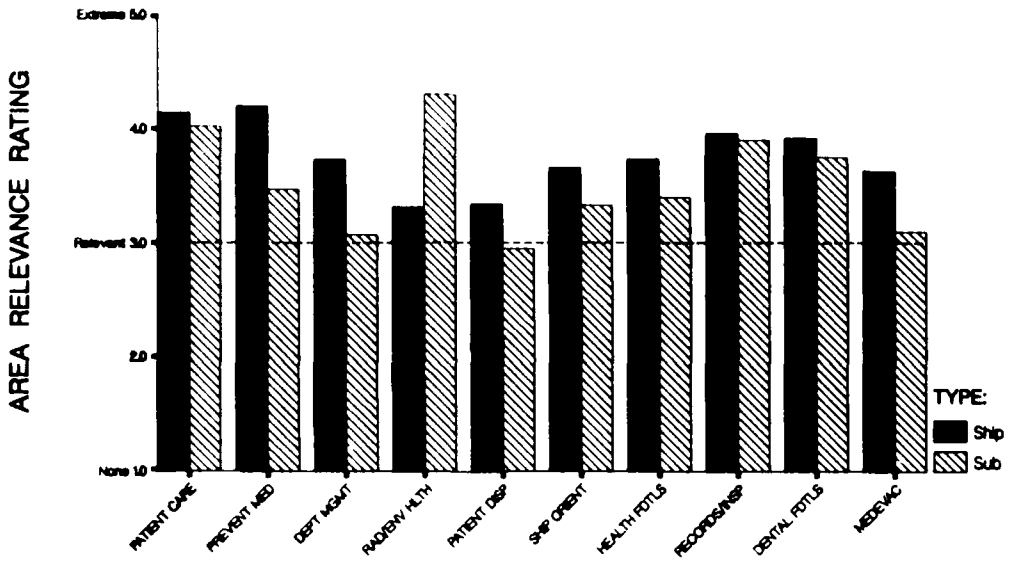

Figure 2 Surface vs sub IDC curriculum relevance ratings.

Despite statistically significant differences between the Atlantic and Pacific fleets on the curriculum relevance ratings of Patient Care and Department Management, an inspection of Figure 3 indicates that the practical effects of these differences are probably slight. In general, the two fleets presented a relatively consistent view of the relevance of each curriculum area.

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[1] Refer to Table 2 for statistically significant differences.

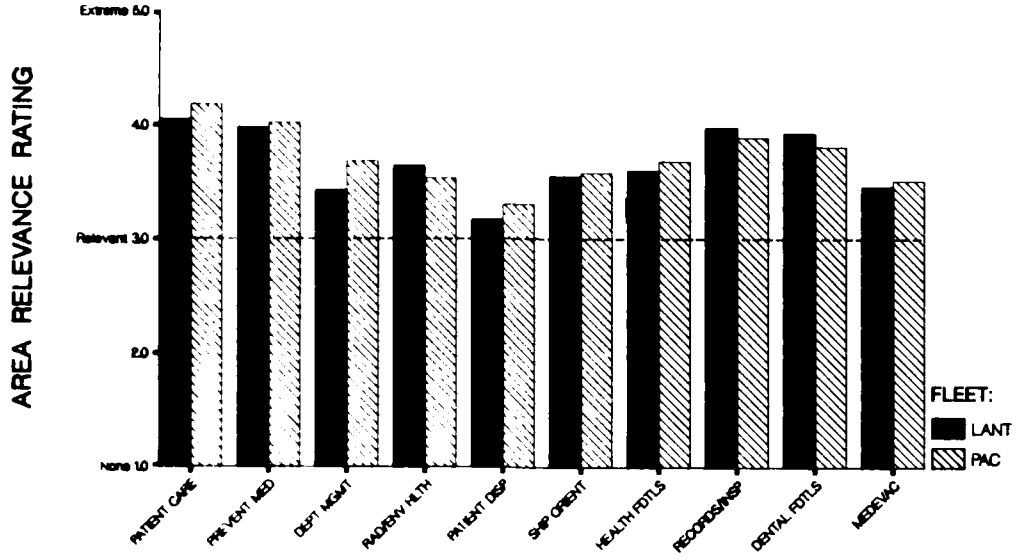

Figure 3 Atlantic vs Pacific IDC curriculum relevance ratings.

Training Emphasis

Classroom Training. A two-way MANOVA was computed to assess differences in perceptions of classroom training emphasis between fleets and between ship-types. Results of the MANOVA indicated that there was a significant effect for ship-type but not for fleet or the interaction between ship-type and fleet. Univariate comparisons of ship-type means for each curriculum area revealed that submarine IDCs felt a significantly greater need for more classroom training in several areas (Preventive Medicine, Department Management, Radiation Health) than did surface ship IDCs. The results of the MANOVA are presented in Table 3.

Figure 4 presents the mean IDC classroom training emphasis ratings for surface ships and submarines. It is clear from this graph that classroom training emphasis was not perceived as excessive. In fact, additional classroom training is considered desirable by IDCs in nearly all curriculum areas, particularly in the areas of Department Management, Dental Fundamentals, and MEDEVAC Procedures.

Table 3

MANOVA of IDC Classroom Emphasis Ratings

Multivariate Summary Statistics:

Effect	Wilk's Lambda	F-Ratio (10,339)	Significance Level
Ship-type	.8768	4.71	.000
Fleet	.9748	.87	.565
Interaction	.9653	1.21	.286

Significant Surface vs Submarine Comparisons:

Curriculum Area	Surface Mean (SD)	Submarine Mean (SD)	F-Ratio (1,348)	Signif. Level
Patient Care	1.86 (.24)	1.81 (.28)	6.17	.013
Preventive Medicine	1.81 (.31)	1.95 (.22)	15.45	.000
Department Management	1.62 (.37)	1.72 (.47)	4.16	.042
Radiation/Atmos. Health	1.79 (.43)	1.89 (.32)	4.58	.033

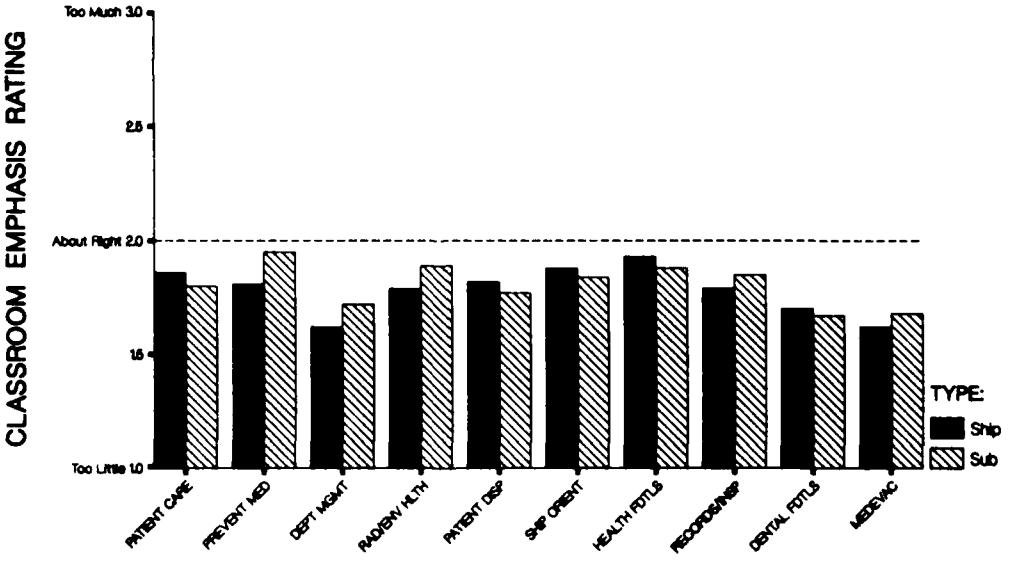

Figure 4 Surface vs submarine classroom emphasis ratings.

Practical/Lab Training. A third MANOVA was computed to test for differences between ship-types and fleets with regard to practical/lab training emphasis. Similar to the results for classroom training, only the

overall effect for ship-type was significant, [F (10,293) = 3.65, $p < .001$]. Subsequent univariate comparisons of curriculum area means between surface ships and submarines revealed significant differences in the areas of Preventive Medicine [F (1,302) = 7.77, $p < .01$] and Department Management [F (1,302) = 6.42, $p < .05$]. In both instances submarine IDCs indicated a greater need than surface ship IDCs for more practical/lab training (Preventive Medicine: M = 1.82 vs M = 1.69; Department Management: M = 1.70 vs M = 1.56).

Figure 5 graphically illustrates the perceived level of practical/lab training emphasis for both submarine and surface ship IDCs. As was the case with classroom training, practical/lab training was not seen as excessive in any curriculum area. A visual comparison of Figures 4 and 5 reveals similar profiles of ratings. That is, the relative mean ratings for each curriculum area produce a similar form for the two graphs. However, without exception, over all the curriculum areas there is judged to be a somewhat greater need for increased practical/lab training than for classroom training. Nevertheless, in both instances it can readily be seen that greater training emphasis

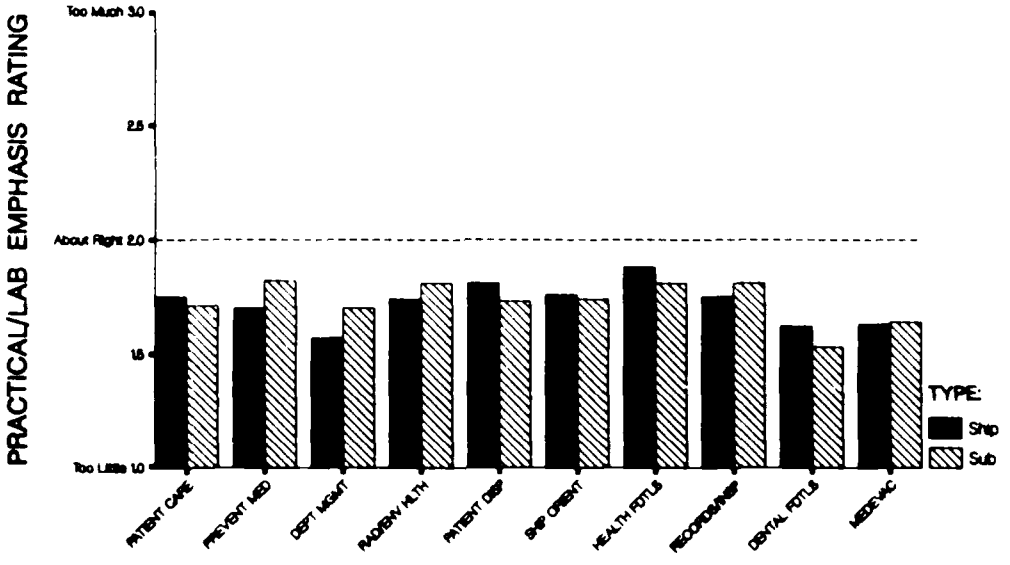

Figure 5 Surface vs submarine practical/lab emphasis ratings

is perceived as particularly necessary in the areas of Department Management, Dental Fundamentals, and MEDEVAC Procedures.

Discussion

Curriculum Relevance

The findings of this study, based on the responses of fleet experienced SMDRs, provide support for the overall relevance of the Advanced Hospital Corps School curriculum. However, three specific curriculum elements were perceived as being of limited shipboard relevance by all IDCs -- Service Records, Diet & Nutrition, and Flight Physiology. Obviously, knowledge of Flight Physiology is of minimal utility to a submarine IDC. Moreover, despite greater relevance to surface ship IDCs, there is virtually always a physician available on board surface ships with flight operations; thus, here too, competency in Flight Physiology is of limited utility. With regard to Service Records and Diet & Nutrition, it appears that coursework in these two subjects is not particularly germane to the shipboard activities of IDCs. Two additional curriculum elements were evaluated as low in relevance by subsets of the total sample. NBC Warfare was rated as high in relevance by surface ship IDCs but low by submariners. Conversely, the topic of Atmosphere Control was considered high in relevance by submarine IDCs but low in relevance by IDCs aboard surface ships. Certainly, these last two findings were to be expected, given the distinct differences in the operational characteristics between surface ships and submarines.

It should be noted that a low relevance rating on a given topic cannot be directly interpreted as indicating the subject itself is not shipboard relevant. An alternate interpretation could be that the content area is indeed relevant, but the specifics of the curriculum dealing with the subject missed the mark. The former interpretation, however, seems reasonable given the specific nature of the curriculum elements found to be low in relevance. However, it must also be noted that the present data do not identify the actual amount of time spent in training each curriculum element but, rather, provide a subjective impression of training emphasis. Therefore, it may be the case that only a negligible amount of time was devoted to the aforementioned five low rated curriculum elements. The determination of how best

to modify the IDC curriculum given this information appears best left up to content area experts.

Analyses of the composite indices of curriculum relevance revealed that, in the aggregate, the curriculum was viewed as "relevant" to "highly relevant" by the majority of respondents. However, significant differences were found in several curriculum areas as a function of ship-type and fleet. The two mean differences found between the Atlantic and Pacific fleets, although statistically significant, were assessed as relatively minor from a practical standpoint. The seven significant differences found between mean relevance ratings for surface ships and submarines, however, were interpreted as large enough to warrant consideration of tailoring the curriculum coverage in these areas to provide a better "fit" between IDC and assigned ship-type. Unfortunately, the data upon which this study was based were not sufficiently detailed to provide further guidance toward optimizing curriculum area content.

Training Emphasis

Although training was not seen as grossly inadequate, aggregate results indicated that shipboard IDCs felt there was room for improvement in training in the classroom and especially in practical applications. Particular emphasis should be placed on examining the training curriculum areas of Department Management, Dental Fundamentals, and MEDEVAC Procedures.

Significant differences in training emphasis emerged between surface ships and submarines in several curriculum areas. Three areas that appeared of greatest practical concern in this regard were Preventive Medicine, Department Management, and Radiation Health. In both classroom and practical/lab evaluations, surface ship IDCs felt a greater need for more training emphasis in these areas than did submariners. Apparently, the skills utilized on the job in these three areas differ sufficiently between the two ship-types to merit curriculum review.

Particular attention to the area of Department Management seems appropriate. There appears to be an inverse relationship between training emphasis and curriculum relevance in this topical area for surface ship

SMDRs. In this area curriculum relevance was evaluated as high, and training emphasis was rated as relatively low.

Limitations

Direct comparisons of the results of this study with those of the Hilton (1986) IDC training curriculum study are problematic for three primary reasons. First, although the 46 specific curriculum elements were identical in the two studies, the scale intervals and verbal anchors differed slightly. Thus, for example, a relevance score of "3" in the present study cannot be assumed equivalent to a score of "3" in the prior training study. Second, the principal components analysis produced slightly different factors in the two studies. Hence, the number of factors produced and the element composition of the various curriculum evaluation indices differed. This is not particularly surprising, since it was assumed that shipboard SMDRs would have a greater awareness of actual job activities. As a result, fleet experienced IDCs apparently perceived the specific curriculum elements in a somewhat different pattern than did the initial sample of instructors and students. Third, on the average, it had been approximately six years since respondents in the present study had obtained their independent duty NEC. Thus, their responses were probably only tenuously linked to any pure recollection of actual IDC school curriculum content and process. Moreover, the curriculum had been subject to ongoing revision and was likely to have changed considerably over a span of six years.

One final limitation that should be addressed is the issue of comprehensiveness. The present study did not attempt to determine what subjects, if any, should be added to the curriculum that were not previously included. The curriculum elements used in this study were extracted from the lesson plans of the various IDC training programs and validated through interviews with selected key training staff (Hilton, 1986). It is conceivable that experienced IDCs might identify additional curriculum topics that could better prepare them for work aboard ships or submarines. No provision was made for open-ended suggestions regarding the IDC curriculum in the survey.

The foregoing limitations notwithstanding, the results of this study provide useful information for reviewing curriculum content and method. To be sure, the interpretation of mean values is problematic if normative data are not available to serve as a reference. But, it is the interpretation of the relative values of the various curriculum areas that yields the greatest informational gain here. The present results serve as cues to identifying potential training deficiencies. In the process of continual curriculum revision to meet the health-care training needs of the shipboard IDC, attention should be directed toward increasing the level of practical training across the board and strengthening the training process in the curriculum areas of Department Management, Dental Fundamentals, and MEDEVAC Procedures.

Future IDC Training Research

In the ideal situation, the process of training program development includes establishing, at the outset, the criteria necessary for evaluating the accomplishment of training objectives. Such criteria should provide the initial basis for curriculum development. As discussed in the introduction, the most direct and easily interpreted method for evaluating the efficacy of a training program is to assess competency on the job. The tools to accomplish this have heretofore not been available. That is, there have not been any standardized, objective performance measures systematically implemented in the fleet nor has any formal mechanism been established for feeding back the fleet experience to the IDC training program. Thus, the present study, and those that preceded it, have employed less direct criteria as yardsticks of training program success. As discussed previously, it is difficult to link the results of studies using indirect measures to specific curriculum elements. Using behavioral competency measures in the fleet can substantially reduce this ambiguity.

Progress has recently been made toward enabling more rigorous fleet evaluation of training with the implementation of PQS for IDCs. Successful implementation of PQS for IDCs should theoretically provide an ongoing and systematic assessment of training program success. It is essential, however, that the PQS be shown to be both reliable and valid prior to using the system for training program modification. In addition, in order to exploit the

information to be gained through PQS, methods and procedures should be identified and established to facilitate mass information collection and integration. Only then can the data be interpreted on a large scale and fed back to training administrators and higher authority. Hence, future research in operational medicine could profitably focus on evaluating the implementation of PQS.

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Appendices A through C

Appendix A

Curriculum Element Relevance Descriptive Statistics[a]

	Curriculum Element	Surface[b] Mean (SD)	Submarine Mean (SD)	Combined Mean (SD)
1.	Shipboard Orientation	3.24(1.03)	2.80 (.99)	3.11(1.03)
2.	SMDR Responsibilities	4.33 (.87)	3.95 (.99)	4.22 (.93)
3.	Communications	3.35 (.91)	3.25(1.12)	3.32 (.98)
4.	Med Dept Inspections	4.00 (.89)	3.93 (.92)	3.98 (.90)
5.	Department Logs	3.71(1.00)	3.60 (.81)	3.67 (.95)
6.	Health Records	4.09 (.93)	4.15 (.77)	4.11 (.88)
7.	Service Records	2.26(1.07)	2.00 (.94)	2.18(1.04)
8.	Training Records	3.28(1.03)	2.71 (.89)	3.11(1.02)
9.	Fiscal (AMAL, OPTAR, etc)	4.07 (.96)	3.38(1.02)	3.87(1.03)
10.	Inventory Management	3.97 (.93)	3.43(1.03)	3.81 (.99)
11.	Equipment Management	3.66(1.04)	3.08(1.10)	3.49(1.09)
12.	3-M System	3.59(1.17)	2.79(1.01)	3.35(1.18)
13.	Radiation Health Program	3.41(1.21)	4.75 (.65)	3.81(1.24)
14.	Diet & Nutrition	2.68(1.08)	2.61(1.08)	2.66(1.08)
15.	Indus. Hygiene & NAVOSH	3.79 (.99)	2.95(1.03)	3.54(1.08)
16.	Anatomy & Physiology	4.00(1.01)	3.93 (.87)	3.98 (.97)
17.	Flight Physiology	2.42(1.10)	1.50 (.82)	2.15(1.11)
18.	MEDEVAC Procedures	3.61(1.08)	3.12(1.13)	3.47(1.11)
19.	Dental Fundamentals	3.95 (.96)	3.79(1.05)	3.90 (.99)
20.	Medical Ethics	3.66(1.19)	3.27(1.18)	3.54(1.20)
21.	Substance Abuse	3.50(1.11)	3.08(1.09)	3.37(1.12)
22.	NBC Warfare	3.74(1.09)	2.58(1.14)	3.39(1.22)
23.	Laboratory Procedures	4.04(1.00)	3.92 (.96)	4.00 (.99)
24.	Physical Examinations	4.17(1.00)	4.21 (.92)	4.18 (.98)
25.	Med. Interview & History	4.20 (.91)	4.24 (.86)	4.21 (.89)
26.	Dermatology/Skin Disorders	4.06 (.90)	4.13 (.98)	4.08 (.93)
27.	Neurological Disorders	3.83 (.97)	3.72(1.09)	3.79(1.01)
28.	Musculoskeletal Disorders	4.24 (.78)	4.16 (.98)	4.22 (.84)
29.	Mental Disorders	3.92 (.98)	3.90(1.04)	3.92 (.99)
30.	Infectious Disorders	4.21 (.80)	4.00 (.98)	4.15 (.86)
31.	Gastrointestinal Disorders	4.22 (.82)	4.05 (.94)	4.17 (.86)
32.	Ear, Nose & Throat Disorders	4.30 (.78)	4.08 (.93)	4.23 (.83)
33.	Principles of Pharmacology	4.00 (.95)	3.74 (.98)	3.92 (.96)
34.	Treatment of Wounds	4.21 (.83)	3.99 (.96)	4.15 (.87)
35.	External Resources	3.35(1.15)	2.95(1.07)	3.23(1.14)
36.	Patient Disposition	3.33(1.08)	3.01 (.99)	3.23(1.06)
37.	Health Education Principles	3.27(1.04)	2.90 (.99)	3.16(1.04)
38.	Cardiac Life Support	4.38 (.89)	4.21 (.99)	4.32 (.92)
39.	Preventive Medicine	4.42 (.75)	3 77 (.89)	4.23 (.85)
40.	Food Sanitation	4.39 (.74)	3.87 (.85)	4.23 (.81)
41.	Potable Water	4.35 (.77)	3.91 (.91)	4.22 (.84)
42.	Waste & Sewage	4.08 (.91)	3.05(1.20)	3.77(1.11)
43.	Entomology & Pest Control	4.17 (.85)	3.27(1.02)	3.90 (.99)
44.	Radiological Fundamentals	3.16(1.16)	4.34 (.90)	3.51(1.21)
45.	Radiation Biology	2.90(1.16)	4.12 (.99)	3.26(1.24)
46.	Atmosphere Control	2.50(1.29)	4.30 (.86)	3.04(1.44)
		N = 223	N = 95	N = 318

[a]Descriptive statistics based only on respondents with no missing data.

[b]Based on a 5-point scale.

Appendix B
Curriculum Classroom Emphasis Descriptive Statistics[a]

	Curriculum Element	Surface[b] Mean (SD)	Submarine Mean (SD)	Combined Mean (SD)
1.	Shipboard Orientation	1.93 (.60)	1.93 (.61)	1.93 (.60)
2.	SMDR Responsibilities	1.73 (.52)	1.82 (.44)	1.75 (.50)
3.	Communications	1.97 (.60)	1.80 (.59)	1.92 (.60)
4.	Med Dept Inspections	1.57 (.55)	1.81 (.48)	1.64 (.54)
5.	Department Logs	1.75 (.53)	1.87 (.48)	1.78 (.52)
6.	Health Records	2.04 (.45)	1.88 (.47)	1.99 (.46)
7.	Service Records	2.29 (.73)	1.95 (.83)	2.20 (.77)
8.	Training Records	1.64 (.59)	1.79 (.64)	1.68 (.60)
9.	Fiscal (AMAL, OPTAR, etc)	1.77 (.60)	1.93 (.65)	1.82 (.62)
10.	Inventory Management	1.63 (.54)	1.71 (.59)	1.65 (.56)
11.	Equipment Management	1.53 (.54)	1.66 (.57)	1.56 (.55)
12.	3-M System	1.46 (.63)	1.60 (.68)	1.50 (.65)
13.	Radiation Health Program	1.75 (.59)	1.86 (.54)	1.78 (.57)
14.	Diet & Nutrition	1.69 (.62)	1.64 (.60)	1.68 (.62)
15.	Indus. Hygiene & NAVOSH	1.73 (.57)	1.80 (.59)	1.75 (.58)
16.	Anatomy & Physiology	2.09 (.42)	1.91 (.45)	2.04 (.43)
17.	Flight Physiology	1.87 (.62)	1.95 (.69)	1.89 (.64)
18.	MEDEVAC Procedures	1.63 (.55)	1.69 (.49)	1.65 (.54)
19.	Dental Fundamentals	1.71 (.51)	1.65 (.48)	1.69 (.50)
20.	Medical Ethics	1.98 (.41)	1.91 (.50)	1.96 (.44)
21.	Substance Abuse	1.74 (.55)	1.81 (.61)	1.76 (.57)
22.	NBC Warfare	1.79 (.54)	1.97 (.57)	1.84 (.56)
23.	Laboratory Procedures	1.76 (.52)	1.73 (.50)	1.75 (.52)
24.	Physical Examinations	2.02 (.40)	1.80 (.43)	1.96 (.42)
25.	Med. Interview & History	1.93 (.35)	1.87 (.37)	1.91 (.35)
26.	Dermatology/Skin Disorders	1.71 (.53)	1.66 (.52)	1.69 (.53)
27.	Neurological Disorders	1.88 (.45)	1.82 (.38)	1.87 (.43)
28.	Musculoskeletal Disorders	1.82 (.43)	1.78 (.45)	1.81 (.43)
29.	Mental Disorders	1.79 (.48)	1.73 (.50)	1.78 (.48)
30.	Infectious Disorders	1.86 (.38)	1.82 (.41)	1.85 (.39)
31.	Gastrointestinal Disorders	1.84 (.39)	1.86 (.38)	1.85 (.39)
32.	Ear, Nose & Throat Disorders	1.83 (.43)	1.86 (.38)	1.84 (.41)
33.	Principles of Pharmacology	2.07 (.50)	1.92 (.49)	2.03 (.50)
34.	Treatment of Wounds	1.86 (.43)	1.87 (.37)	1.86 (.42)
35.	External Resources	1.73 (.57)	1.73 (.59)	1.73 (.57)
36.	Patient Disposition	1.85 (.51)	1.80 (.57)	1.84 (.53)
37.	Health Education Principles	1.92 (.42)	1.80 (.55)	1.89 (.46)
38.	Cardiac Life Support	1.79 (.44)	1.72 (.53)	1.77 (.47)
39.	Preventive Medicine	1.86 (.42)	1.97 (.33)	1.89 (.40)
40.	Food Sanitation	1.87 (.40)	2.02 (.22)	1.91 (.37)
41.	Potable Water	1.81 (.45)	1.95 (.34)	1.85 (.43)
42.	Waste & Sewage	1.70 (.49)	1.98 (.44)	1.78 (.49)
43.	Entomology & Pest Control	1.85 (.43)	1.99 (.36)	1.89 (.42)
44.	Radiological Fundamentals	1.81 (.58)	1.98 (.44)	1.86 (.55)
45.	Radiation Biology	1.81 (.60)	1.99 (.45)	1.86 (.57)
46.	Atmosphere Control	1.72 (.61)	1.78 (.50)	1.74 (.58)
		N = 218	N = 85	N = 303

[a]Descriptive statistics based only on respondents with no missing data.

[b]Based on a 3-point scale.

Appendix C

Curriculum Practical/Lab Emphasis Descriptive Statistics[a]

	Curriculum Element	Surface[b] Mean (SD)	Submarine Mean (SD)	Combined Mean (SD)
1.	Shipboard Orientation	1.77 (.54)	1.79 (.57)	1.78 (.55)
2.	SMDR Responsibilities	1.63 (.51)	1.77 (.46)	1.67 (.50)
3.	Communications	1.89 (.61)	1.73 (.58)	1.84 (.60)
4.	Med Dept Inspections	1.52 (.52)	1.73 (.53)	1.58 (.53)
5.	Department Logs	1.75 (.56)	1.82 (.48)	1.77 (.54)
6.	Health Records	2.02 (.49)	1.87 (.57)	1.98 (.52)
7.	Service Records	2.22 (.73)	1.92 (.79)	2.14 (.76)
8.	Training Records	1.62 (.59)	1.71 (.60)	1.64 (.59)
9.	Fiscal (AMAL, OPTAR, etc)	1.70 (.60)	1.84 (.67)	1.74 (.62)
10.	Inventory Management	1.57 (.55)	1.73 (.58)	1.61 (.56)
11.	Equipment Management	1.53 (.56)	1.68 (.55)	1.57 (.56)
12.	3-M System	1.39 (.59)	1.61 (.67)	1.46 (.62)
13.	Radiation Health Program	1.69 (.56)	1.77 (.54)	1.71 (.55)
14.	Diet & Nutrition	1.63 (.55)	1.61 (.54)	1.63 (.55)
15.	Indus. Hygiene & NAVOSH	1.65 (.59)	1.75 (.59)	1.68 (.59)
16.	Anatomy & Physiology	2.02 (.40)	1.79 (.47)	1.95 (.43)
17.	Flight Physiology	1.79 (.56)	1.84 (.61)	1.80 (.57)
18.	MEDEVAC Procedures	1.65 (.54)	1.65 (.48)	1.65 (.52)
19.	Dental Fundamentals	1.63 (.56)	1.52 (.50)	1.60 (.54)
20.	Medical Ethics	1.93 (.39)	1.88 (.46)	1.92 (.41)
21.	Substance Abuse	1.72 (.58)	1.77 (.58)	1.73 (.58)
22.	NBC Warfare	1.67 (.55)	1.83 (.55)	1.72 (.55)
23.	Laboratory Procedures	1.64 (.56)	1.57 (.55)	1.62 (.56)
24.	Physical Examinations	1.88 (.46)	1.70 (.52)	1.83 (.48)
25.	Med. Interview & History	1.87 (.44)	1.79 (.44)	1.85 (.44)
26.	Dermatology/Skin Disorders	1.59 (.53)	1.48 (.53)	1.56 (.53)
27.	Neurological Disorders	1.72 (.49)	1.71 (.46)	1.72 (.48)
28.	Musculoskeletal Disorders	1.70 (.49)	1.62 (.51)	1.68 (.50)
29.	Mental Disorders	1.67 (.50)	1.64 (.54)	1.66 (.51)
30.	Infectious Disorders	1.76 (.45)	1.73 (.48)	1.75 (.46)
31.	Gastrointestinal Disorders	1.76 (.45)	1.74 (.47)	1.76 (.46)
32.	Ear, Nose & Throat Disorders	1.75 (.47)	1.74 (.47)	1.74 (.47)
33.	Principles of Pharmacology	1.93 (.54)	1.83 (.47)	1.90 (.52)
34.	Treatment of Wounds	1.74 (.48)	1.78 (.45)	1.75 (.47)
35.	External Resources	1.73 (.52)	1.73 (.55)	1.73 (.53)
36.	Patient Disposition	1.82 (.50)	1.77 (.54)	1.80 (.51)
37.	Health Education Principles	1.89 (.41)	1.77 (.56)	1.86 (.46)
38.	Cardiac Life Support	1.74 (.46)	1.66 (.53)	1.72 (.48)
39.	Preventive Medicine	1.77 (.49)	1.79 (.44)	1.77 (.48)
40.	Food Sanitation	1.73 (.49)	1.86 (.42)	1.77 (.47)
41.	Potable Water	1.69 (.50)	1.82 (.45)	1.73 (.49)
42.	Waste & Sewage	1.65 (.50)	1.88 (.46)	1.72 (.50)
43.	Entomology & Pest Control	1.71 (.51)	1.84 (.46)	1.74 (.50)
44.	Radiological Fundamentals	1.77 (.57)	1.87 (.52)	1.80 (.56)
45.	Radiation Biology	1.78 (.56)	1.97 (.46)	1.84 (.54)
46.	Atmosphere Control	1.72 (.59)	1.61 (.54)	1.69 (.58)
		N = 193	N = 77	N = 270

[a]Descriptive statistics based only on respondents with no missing data.

[b]Based on a 3-point scale.

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION Unclassified	1b RESTRICTIVE MARKINGS None
2a SECURITY CLASSIFICATION AUTHORITY N/A	3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.
2b DECLASSIFICATION/DOWNGRADING SCHEDULE N/A	
4 PERFORMING ORGANIZATION REPORT NUMBER(S) NHRC Report No. 87-3	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION Naval Health Research Center 6b OFFICE SYMBOL (If applicable) 40	7a NAME OF MONITORING ORGANIZATION Commander, Naval Medical Command
6c ADDRESS (City, State, and ZIP Code) P. O. Box 85122 San Diego, CA 92138-9174	7b ADDRESS (City, State, and ZIP Code) Department of the Navy Washington, DC 20372
8a NAME OF FUNDING/SPONSORING ORGANIZATION Naval Medical Research & Development Command 8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c ADDRESS (City, State, and ZIP Code) Naval Medical Command National Capital Region Bethesda, MD 20814-5044	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO: 65152N PROJECT NO: M0106 TASK NO: 002 WORK UNIT ACCESSION NO: 0008
11 TITLE (Include Security Classification) (U) ADVANCED HOSPITAL CORPS SCHOOL CURRICULUM RELEVANCE AND TRAINING EMPHASIS: PERCEPTIONS FROM THE FLEET	
12 PERSONAL AUTHOR(S) Steele, Timothy P., LT, MSC, USNR	
13a TYPE OF REPORT Interim 13b TIME COVERED FROM _____ TO _____	14 DATE OF REPORT (Year, Month, Day) 1987 March 15 PAGE COUNT
16 SUPPLEMENTARY NOTATION	
17 COSATI CODES FIELD / GROUP / SUB-GROUP	18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Independent Duty Hospital Corpsmen Training Program Evaluation Technical Training

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

The study was a follow-up and partial replication of a prior survey of Advanced Hospital Corps School instructors and students that examined the relevance and adequacy of the Independent Duty Corpsman (IDC) curriculum. In this study, however, data from a sample of experienced shipboard IDCs were analyzed. The objectives of the present study were: (a) to describe the perceived relevance of IDC curriculum topic areas, (b) to evaluate perceived classroom and practical/lab training emphasis for meeting fleet requirements, and (c) to assess differences in curriculum relevance and training emphasis between Atlantic and Pacific fleets, and between surface ships and submarines.

The findings provided support for the overall relevance of the IDC curriculum. However, differences were found between IDCs aboard surface ships and submarines in several curriculum areas. These results suggested that additional tailoring of the IDC curriculum, dependent on ship-type, may be warranted. With regard to perceptions of training emphasis, none of the curriculum areas were seen as grossly inadequate. Aggregate results, however,

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT ☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT ☐ DTIC USERS	21 ABSTRACT SECURITY CLASSIFICATION Unclassified
22a NAME OF RESPONSIBLE INDIVIDUAL LT Timothy P. Steele, MSC, USNR	22b TELEPHONE (Include Area Code) (619) 225-7395 22c OFFICE SYMBOL 40

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted
All other editions are obsolete

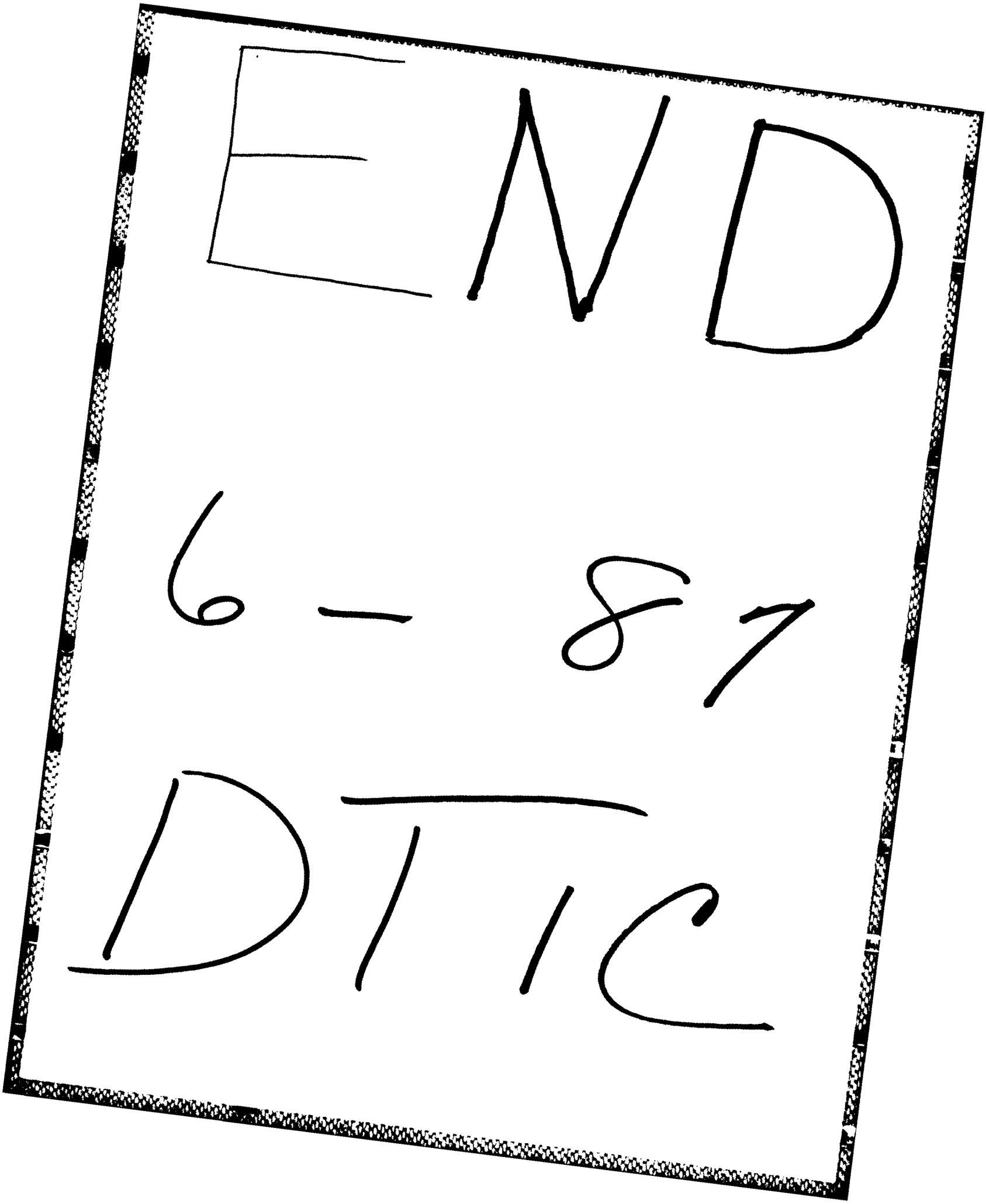
U.S. Government Printing Office: 1988—607-047

19. ABSTRACT (cont.)

indicated that shipboard IDCs felt there was room for improvement in training in the classroom and especially in practical applications. Particular emphasis should be placed on examining the training emphasis in topical areas pertaining to shipboard Medical Department management, Dental fundamentals, and MEDEVAC procedures.

As noted in the prior training study, it is recognized that the IDC curriculum is continuously being updated and revised to meet changing requirements and methodologies. Therefore, the results of this study should be viewed as supplementary information regarding the efficacy of the IDC curriculum and used only in conjunction with other indicators suggestive of curriculum modification.

With the advent of Personnel Qualification Standards (PQS) for IDCs, substantial progress has been made toward enabling more rigorous fleet evaluation of IDC training. It is essential, however, that PQS be shown to be valid as a performance measure. Also, methods and procedures should be identified to facilitate mass data collection and integration to exploit the information to be gained through PQS for training program modification. Only then can the data be interpreted on a large scale and fed back to training administrators and higher authority. Future research in operational medicine could profitably focus on evaluating the implementation of PQS for IDC.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