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Navy Medical Service Corps Accessions and Retention for FY 1983 Through FY 1988

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ABSTRACT

The Medical Service Corps provides professional administrative and clinical services for the Navy Medical Department. In recent years, Navy medicine has experienced a decrease in accession and retention of the Nurse Corps and Medical Corps. This research memorandum examines the accession and retention of Navy Medical Service Corps officers to determine if a similar pattern has developed in this community.

EXECUTIVE SUMMARY

The delivery of health care to Navy beneficiaries depends upon the successful integration of the four distinct officer communities that make up Navy medicine: the Medical Corps, the Nurse Corps, the Dental Corps, and the Medical Service Corps (MSC). In response to congressional concerns regarding the accession and retention of active duty Armed Forces health care professionals, the Navy asked CNA to study these issues as they pertain to the Medical Corps, the Nurse Corps, and the MSC. To date CNA studies [1, 2, 3] have documented a decrease in accession and retention rates from FY 1983 through FY 1988 for the Medical Corps and the Nurse Corps. The purpose of this research memorandum is to examine MSC accessions and officer retention since FY 1983 in order to determine whether a manpower shortage exists.

DATA

The data used to analyze MSC accessions and retention cover FY 1983 through FY 1988 and come from the Bureau of Medicine Information System (BUMIS) and the Officer Master File (OMF). Information on the personnel composition and career paths of the MSC was obtained from the Navy Medical Command's *Officer Career Guide* [4].

MEDICAL SERVICE CORPS COMPOSITION

The MSC functions as a support community, providing professional administrative and clinical services to the Navy Medical Department. Approximately half of the MSC are health care administrators (HCA), while the other half are health care science (HCS) specialists. The HCS community represents approximately 20 clinical/allied science professions that either conduct research or provide direct patient care or support of direct patient care. Because nearly 90 percent of all HCA officers are classified as general health care administrators, all HCA officers are grouped under the category of health care administration. HCS specialists are categorized by their general specialty discipline.

MSC ACCESSIONS

MSC accessions have fluctuated in size between FY 1983 and FY 1988. HCA officer accessions are commissioned through in-service procurement or directly from the civilian community, while nearly all HCS accessions are recruited directly from the civilian community. Table I compares direct accessions to initial direct procurement goals, by specialty. Direct procurement goals from FY 1983 to FY 1988 have not been stable in the aggregate nor by specialty. From FY 1983 to FY 1986, direct procurement goals were not achieved, but goals were exceeded in FY 1987 and FY 1988.

Table I. *Actual direct accessions versus initial procurement goals, by specialty for health care science MSC officers—FY 1983 to FY 1988*[a]

Specialty	1983		1984		1985		1986		1987		1988	
	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual
Health Care Administration	113	108	36	32	72	57	101	105	26	33	57	103
Biochemistry	4	4	1	1	4	2	4	3	2	2	0	0
Microbiology	3	3	1	1	6	7	4	3	1	2	1	2
Radiation health	8	6	6	6	8	6	12	11	1	2	4	8
Radiation specialist[b]	2	1	0	0	1	0	0	0	0	0	0	0
Physiology	10	4	6	4	6	5	6	4	2	2	7	5
Clinical psychology	17	17	5	4	12	7	20	15	11	9	8	8
Research psychology	7	8	5	4	7	4	4	3	2	2	2	2
Entomology	3	6	0	0	3	3	4	5	2	2	2	3
Environmental health	6	6	5	7	6	2	10	7	2	4	4	11
Industrial hygiene	10	14	3	3	12	8	31	25	8	8	13	12
Medical technology	13	8	4	5	5	4	15	15	2	2	5	10
Social work[c]	0	1	2	2	4	2	5	5	0	0	3	2
Audiology	3	1	1	1	1	1	3	3	1	1	1	2
Physical therapy	7	5	4	4	10	8	18	9	7	7	5	8
Occupational therapy[c]	0	0	0	0	0	0	2	1	0	0	0	0
Clinical dietetics	5	15	3	3	14	12	5	5	0	0	4	3
Optometry	16	16	14	11	20	9	39	33	13	10	11	10
Pharmacy	10	12	7	12	15	13	17	18	3	3	13	11
Podiatry	3	5	0	0	5	4	6	6	0	0	3	6
Total	240	240	103	100	211	154	306	276	83	89	143	206

a. The FY 1983 to FY 1988 direct accession figures include those persons accessed in clinical psychology internship positions. The FY 1987 and FY 1988 figures also include those persons accessed to attend the Army/Baylor physical therapy program.

b. Generally, radiation specialists are trained from the radiation health officer specialty, resulting in no direct accessions to the specialty.

c. A majority of social workers and occupational therapists are civilians; therefore, accessions to these specialties are rare.

Three general patterns describe direct accession figures since FY 1983. Some subcommunities tend to attain or surpass initial direct procurement goals regardless of whether or not goals vary from year to year. Other subcommunities experience wide variation in initial goals and actual accessions from year to year, which makes it difficult to determine whether the recruiting of these specialties is becoming easier or harder. Finally, optometry and physiology consistently have fallen short of initial direct procurement goals.

The main factor contributing to MSC accession variation since FY 1983 is the Navy's use of the MSC as a buffer to offset accession shortfalls in the Medical and Nurse Corps. In FY 1987 and FY 1988, "overshipping" (recruiting over initial goals) was allowed in several MSC specialties as shortfalls occurred in the Medical and Nurse Corps. Before FY 1987, overshipping was also allowed in some MSC specialties as it became apparent that other MSC specialties would not be able to reach their procurement goals.

CONTINUATION AND RETENTION

MSC continuation rates both in the aggregate and by community are consistently at or above 90 percent from FY 1984 to FY 1988. The Corps as a whole has retained a commanding majority of their officers. Stratified by years of commissioned service, differences exist between the HCA and HCS communities with respect to the timing of losses during career progression.

HCA officers tend to stay in the Navy during their first 10 years of commissioned service as compared with the continuation rates of the HCS community. Once they reach 10 years of commissioned service, HCS officers tend to make a long-term commitment to the Navy, resulting in high continuation rates until 20 years of service (their typical retirement eligibility point). In contrast, the continuation rates of HCA officers decline after 10 years. These different continuation patterns between HCA and HCS officers are largely a function of the fact that most HCA officers have enlisted experience and thus are eligible to retire before 20 years of commissioned service.

Community continuation rates provide evidence that both HCA and HCS officers tend to be Navy-career oriented. However, the drop in continuation rates at the three-year mark for HCS officers could reflect some specialty-specific retention problems. The retention of HCS officers at the end of initial obligation was determined for all active duty HCS officers reaching three years of service as an MSC officer some time between FY 1984 and FY 1988. On the average, specialty retention rates for individuals reaching the end of their initial obligation (i.e., within 1 to 12 months of completing the initial obligation) are 80 percent or above. Of those specialties with lower average retention rates, the rates for research psychology, physical therapy, clinical dietetics, and podiatry result more from the volatility of the data due to extremely small cohort sizes than from a retention problem. Clinical psychology shows signs of potentially being a problem specialty (68 percent average retention), and optometry clearly experiences difficulty retaining officers (59 percent average retention) at the end of their initial obligation.

SPECIALTY CONTINUATION RATES AND AUTHORIZATION

While the HCS community continuation rates are high, shortages exist for many of the subcommunities when compared with their authorized billets. In FY 1988, HCA billets were manned at 103 percent of authorized levels and HCS specialists were manned at 89 percent of authorization. Of the 19 HCS specialties examined, 14 were manned below their authorized level, with 10 of the 14 manned at 90 percent or less of the authorization. To achieve authorized levels for HCS specialists in FY 1991, accessions or continuation rates must increase, or both.

Focusing solely on retention as the means to achieve FY 1991 authorization, table II gives the rate needed during the next three years to achieve authorization, assuming historical accession levels prevail. The maintenance rate is the continuation rate needed to maintain authorized levels once they are achieved given the assumptions regarding future gains. Slightly less than half of the 19 specialties have had average continuation rates over the last four years sufficient to meet authorized levels in FY 1991. If FY 1991 authorization is achieved solely by increasing retention, authorized levels for radiation specialists, physiology, social work, audiology, occupational therapy, and pharmacy could not be reached by FY 1991, even if 100 percent retention is achieved each year. Furthermore, since most communities historically have continuation rates above 90 percent, it is highly unlikely that policy initiatives could raise these already high rates. Therefore, it would most likely be easier to alleviate shortages through increased accessions.

Table III compares the average number of accessions to the number of accessions needed to reach FY 1991 authorizations given historical retention rates are maintained. The average historical accessions levels are high enough to reach FY 1991 authorized levels for seven specialties. Those specialties that could not reach FY 1991 goals with higher retention could achieve authorized levels with increases in their numbers of yearly accessions. Most specialties require only two to four additional accessions over their historical averages to reach FY 1991 strength. Optometry, which historically has not been successful in achieving its direct procurement goals, must annually access 10 persons more than its historical average.

CONCLUSION

Overall, the MSC is a healthy community with only a few HCS specialties experiencing accession or retention problems. Since FY 1983, MSC accessions have not achieved a steady state. Analytically, the variability of accessions makes it difficult to assess whether recruiting HCS specialists is becoming easier or harder. While overshipping in the MSC has bolstered manpower in some specialties and in the aggregate, the potential exists for overshipping to contribute to force management problems in the future. Historically, recruiting problems were experienced in optometry and physiology. Currently recruiting difficulties are being experienced in optometry and pharmacy. Specialty retention rates for HCS officers average 80 percent or above. Only optometry has experienced consistent difficulty retaining its officers. Clinical psychology shows signs of possible retention problems. Most HCS specialties are currently

manned below authorized levels. The most viable approach to achieving FY 1991 authorized levels is to adjust and stabilize procurement, perhaps by initiating health professional scholarship programs (HPSP) to attract persons in currently labor-constrained specialties to careers in the Navy.

Table II. Continuation rates needed to achieve FY 1991 authorized strength

Specialty	Average rate[a]	Rate needed[b]	Maintenance rate
Biochemistry	94	93	93
Microbiology	96	95	94
Radiation health	94	79	85
Radiation specialty	91	c	c
Physiology	95	c	c
Clinical psychology	88	98	85
Research psychology	92	97	92
Entomology	97	91	91
Environmental health	93	92	93
Industrial hygiene	92	94	90
Medical technology	93	95	92
Social work	95	c	c
Audiology	96	c	c
Physical therapy	95	93	90
Occupational therapy	88	c	c
Clinical dietetics	93	83	82
Optometry	86	92	90
Pharmacy	93	c	c
Podiatry	88	74	75
All HCS	92	95	91

a. Average historical rate from FY 1984 to FY 1988.
b. Rate needed to meet FY 1991 authorization figures by the end of FY 1991.
c. *Authorized levels could not be met even with 100 percent retention.*

Table III. Accessions needed to achieve FY 1991 authorized strength for HCS specialists

	Average historical accessions	Accessions needed[a]
Biochemistry	2.17	2
Microbiology	3.00	3
Radiation health	7.33	–2
Radiation specialty	0.17	9
Physiology	4.50	9
Clinical psychology	10.00	22
Research psychology	3.83	6
Entomology	3.17	1
Environmental health	6.67	6
Industrial hygiene	12.83	16
Medical technology	7.33	9
Social work	2.33	5
Audiology	1.67	3
Physical therapy	7.83	7
Occupational therapy	0.17	2
Clinical dietetics	6.17	3
Optometry	14.00	25
Pharmacy	11.50	24
Podiatry	5.67	3

a. Number needed annually to achieve FY 1991 authorizations.

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TABLES

INTRODUCTION

The delivery of health care to Navy beneficiaries depends upon the successful integration of the four distinct officer communities that make up Navy medicine: the Medical Corps, the Nurse Corps, the Dental Corps, and the Medical Service Corps (MSC). An increase in demand for the services of one community generally will imply an increase in demand for the services of the other Navy medicine communities. During the past decade, the number of beneficiaries eligible to receive medical benefits has grown, and the number of beneficiaries actually placing a demand on the Navy health care system has increased. Two major factors contributing to this increased demand are the increases in the number of retirees and in the cost of private medical care.

In response to congressional concerns, the Navy asked CNA to study the accession and retention of active duty armed forces health care professionals in the Medical Corps, the Nurse Corps, and the MSC. Recent CNA studies [1, 2, 3] documented a decrease in accession rates and retention rates from FY 1983 through FY 1988 for the Medical Corps and the Nurse Corps. The purpose of this research memorandum is to examine MSC accessions and retention of officers since FY 1983 to determine whether manpower shortages exist.

DATA

The data used to analyze MSC accessions and retention come from the Bureau of Medicine Information System (BUMIS) from FY 1983 through FY 1988 and the Officer Master File (OMF) as reported by OP-13 for FY 1983 through FY 1988. All accession and retention measures are calculated for the population of MSC officers on active duty as of 1 October of each fiscal year.[1] Information on the personnel composition and career paths of the MSC was obtained from the Navy Medical Command's *Officer Career Guide* [4].

MSC COMPOSITION

The MSC functions as a support community, providing professional administrative and clinical services to the Navy Medical Department. Table 1 shows that approximately half of the MSC are health care administrators (HCA), while the other half are health care science (HCS) specialists. Health care administration entails the management of the business concerns that accompany the provision of health care to the military's beneficiary population. The domain of HCA officers includes the management of health facility operations, finance and logistics, computer technology and information systems, and human services and resources. In contrast, the HCS community represents approximately 20 clinical/allied science professions that conduct research or provide either direct patient care (e.g., clinical psychology) or support of direct patient care (e.g., pharmacy, radiation health, and physiology).

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1. The population of MSC officers on active duty as of 1 October of each fiscal year is measured as the number of MSC officers on active duty as of 30 September of the preceding fiscal year.

Historically, nearly 75 percent of HCA officers have some type of prior military experience. Generally, those HCA officers with prior military service are commissioned directly from enlisted status or are direct accessions who were once enlisted in the Navy and left in order to finish their degree before seeking a commission in the Navy MSC. In contrast, HCS officers tend to be commissioned through direct procurement from the civilian community.

Table 1. *Percentage distribution of MSC officers, by health care community*

Fiscal year	HCA	HCS	Total
1983	48 (1,054)	52 (1,129)	(2,183)
1984	51 (1,096)	49 (1,075)	(2,171)
1985	51 (1,134)	49 (1,115)	(2,249)
1986	51 (1,236)	49 (1,211)	(2,447)
1987	52 (1,256)	48 (1,179)	(2,435)
1988	53 (1,344)	47 (1,189)	(2,533)

NOTE: Population size in parentheses.

Table 2 displays MSC inventory by specialty. Because 90 percent of all HCA officers are classified as general health care administrators, all HCA officers are grouped under the category of health care administration throughout the analysis. HCS officers are classified under 19 general clinical/allied science categories. Appendix A gives detailed explanations of specialty classifications.

From FY 1983 to FY 1988, the MSC has grown in the aggregate from 2,183 to 2,533.[1] Nearly 84 percent of the total growth in the MSC has been concentrated in the HCA community. With such a low proportion of growth in the HCS community, most HSC specialty inventories

1. The FY 1983 through FY 1988 inventory figures include people in clinical psychology internships. The FY 1987 and FY 1988 numbers also include the three individuals attending the Army/Baylor University program in physical therapy. These individuals will be included in the figures throughout the analysis unless otherwise noted.

have increased and decreased sporadically. Clinical psychology and optometry experienced the largest decreases in total number from FY 1983 to FY 1988 (–11 and –9, respectively), although as percentages these decreases represent less than a 10-percent loss in inventory. Research psychology lost 13 percent (7 persons) of its FY 1983 inventory strength by FY 1988. Radiation specialists decreased in number by 35 percent (9 persons), and occupational therapy dropped to only 40 percent (a loss of 6 persons) of its FY 1983 inventory strength by FY 1988.

Table 2. Medical Service Corps inventory, by specialty—FY 1983 to FY 1988

Specialty	1983	1984	1985	1986	1987	1988
Health care admission	1,054	1,096	1,134	1,236	1,256	1,344
Biochemistry	43	42	40	44	42	40
Microbiology	51	48	53	54	52	49
Radiation health	54	53	55	64	62	67
Radiation specialist	26	24	21	19	18	17
Physiology	80	85	86	90	88	92
Clinical psychology	114	110	113	111	107	103
Research psychology	54	50	54	53	50	47
Entomology	30	29	32	36	36	38
Environmental health	86	86	88	95	94	95
Industrial hygiene	78	71	77	96	103	107
Medical technology	88	85	86	92	87	87
Social work	14	13	15	19	18	21
Audiology	8	10	10	12	12	14
Physical therapy	58	52	58	68	74	75
Occupational therapy	10	9	9	9	8	4
Clinical dietetics	42	37	45	49	46	43
Optometry	138	127	118	128	124	129
Pharmacy	135	128	136	148	136	137
Podiatry	20	16	19	24	22	24
Total	2,183	2,171	2,249	2,447[a]	2,435	2,533

a. One record is missing a specialty code in FY 1986.

MSC ACCESSIONS

MSC accessions are recruited predominantly from the civilian sector (direct procurement) or from enlisted status (in-service procurement). Table 3 displays the source of entry for HCA and HCS officer accessions from FY 1983 to FY 1988. The majority of HCA officer accessions are commissioned with some type of previous military experience, while the majority of HCS accessions are recruited directly from the civilian community.

Since FY 1982, MSC officer accessions have been entering the Navy fully trained. During the 1970s, Armed Forces Health Professional Scholarship Programs (AFHPSP) were available in the disciplines of dietetics, physical therapy, occupational therapy, optometry, clinical psychology (doctoral level only), hospital administration, and health care administration [5, 6, 7, 8]. By FY 1982, AFHPSP funding to all these programs had been eliminated. Only clinical psychology and physical therapy presently have training programs available to new accessions (see appendix B); however, these programs are not part of AFHPSP.

Table 3. Source-of-entry percentages for health care administration and health care science accessions

Fiscal year	Accession source: In-service procurement	Direct: Civilian	Direct: Previous military[a]	Other[b]	Total
		HCA			
1983	31 (50)	38 (61)	30 (47)	1 (2)	100 (160)
1984	45 (30)	32 (21)	17 (11)	6 (4)	100 (66)
1985	35 (30)	41 (36)	24 (21)	0	100 (87)
1986	27 (40)	39 (58)	31 (47)	3 (5)	100 (150)
1987	33 (18)	13 (7)	43 (24)	11 (6)	100 (55)
1988	18 (24)	54 (74)	21 (29)	7 (10)	100 (137)
		HCS			
1983	0	77 (106)	19 (26)	4 (5)	100 (137)
1984	0	78 (55)	18 (13)	4 (3)	100 (71)
1985	0	72 (72)	24 (24)	4 (4)	100 (100)
1986	0	81 (143)	16 (28)	3 (6)	100 (177)
1987	0	62 (41)	23 (15)	15 (10)	100 (66)
1988	0	84 (96)	6 (7)	10 (11)	100 (114)

NOTE: Population size in parentheses.

a. Includes direct accessions with previous enlisted or officer status.
b. Includes accessions from NROTC, interservice transfers, recalls, and changes in officer designations.

MSC accessions fluctuated in size between FY 1983 and FY 1988 (see table 4). The variable yearly accession figures show that the Navy has not attained a steady state in the

procurement process of MSC officers during the past six fiscal years. This may contribute to specialty manpower shortages. To determine whether specific specialties are experiencing recruiting problems, direct accession goals were compared with initial procurement goals (see table 5). The initial direct procurement goals reported by the Military Personnel Policy Division (OP-130D) represent the total number of direct accessions needed in addition to the retained inventory and the new accessions from other sources[1] in order to attain the new MSC endstrength figure. Direct procurement goals from FY 1983 to FY 1988 have not been stable in the aggregate nor by specialty. From FY 1984 to FY 1986, initial procurement goals were not achieved. Overall shortfalls swung from –3 in FY 1984 to –57 in FY 1985 to –30 in FY 1986. In FY 1984 overall accessions reached the initial goal of 240, while in FY 1987 and FY 1988, total MSC direct accessions exceeded initial goals by +6 and +63, respectively.

Table 4. Medical Service Corps accessions

Fiscal year	HCA	HCS	Total
1983	160	137	297
1984	66	71	137
1985	87	100	187
1986	150	177	327
1987	55	66	121
1988	137	114	251

Interpreting whether specialty-specific accession problems exist is difficult due to the small numbers associated with procurement goals and actual direct accessions. Keeping this in mind, three general patterns describe specialty accession figures since FY 1983. Some specialties attain or surpass initial direct procurement goals regardless of whether or not goals vary from year to year. The specialties described by this pattern are biochemistry, microbiology, research psychology, entomology, environmental health, audiology, dietetics, podiatry, and medical technology. Other subcommunities experience wide variation in initial goals and actual accessions from year to year. This pattern describes health care administration, radiation health, clinical psychology, industrial hygiene, physical therapy, and pharmacy. The third pattern describes physiology and optometry as specialties that consistently fall short of procurement goals. Overall, the variability of specialty goals and accessions and small cohort sizes obscure determination of whether recruiting is becoming easier or harder.

1. "Other" accession sources include NROTC, interservice transfers, recalls, and change in officer designation.

Table 5. Actual direct accessions versus initial procurement goals, by specialty for health care science MSC officers—FY 1983 to FY 1988

	1983		1984		1985		1986		1987		1988	
Specialty	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual
Health Care Administration	113	108	36	32	72	57	101	105	26	33	57	103
Biochemistry	4	4	1	1	4	2	4	3	2	2	0	0
Microbiology	3	3	1	1	6	7	4	3	1	2	1	2
Radiation health	8	6	6	6	8	6	12	11	1	2	4	8
Radiation specialist[a]	2	1	0	0	1	0	0	0	0	0	0	0
Physiology	10	4	6	4	6	5	6	4	2	2	7	5
Clinical psychology	17	17	5	4	12	7	20	15	11	9	8	8
Research psychology	7	8	5	4	7	4	4	3	2	2	2	2
Entomology	3	6	0	0	3	3	4	5	2	2	2	3
Environmental health	6	6	5	7	6	2	10	7	2	4	4	11
Industrial hygiene	10	14	3	3	12	8	31	25	8	8	13	12
Medical technology	13	8	4	5	5	4	15	15	2	2	5	10
Social work[b]	0	1	2	2	4	2	5	5	0	0	3	2
Audiology	3	1	1	1	1	1	3	3	1	1	1	2
Physical therapy	7	5	4	4	10	8	18	9	7	7	5	8
Occupational therapy[b]	0	0	0	0	0	0	2	1	0	0	0	0
Dietetics	5	15	3	3	14	12	5	5	0	0	4	3
Optometry	16	16	14	11	20	9	39	33	13	10	11	10
Pharmacy	10	12	7	12	15	13	17	18	3	3	13	11
Podiatry	3	5	0	0	5	4	6	6	0	0	3	6
Total	240	240	103	100	211	154	306	276	83	89	143	206

a. Generally, radiation specialists are trained from the radiation health officer specialty, resulting in no direct accessions to the specialty.
b. A majority of social workers and occupational therapists are civilians; therefore, accessions to these specialties are rare.

Several factors have driven MSC accession variation since FY 1983. New civilian licensing and education regulations were imposed upon many of the clinical and allied science professions. These new regulatory controls contributed to slowing the influx of new health professionals into the market. While this may have constrained the eligible pool of clinicians and allied scientists in the labor market, the extent of the effects on MSC recruiting is difficult to assess due to the small numbers of persons annually recruited in each specialty.

Recruiting has also been influenced by Navy policy concerning other corps within its medical department. In recent years, the Navy has used the MSC as a buffer to offset accession shortfalls in the Medical and Nurse Corps. Table 6 displays Navy Medical Department target and actual endstrength figures, by corps. From FY 1983 to FY 1985, the Medical Corps endstrengths were well above the targeted figures. Actual endstrength figures for the Nurse Corps, MSC, and Dental Corps were either below or just slightly above the target endstrength. In FY 1986, the Medical and Nurse Corps' endstrengths did not reach their targets. Since FY 1987, the medical department has had its growth protected from statutory limits, with the amount of growth to be determined internally by the Navy. Since that time, the MSC has been the only corps to consistently exceed its endstrength goals.

As seen earlier, in table 5, the recruitment of MSC direct accessions in both FY 1987 and FY 1988 surpassed initial goals. This overage was due, in part, to "overshipping" (recruiting over initial goals) in the MSC as accession shortfalls took place in the Medical Corps and Nurse Corps. The specialties that experienced overshipping—microbiology, entomology, environmental health, medical technology, audiology, dietetics, and podiatry—are among those subcommunities described earlier as being able to attain their initial goals regardless of whether or not the goals vary from year to year. These specialties appear to be healthy in their ability to recruit to or over direct procurement goals. Overshipping in some MSC specialties has also been used when it becomes apparent that other MSC specialties will not reach their procurement goals. Specialties that have benefited from this type of overshipping are health care administration, radiation health, industrial hygiene, and pharmacy. Overshipping has allowed these specialties to compensate for sporadic accession shortages over time.

The dynamic nature of medicine and the increasing demands placed on it make health-care-related professions particularly changeable. MSC recruiting priorities change as demands on the Navy health care system change. A shortage in one specialty's accessions for several years may or may not connote a serious problem to health care delivery in the present. For example, accession shortages in physiology from FY 1983 to FY 1988 are not viewed by NAVBUMED as serious to the present system because of the high continuation rates (95 percent) exhibited by these specialists. In addition, a conscious policy decision was made to be very selective in recruiting physiologists due to the autonomy of their billet assignments, even though this decision has entailed falling short of procurement goals. Historical accession shortages in optometry and current shortages in pharmacy are viewed by NAVBUMED as a recruiting problem due to competition in the civilian market, with direct effects on health care delivery, especially given CHAMPUS concerns.

Table 6. Navy Medical Department target and actual endstrength figures, by corps

	Fiscal year					
	1983	1984	1985	1986	1987	1988
Medical Corps						
Target	3790	3757	3874	3990	3993	4020
Actual	3848	3979	3984	3954	3888	3938
Difference[a]	58	222	110	–36	–105	–82
Nurse Corps						
Target	2855	2802	2999	3251	3100	3212
Actual	2845	2873	2984	3103	3108	3074
Difference[a]	–10	71	–15	–148	8	–138
Medical Service Corps						
Target	2137	2090	2282	2454	2400	2480
Actual	2152	2166	2238	2442	2432	2544
Difference[a]	15	76	–44	–12	32	64
Dental Corps						
Target	1720	1654	1731	1739	1720	1713
Actual	1681	1670	1722	1713	1710	1686
Difference[a]	–39	16	–9	–26	–10	–27

SOURCE: OMF as reported by OP-13.

a. Represents the difference between the actual endstrength minus the targeted endstrength.

CONTINUATION AND RETENTION

Yearly MSC aggregate continuation rates have been fairly constant since FY 1984. The yearly aggregate continuation rates measure the percentage of MSC officers on active duty at the end of one fiscal year who were on active duty at the end of the next fiscal year. This measure provides a retention picture of the corps as a whole, without regard to obligation status. The MSC experiences among the highest continuation rates of the officer corps within the Navy medical department. Stratified by community, annual continuation rates for HCA officers are slightly above the aggregate rates and nearly constant at 95 percent since FY 1984 (see table 7). HCS officer continuation rates are slightly lower than the aggregate rates and fairly constant at 92 percent.

In contrast to continuation rates, retention rates measure the percentage of unobligated MSC officers that are retained. At the aggregate level, the retention of unobligated MSC officers also has remained fairly constant at 91 percent. The annual aggregate retention rate of HCA officers

is approximately 93 percent and for HCS officers is nearly 89 percent. Since few people are allowed to leave the Navy while under obligation, retention rates are lower than continuation rates.

Table 7. Medical Service Corps aggregate continuation and retention percentages

Fiscal year	Continuation rate (obligated and unobligated)			Retention rate (unobligated)		
	HCA	HCS	MSC	HCA	HCS	MSC
1984	95 (1,054)	92 (1,129)	94 (2,183)	93 (742)	89 (797)	91 (1,539)
1985	95 (1,096)	93 (1,075)	94 (2,171)	93 (763)	90 (744)	91 (1,507)
1986	94 (1,134)	91 (1,115)	93 (2,249)	91 (682)	86 (609)	89 (1,291)
1987	95 (1,236)	94 (1,211)	95 (2,447)	92 (632)	89 (582)	90 (1,214)
1988	95 (1,256)	92 (1,179)	94 (2,435)	94 (745)	89 (710)	91 (1,455)

NOTE: Population size in parentheses.

MSC continuation rates in the aggregate and by community show little variation from FY 1984 to FY 1988. The corps, as a whole, has successfully retained a commanding majority of its officers. Yet, the aggregate continuation and retention figures provide only an overview of the MSC; they do not discern information regarding losses in terms of career path progression and in terms of experience and skill mix. It is possible that retention problems do exist within specific specialties and among individuals with certain experience levels.

One approach to analyzing community retention is by years of service in order to identify key decision points in the MSC officer's career path. Almost all officers in both HCA and HCS communities are required to be fully trained in their profession before being accessed to the Navy MSC. Examining MSC community retention by years of service provides useful information specific to each community concerning the key decision points in the career paths of HCA and HCS officers.

Table 8 displays the average continuation rates for FY 1983 through FY 1988 of each MSC community, by years of commissioned service. MSC continuation rates by years of service are almost consistently above 90 percent both in the aggregate and by community. Because all MSC officers must serve for a minimum of three years, continuation rates are nearly 100 percent in the HCS and HCA communities during the first two years of service. At the three-year point, the HCS continuation rate drops to 79 percent, while the HCA continuation rate decreases slightly to 93 percent. This drop in continuation rates corresponds to the end of the initial obligation period. HCA officers have somewhat higher continuation rates from 4 to 10 years beause HCA officers with previous enlisted experience need only 10 years of service as an officer to reach retirement eligibility.[1]

Table 8. Average continuation rates for FY 1984 through FY 1988, by years of commissioned service and MSC community

Years[a]	Health Care Administration	Health Care Science	All MCS Officers
≤1	99	99	99
2	99	97	98
3	93	79	85
4	97	87	92
5	98	90	94
6	98	90	94
7	98	90	94
8	98	94	96
9	97	94	96
10	97	95	96
11	91	99	94
12	96	98	97
13	93	99	95
14	93	98	95
15	93	97	95
16	94	95	95
17	92	100	97
18	93	96	95
19	93	94	93
20	89	65	76
21	86	77	80
> 21 years	86	81	84

a. Years of commissioned service as of the end of the base fiscal year. For example, 3 years of service implies that as of 30 September of the base year, 2 < years of service <= 3.

1. Regardless of whether an individual was directly procured from enlisted to the MSC or left the Navy and then entered the MSC as a direct accession, time served as active duty enlisted is creditable toward retirement as long as an individual has served at least 10 years active duty commissioned as an officer.

The decrease in HCA continuation rates upon the completion of 10 years of commissioned service reflects the point of retirement for 90 percent or more of those who leave (see table 9). For HCA officers with previous military service, entering the MSC can be interpreted as a decision to advance and continue their Navy career. The HCS community, on the other hand, is predominantly made up of individuals who entered the Navy as direct accessions, with no previous military service. The decrease in continuation rates at the end of the initial obligation period marks the first major career decision point for them. The continuation rates of HCS officers beyond the initial obligation period remain above 90 percent until the point of retirement.

Table 9. Percentage of HCA officers retiring from the Navy with at least 10 years of commissioned service

Fiscal year	Percentage leaving
1984	95 (37)
1985	96 (46)
1986	98 (40)
1987	90 (40)
1988	97 (31)

NOTE: Population of those eligible to retire in parentheses.

In the aggregate, MSC continuation rates show the corps has successfully retained its officers. Stratified by community, continuation rates provide evidence that both HCA and HCS officers tend to be Navy-career oriented. However, the drop in continuation rates at the three-year mark for HCS officers may reflect a specialty-specific retention problem, which in turn could create a shortage of certain experienced clinicians.

The retention of HCS officers at the end of the initial obligation period was determined for all active duty HCS officers reaching three years of service as an MSC officer some time between FY 1984 and FY 1988. Since FY 1982, all MSC officer accessions incur an initial obligation of three years of service. The officer's report date (RPD) is used to determine the fiscal year in which an individual first became an active duty MSC officer in the Navy. The end of the initial obligation is three years from the RPD. The end of the initial contract period is an important career milestone because it is the first opportunity an individual has to leave the Navy. Since nearly all MSC-HCS officers enter the Navy fully trained, a decision to remain in the Navy after completing the initial obligation can be interpreted as a decision to build a medical career in the Navy.

Table 10 provides information on the specialty retention of MSC-HCS officers at the end of the initial obligation period. The total number of HCS officers completing their initial obligation in a given fiscal year is generally lower than 100. In turn, the small size of specialty cohorts makes the retention rates volatile and their predictive capability negligible. On the average, specialty retention rates for individuals reaching the end of their initial obligation (i.e., within 1 to 12 months of completing the initial obligation) tend to be 80 percent or above. Compared with the historical retention rates of the Medical and Nurse Corps, the retention of MSC officers is high. Nurse Corps end-of-obligation retention has ranged between 57 and 75 percent since FY 1983, while Medical Corps retention rates have declined from FY 1984 to FY 1988 from 47 to 33 percent [2 and 3]. A majority of the specialty communities retain 100 percent of their individuals completing their initial obligation during at least one of the fiscal years observed. Compared with the average rates for the majority of the specialties, clinical psychology, research psychology, optometry, physical therapy, clinical dietetics, and podiatry tend to have lower retention of their specialists at the end of the initial obligation period.

Whether the lower retention rates for these specialties denote a retention problem is questionable. Examining the yearly retention rates, the low average rates for several of the specialties result more from the instability of the percentages due to extremely small cohort sizes than from a retention problem. The low average rates for research psychology, physical therapy, and clinical dietetics are driven by poor retention in one or two years in which three or fewer persons reached the end of their initial obligation. Podiatry's average retention of 72 percent represents a total of 3 losses out of 11 officers during a five-year period. Of the clinical psychologists reaching the end of their initial obligation from FY 1984 to FY 1988, 33 out of 49 were retained. Taking into consideration the variability of the specialty's accessions since FY 1983, clinical psychology may be a problem specialty for the MSC.

HCS officers reaching the end of their initial obligation late in the fiscal year have a shorter "window of opportunity" to leave than those reaching the end of their initial obligation early in the fiscal year. Specialty advisors from the HCS subcommunities maintain that people on active duty on the last day of the fiscal year in which they reach the end of their initial obligation leave on the first day of the new fiscal year. In order to ensure that all persons are observed having an opportunity to leave the Navy, retention was computed with the "window" extended forward to 24 months.

Extending the opportunity window to 24 months results in an average of 1.8[1] additional losses for 13 of the 19 specialties.[2] The significance of such a small number of additional losses per specialty over a four-year period is negligible. Optometry, however, does experience difficulty

1. Excluding optometry, which experienced 11 additional losses, the average additional loss per specialty is 1.3.

2. The specialties experiencing additional losses during the 24 months are biochemistry, radiation health, physiology, clinical psychology, research psychology, medical technology, social work, physical therapy, occupational therapy, clinical dietetics, optometry, pharmacy, and podiatry.

Table 10. Retention rates of HCS specialists at the end of initial obligation[a]

Specialty	Fiscal year 1984		1985		1986		1987		1988		Average rate	
Biochemistry		b	50	(2)	100	(4)	100	(1)	100	(1)	88	(8)
Microbiology	100	(2)	75	(4)	100	(3)	100	(1)	80	(5)	89	(15)
Radiation health	83	(6)	75	(8)	86	(7)	100	(7)	83	(6)	85	(34)
Radiation specialist		b		b	0	(1)		b		b	0[c]	(1)
Physiology	80	(5)	100	(5)	67	(6)	67	(3)	100	(7)	83	(26)
Clinical psychology	78	(9)	89	(9)	47	(19)	50	(4)	75	(8)	68	(49)
Research psychology		b	67	(3)	71	(7)	67	(3)	100	(4)	76	(17)
Entomology	100	(2)	100	(2)	100	(6)		b	100	(3)	100	(13)
Environmental health	100	(4)	75	(4)	100	(7)	100	(8)	100	(5)	95	(28)
Industrial hygiene	89	(9)	86	(14)	64	(14)	100	(3)	75	(8)	83	(48)
Medical technology	75	(4)	86	(7)	86	(7)	80	(5)	100	(4)	85	(27)
Social work	67	(3)		b	100	(1)	100	(2)	100	(2)	92	(8)
Audiology	100	(1)		b	100	(1)	100	(1)	100	(1)	100	(4)
Physical therapy	75	(8)	0	(1)	100	(6)	100	(4)	88	(8)	73	(27)
Occupational therapy		b		b		b		b		b		b
Clinical dietetics	33	(3)	50	(2)	82	(11)	100	(3)	92	(12)	71	(31)
Optometry	71	(21)	29	(21)	56	(16)	60	(10)	80	(10)	59	(78)
Pharmacy	100	(3)	71	(7)	67	(12)	92	(12)	93	(15)	85	(49)
Podiatry	67	(3)		b	80	(5)		b	67	(3)	72	(11)
Total	78	(83)	67	(89)	73	(133)	85	(67)	88	(102)	–	

NOTE: Population size in parentheses.

a. The specialty cohort designates a person's current specialty when observed as eligible to leave at the end of the initial obligation period. Those persons who have switched from health care science to health care administration and are retained at the end of the initial obligation are not counted in these figures.

b. No individuals eligible to leave in specialty for the given year.

c. Since radiation specialists are trained from the radiation health subcommunity and tend to have passed the point of completing the initial obligation, almost no radiation specialists are observed at the end of their initial obligation.

retaining officers at the end of their initial obligation. The average retention rate using the 1-to-12-month window is 59 percent, and it drops to 38 percent when the window is extended to 24 months. This decrease in retention rates for optometry reflects an additional loss of 11 persons between FY 1984 and FY 1988.

BILLET AUTHORIZATIONS, SPECIALTY CONTINUATION RATES, AND ACCESSIONS

Although the HCS community continuation rates are high, shortages exist for many of the subcommunities when compared with their authorized billets. Billet authorizations are manpower requirements adjusted within budgetary limits during peacetime. For the MSC, billet authorizations reflect short-term manpower goals and can be used to identify shortages in specific communities.

The MSC assigns a portion of its total inventory to executive medicine, outfill, and training billets.[1] In FY 1988, about 20 percent of the HCA inventory and 10 percent of the HCS inventory were assigned to executive medicine, outfill, or training billets. In order to compute the net inventory assigned to billets in their specialty, those individuals assigned to executive medicine, outfill, or training billets were subtracted from the total community inventories. HCA billets were manned at 103 percent (1,060 to 1,034) of authorization in FY 1988. Table 11 shows the breakdown of the total HCS inventory for FY 1988 to its net inventory, by specialty. In FY 1988, the HCS billets were manned at 89 percent of authorization. Of the 19 HCS specialties examined, 14 were manned below their authorized level, with 10 of the 14 manned at 90 percent or less of the authorization.

One option available to the Navy to offset a portion of the specialty shortages is to eliminate the assignment of HCS clinicians and allied scientists to the executive medicine and outfill billets. If this approach had been taken in FY 1988, net billet authorization levels would have been achieved for biochemistry, microbiology, research psychology, medical technology, and clinical dietetics. However, HCS officers express the opinion that the experience gained from being assigned to an executive medicine or outfill billet is necessary for promotion purposes. Some officers do return to practice their HCS specialty after serving in an executive medicine billet. Others decide to continue their career in HCA billets while retaining their clinical or allied science specialty designation. By retaining their HCS specialty designation, these officers are still counted against their HCS specialty inventory, which fact projects an inaccurate account of available manpower resources for each community.

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1. The executive medicine billets are referred to as 2XXX billets. Outfills are MSC billets in which the HCS officer is functioning in an administrative position that is not considered a 2XXX billet. Training billets are full-out-service training positions except for the eight clinical psychology internship positions and the three psychology therapy positions within the Army/Baylor program.

Table 11. Breakdown of total HCS inventory to net HCS inventory compared with net authorized billets, by specialty, for FY 1988

Specialty	Total MSC-HCS inventory	–	Number assigned to 2XXX and outfill billets	–	Number assigned to training	=	Net inventory	Net authorized billets	Overage or shortage
Biochemistry	40		7		2		31	38	–7
Microbiology	49		4		2		43	48	–5
Radiation health	67		0		4		63	50	13
Radiation specialist	17		1		0		16	32	–16
Physiology	92		3		9		80	90	–10
Clinical psychology	103		3		20		80	105	–25
Research psychology	47		4		2		41	44	–3
Entomology	38		4		1		33	33	0
Environmental health	95		5		3		87	98	–11
Industrial hygiene	107		2		2		103	115	–12
Medical technology	87		5		2		80	86	–6
Social work	21		2		1		18	25	–7
Audiology	14		0		0		14	13	1
Physical therapy	75		0		7		68	75	–7
Occupational therapy	4		0		0		4	4	0
Clinical dietetics	43		11		1		31	32	–1
Optometry	129		2		1		126	140	–14
Pharmacy	137		9		3		125	147	–22
Podiatry	24		0		1		23	22	1
Total HCS	1,189		62		61		1,066	1,197	–131

As shown in table 12, future HCS authorized strength remains fairly stable, with some growth in several specialties and some loss of billets in others. By FY 1991, aggregate authorized strength for the HCS community peaks at 1,220. To achieve authorized specialty strengths by the end of FY 1991, the maintenance of historical continuation rates will suffice for some specialties, while others will have to increase either accesssions, continuation rates, or a combination of both.

Table 12. Inventory and authorization levels of Navy HCS specialists

	FY 1988 net inventory	FY 1991 net authorization	Difference[a]
Biochemistry	31	31	0
Microbiology	43	45	2
Radiation health	63	48	−15
Radiation specialty	16	35	19
Physiology	80	94	14
Clinical psychology	80	106	26
Research psychology	41	48	7
Entomology	33	33	0
Environmental health	87	86	−1
Industrial hygiene	103	121	18
Medical technology	80	88	8
Social work	18	28	10
Audiology	14	21	7
Physical therapy	68	76	8
Occupational therapy	4	7	3
Clinical dietetics	31	33	2
Optometry	126	136	10
Pharmacy	125	162	37
Podiatry	23	22	−1
All HCS	1,066	1,220	154

a. The difference between FY 1991 authorization and FY 1988 inventory.

How severely shortages of HCS specialists affect the Navy's delivery of health care is related to the types of support that these specialists provide. Several HCS specialists closely support the work of their physician counterparts: radiation specialists with radiologists, clinical psychologists with psychiatrists, physical and occupational therapists with orthopedic surgeons, optometrists with ophthalmologists. A shortage in MSC support staff could mean additional work for physicians or additional cases sent out on CHAMPUS.

The problems the Navy is presently having in providing mental health care to its beneficiaries is a good example of how shortages in related specialties in the Medical Corps and the MSC can significantly affect health care delivery. Clinical psychologists are qualified to treat many of the types of cases normally seen by a psychiatrist. This means that if the Navy is experiencing manpower problems in psychiatry, clinical psychologists can help offset the demand for psychiatric care. In FY 1988, the Navy experienced shortages in both psychiatry and clinical psychology: psychiatry was manned at 79 percent of its authorized strength [1 and 2], and clinical psychology was manned at 76 percent of its authorized strength. A large number of Navy beneficiaries needing mental health care were sent out on CHAMPUS. This contributed to a national CHAMPUS bill in which 22.7 percent of the costs were for mental health care. Approximately 6,000 nonavailability statements were issued by the Navy in FY 1988 for mental health care. This represents the second largest contributing source to the Navy CHAMPUS bill. An increase in the number of Navy psychiatrists and clinical psychologists would help relieve the burden placed on CHAMPUS.

One approach the Navy might take to reach FY 1991 authorizations is to increase continuation rates. Assumptions must be made concerning the number of future gains expected from direct accessions and the training pipeline, given no policy changes in this area. The assumptions made regarding future accessions from the training pipeline only affect the clinical psychology specialty community. During the 1980s, the Navy has increasingly relied on the clinical psychology internship program as a source for new, fully trained clinical psychologists, since the accession of a fully trained and licensed clinical psychologist from the civilian community is rare. Therefore, it is assumed that all future accessions to clinical psychology will be via the internship program. For the remaining HCS specialists, assumptions made regarding expected future accessions are based on historical direct procurement information. Determining expected future accessions based on historical information is difficult due to the fluctuation of HCS accessions since FY 1983. The average number of HCS accessions who entered between FY 1983 and FY 1988 is used as a measure of the expected number of direct accessions each year for FY 1989 to FY 1991. This combines three years of information in which accessions were poor with three years of information in which accessions were relatively successful. The assumptions regarding future gains are detailed in appendix C.

Table 13 compares the average historical continuation rate from FY 1984 to FY 1988 for HCS officers with the rate needed during the next three years to achieve FY 1991 authorization figures by the end of that year. The maintenance rate is the continuation rate needed to maintain authorized levels once they are achieved, given the assumptions regarding future gains. The average historical continuation rate is for those HCS officers assigned to HCS staff billets, excluding executive medicine, outfill, and training billets.

Eight of the specialties historically have had continuation rates sufficient to achieve FY 1991 authorized levels given historical accession levels. Nearly all of the remaining specialties have average continuation rates over 90 percent and would require small increases in their continuation rates to meet FY 1991 authorization. Authorized levels for radiation

specialists, physiology, social work, audiology, occupational therapy, and pharmacy cannot be reached by FY 1991 even if 100 percent retention is achieved each year. The inability to attain FY 1991 authorized levels even with 100 percent retention points toward a recruiting problem rather than a retention problem. Historically, accessions for these specialties have either been very low, have fluctuated, or have not been recruited because the specialty relied upon civilians to fill the positions.

Table 13. Continuation rates needed to achieve FY 1991 authorized strength, by HCS specialty

Specialty	Average historical rate	Rate needed[a]	Maintenance rate
Biochemistry	94	93	93
Microbiology	96	95	94
Radiation health	94	79	85
Radiation specialty	91	b	b
Physiology	95	b	b
Clinical psychology	88	98	85
Research psychology	92	97	92
Entomology	97	91	91
Environmental health	93	92	93
Industrial hygiene	92	94	90
Medical technology	93	95	92
Social work	95	b	b
Audiology	96	b	b
Physical therapy	95	93	90
Occupational therapy	88	b	b
Clinical dietetics	93	83	82
Optometry	86	92	90
Pharmacy	93	b	b
Podiatry	88	74	75

a. Rate needed to meet FY 1991 authorizations figures by the end of FY 1991.
b. Authorized levels could not be met even with 100 percent retention.

An alternative approach would be for the Navy to achieve authorized strength in FY 1991 by adjusting the annual number of accessions per specialty. To determine the accessions needed to reach FY 1991 authorization levels only the current inventory and the average historical continuation rates need be known. Table 14 displays the annual accessions needed to achieve FY 1991 authorized strength by HCS specialty if historical continuation rates continue to prevail. The average historical accession levels are high enough to reach FY 1991 authorized goals for seven specialties. Those specialties that would be unable to attain FY 1991 goals even with

100 percent retention (radiation specialty, physiology, social work, audiology, occupational therapy, and pharmacy) would reach authorized levels with increases in their numbers of yearly accessions. Most of the specialties require only two to four additional accessions over their average historical accession figure to reach their FY 1991 strength. However, yearly accessions for clinical psychology, optometry, and pharmacy must increase by more than 10 persons each.

Table 14. Accessions needed to achieve FY 1991 authorized strength for HCS specialists

	Average historical accessions	Accessions needed[a]
Biochemistry	2.17	2
Microbiology	3.00	3
Radiation health	7.33	–2
Radiation specialty	0.17	9
Physiology	4.50	9
Clinical psychology	10.00	22
Research psychology	3.83	6
Entomology	3.17	1
Environmental health	6.67	6
Industrial hygiene	12.83	16
Medial technology	7.33	9
Social work	2.33	5
Audiology	1.67	3
Physical therapy	7.83	7
Occupational therapy	0.17	2
Clinical dietetics	6.17	3
Optometry	14.00	25
Pharmacy	11.50	24
Podiatry	5.67	3

a. Number needed annually to achieve FY 1991 authorization.

CONCLUSION AND RECOMMENDATIONS

Overall, the MSC is a healthy community with only a few of the HCS specialties experiencing accession or retention problems. Since FY 1983, MSC accessions have not achieved a steady state. Analytically, the variability of accessions makes it difficult to assess whether recruiting HCS specialists is becoming easier or harder. While overshipping has been useful because it has bolstered manpower in some specialties and in the aggregate, the potential exists for overshipping to be used to the detriment of Navy medicine. The challenge for the Navy is to increase

manpower levels in the Medical and Nurse Corps while maintaining the strength of the MSC through a steady and stable recruiting process. Otherwise, HCS specialties made "fat" by overshipping during the lean recruiting years for physicians and nurses may have to force out officers or cut accessions in the future when the Medical and Nurse Corps improve their recruiting levels. Historically, recruiting problems were experienced in optometry and physiology. Currently, recruiting difficulties are being experienced in optometry and pharmacy.

Specialty retention rates for HCS officers reaching the end of their initial obligation average 80 percent or above. Several specialties do have lower average retention rates, but the lower rates are driven more by small cohort sizes than by a retention problem. At present, only optometry has experienced consistent difficulty retaining its officers at the end of the initial obligation period. Clinical psychology shows signs of possible retention problems.

Most HCS specialties are currently manned below authorized levels. Two approaches are suggested to achieve authorized levels in FY 1991. The first approach is to increase continuation rates; the second is to adjust and stabilize accessions. The feasibility of increasing already high continuation rates is questionable. Given the past variation in accessions, adjusting accessions and achieving a steady state in procurement seems possible. Reinstating AFHPSP for certain problem specialties would help attract recruits to the MSC. Adjusting and stabilizing procurement would not only help achieve authorized levels in FY 1991 but would give the Navy the ability to truly assess which specialties, if any, have a recruiting problem. Stabilizing the procurement process would also address the dilemma of maintaining the soundness of the MSC while the Navy tries to strengthen the Medical and Nurse Corps.

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1. Numbers in parentheses are internal CNA control numbers.

APPENDIX A

CLASSIFICATION OF SPECIALTIES

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CLASSIFICATION OF SPECIALTIES

For analytical purposes, all health care administration subspecialties are grouped together. Table A-1 shows that more than 80 percent of the HCA officers are categorized under the general umbrella of health care administration from FY 1983 to FY 1988. Anecdotal information from the HCA community explains that regardless of their area of expertise in health care administration, a majority of MSC-HCA officers prefer to maintain the general HCA specialty classification in order to avoid being viewed as "tied" to any one administrative service, which in turn, allows them to retain flexibility of movement among billets. This means that for descriptive purposes many MSC-HCA officers' current actual specialties are not designated. Unlike the HCA community, the specialties that make up the HCS community are professionally distinct and do not allow officers to change from one specialty to another. The clinical/allied science subspecialties are classified under 19 general categories. Table A-2 shows the grouping of specialties into 20 categories and lists the BUMIS codes that identify each specialty.

Table A-1. Percentage Distribution of MSC-HCA officers, by specialty

	1983	1984	1985	1986	1987	1988
Health care administration	82.8 (873)	83.9 (919)	84.4 (957)	86.5 (1,069)	88.1 (1,106)	88.0 (1,183)
Patient administration	3.1 (33)	3.4 (37)	2.4 (27)	2.0 (25)	2.1 (26)	1.7 (23)
Medical logistics	4.1 (43)	3.4 (37)	2.8 (32)	2.4 (30)	2.1 (27)	1.6 (22)
Administrative dietetics	2.3 (24)	0.5 (6)	0.7 (8)	0.6 (8)	0.6 (8)	0.9 (12)
Medical data services	3.3 (35)	3.2 (35)	3.1 (35)	2.7 (33)	2.1 (27)	2.1 (28)
Operations management	0.1 (1)	0.1 (1)	0.1 (1)	0.1 (1)	a	a
Medical construction liaison	0.6 (6)	0.7 (8)	0.6 (7)	0.5 (6)	0.5 (6)	0.5 (7)
Financial management	2.9 (31)	3.9 (43)	4.5 (51)	3.9 (48)	3.2 (40)	3.4 (46)
Material logistics management	a	a	a	a	a	0.1 (1)
Manpower, personnel, and training	0.8 (8)	0.9 (10)	1.4 (16)	1.3 (16)	1.3 (16)	1.2 (16)
Education and training management	a	a	a	a	a	0.1 (1)
Operations research	a	a	a	a	a	0.1 (1)
Computer technology	a	a	a	a	a	0.3 (4)
Total	1,054	1,096	1,134	1,236	1,256	1,344

NOTE: Population size in parentheses.

a. No observations in the specialty for the specified year.

Table A-2. Classification of specialties

Specialty	Subspecialty	BUMIS specialty codes 1983-87	BUMIS specialty codes 1988-89
Health care admission	General management	0030	0030
	Financial managememt	0031	0031
	Material logistics support	0032	0032
	Manpower, personnel, and training analysis	0033	0033
	Transportation management (MSC)	0035	0035
	Manpower and personnel	0036	0036
	Education and training	0037	0037
	Human resource management	0038	0038
	Computer technology, general	0090	0090
	Computer technology, science	0091	0091
	Computer technology, systems	0095	0095
	Professional health care administrator	1800	1800
	Patient affairs	1808	1801
	Medical supply/logistics	1812	1802
	Administrative dietetics	1814,1877	1877
	Medical data services	1818	1803
	Operations management	1820	a
	Medical construction liaison	1822	1804
	Educational systems management	1837	a
Biochemistry	Biochemistry	1840	1810
	Toxicology	b	1811
	Pharmacology	1843	a
Microbiology	Microbiology	1841	1815
	Epidemiology	b	1816
	Immunology	b	1817
	Parasitology	b	1819
	Virology	b	1821
Radiation health	Radiation health	1845	1825
	Radiation survey ionizing	b	1826
	Radiation survey non-ionizing	b	1827
Radiation specialist	Radiation specialist	1847	1828
Physiology	Physiology	1848	1835
	Aerospace physiology	1849	1836
	Aerospace physiology, education	1850	a

Table A-2. Continued

Specialty	Subspecialty	BUMIS specialty codes 1983-87	BUMIS specialty codes 1988-89
Clinical psychology	Clinical psychology	1851	1840
	Child psychology	1853	1841
	Neuropsychology	b	1842
	Medical psychology	b	1843
Research psychology	Aerospace experimental psychology	1852	1844
	Research psychology	1854	1845
Entomology	Entomology	1860	1850
Environmental health	Environmental health	1861	1860
Industrial hygiene	Industrial hygiene	1862	1861
Medical technology	Medical technology	1866	1865
	Immunohematology	1867	1865
Social work	Social work	1868	1870
Audiology	Audiology	1871	1862
Physical therapy	Physical therapy	1873	1873
Occupational therapy	Occupational therapy	1874	1874
Clinical/therapeutic dietetics	Dietetics	1876	1876
Optometry	Optometry	1880	1880
	Optometry, industrial	1881	a
Pharmacy	Pharmacy, general	1887	1887
	Pharmacy, clinical	1888	1888
	Pharmacy, radio	1889	a
Podiatry	Podiatry	1892	1892

a. Specialty classification not retained in FY 1988 and FY 1989.
b. Specialty classification not designated until FY 1988.

APPENDIX B

MSC TRAINING PROGRAMS

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MSC TRAINING PROGRAMS

The clinical psychology internship program and the physical therapy student program presently are the only Navy training programs available to MSC accessions. The physical therapy student program allows three MSC accessions to attend the Army/Baylor University program in physical therapy. Successful applicants must have completed at least three years of their undergraduate degree with a heavy concentration in math and the sciences. Upon completion of the Army/Baylor program, the student will receive an M.S. degree in physical therapy and have one year to obtain licensure or registration as a physical therapist in one of the 50 states or the District of Columbia.

Clinical psychology is among those clinical professions that have experienced several changes in their professional, educational, and licensing standards over the past 10 years. In response to these changes, the clinical psychology internship program was developed and implemented in FY 1985 in order to attract ABD (all but dissertation) clinical psychology doctoral candidates to a career in the Navy MSC. The initial change in professional requirements occurred in FY 1979, when the educational requirement for a practicing clinical psychologist was upgraded from a master's degree to a doctorate. At that time, AFHPSP was still available for doctoral candidates in clinical psychology, and the Navy was able to continue to compete with the civilian health community for new accessions. However, the Navy lost this accession incentive in FY 1982 when AFHPSP was discontinued for the MSC.

In order to receive a Ph.D. in clinical psychology, a candidate must have completed all coursework and the dissertation and must have worked for one year in an internship program. Upon completion of the Ph.D., the clinical psychologist must gain one year of practical experience in the field under the supervision of a licensed clinical psychologist. After completing the one-year period of field experience, the clinical psychologist is eligible to take the test for licensure, which has been required of all practicing clinical psychologists since FY 1985.

The Navy typically accesses clinical psychologists at the point of internship training. Applicants who have completed their coursework and their dissertation are preferred. At present, the Navy accesses eight clinical psychology doctoral candidates per year to the internship program. The number of positions available has been increased to 16 for FY 1990 due to the inability of the Navy to recruit fully trained and licensed clinical psychologists as direct accessions in the past.

APPENDIX C

ASSUMPTIONS REGARDING FUTURE GAINS

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ASSUMPTIONS REGARDING FUTURE GAINS

The assumptions made to determine the continuation rates needed to achieve authorized strength in FY 1991 were based upon the average number of accessions expected through direct procurement and the training pipeline. Table C-1 displays the assumed number of future gains, by specialty. With the exception of clinical psychology, the expected accessions for each specialty are averaged from the historical data, spanning FY 1983 through FY 1988. Future gains to clinical psychology are expected to be via the Navy's clinical psychology internship program. Beginning in FY 1990, the number of internship positions available has been raised from 8 to 16. Since the internship program normally lasts one year, the first group of 16 should be eligible for assignment to staff billets in FY 1991. Without the increase in the number of authorized training internship billets from 8 to 16 for clinical psychology, the specialty would be incapable of achieving FY 1991 authorized levels by the end of that year even if 100 percent retention was maintained from FY 1989 to FY 1991.

Table C-1. Assumed level of future gains each fiscal year

Specialty	Direct accessions (1989-91)	Training pipeline 1989	1990	1991
Biochemistry	2.17	0	0	0
Microbiology	3.00	0	0	0
Radiation health	7.33	0	0	0
Radiation specialist	0.17	0	0	0
Physiology	4.50	0	0	0
Clinical psychology	0	8.0	8.0	16.0
Research psychology	3.83	0	0	0
Entomology	3.17	0	0	0
Environmental health	6.67	0	0	0
Industrial hygiene	12.83	0	0	0
Medical technology	7.33	0	0	0
Social work	2.33	0	0	0
Audiology	1.67	0	0	0
Physical therapy	7.83	0	0	0
Occupational therapy	0.17	0	0	0
Clinical dietetics	6.17	0	0	0
Optometry	14.00	0	0	0
Pharmacy	11.50	0	0	0
Podiatry	5.67	0	0	0