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**THE AMBULATORY CARE
WORKLOAD MANAGEMENT SYSTEM FOR NURSING
REFERENCE MANUAL**

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The Ambulatory Care Workload Management System for Nursing (AC/WMSN) is a patient classification and staffing methodology developed for emergency and ambulatory care departments in naval medical treatment facilities. The staffing model translates varying patient care workload into professional and paraprofessional nursing staff requirements. This manual provides an explanation why nursing resources should be quantified on the basis of patient care requirements, and the plan of action for the AC/WMSN. Ambulatory care nursing activities identified in a navy-wide survey and measured in 1986-1988 in naval MTFs are the basis of the AC/WMSN. Forty-two direct care nursing activities that significantly impact upon required time for patient care are incorporated in the Ambulatory Care Patient Classification Instrument (ACPCI). In 1988 the ACPCI was validated in seven naval medical treatment facilities in the following ambulatory services: emergency, urgent care, primary care, military medicine, pediatrics, immunization and allergy, obstetrics/gynecology, internal medicine, general surgery, orthopedics, and gastroenterology. The staffing methodology includes the indirect care component, the recommended skill mix (RN and paraprofessional), and the nonavailable standard time allotted by the Bureau of Medicine and Surgery (MED-154). The reference manual includes the operational definitions of the 42 critical indicators on the ACPCI and the directions to a manual application of the instrument in total quality management or efficiency review.

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CHAPTER 1

THE AMBULATORY CARE WORKLOAD MANAGEMENT SYSTEM FOR NURSING

A. USE OF PATIENT CARE-BASED WORKLOAD DATA

1. Purpose. The purpose of this reference manual is to provide ambulatory care managers a tool to measure and translate patient acuity into nursing manpower requirements. In the Ambulatory Care Workload Management System for Nursing (AC/WMSN) model, quantification of required nursing hours for patient care is based upon nursing activities that are critical in quantifying staffing for patient care. The AC/WMSN is specifically designed to assist medical treatment facilities (MTFs) to meet accreditation standards for professional and paraprofessional nurse staffing.

a. The Joint Commission on Accreditation of Health Care Organizations (JCAHO). Ambulatory care nursing services of JCAHO accredited MTFs must "develop hospitalwide patient care programs, policies, and procedures that describe how the nursing care needs of patients or patient populations are assessed, evaluated, and met." (1)

b. The American Academy of Ambulatory Nursing Administration (AAANA). AAANA standards also require nursing service staffing to meet patient care requirements. (2) In 1990 the AAANA initiated a nursing resource intensity (patient acuity) study to develop standardized staffing methodologies to allow comparative analysis of patient acuity and staffing across clinical sites. (3)

c. Office of the Assistant Secretary of Defense (Health Affairs) (OASD(HA)) Standards. In addition to quantification of direct and indirect care nursing hours, the AC/WMSN staffing model includes the OASD(HA) standard non-productive time (days off, vacation, sick leave, and off-unit military and organizational duties). This additive ensures that adequate numbers of patient care staff are identified for assignment for patient care. OASD(HA) staffing standards do not specify required specialty education or skill certification; grade, rate, or rank; nor specialty training. The goal of OASD(HA) staffing standards is to quantify the number of professional and paraprofessional staff required to deliver safe and least cost care to the patient.

d. Joint Healthcare Manpower Standards (JHMS) Development. OASD(HA) established the Joint Healthcare Manpower Engineering Team (JHMET) to initiate the JHMS development process. The process involves the collection of existing data bases and the use of specialty expert representatives to validate manpower prediction models. AT this time, patient acuity-based nursing workload systems are in development or are still in a manually collected data base in naval MTFs. When acuity based nursing workload data is automated and available to higher authority as a data base, the JHMET can include the most significant predictor of nursing resources (patient acuity) in their prediction models.

e. Use of Acuity Based Nursing Workload Data. The AC/WMSN can provide an objective description of patient acuity. The use of the ambulatory care patient classification instrument (ACPCI) as a objective tool to estimate nursing resource intensity is described in Chapter 2. The AC/WMSN can assist managers in the following areas:

(1) Staffing. Use objective, patient-centered assignment criteria by which to manage and allocate personnel and optimize nursing and patient care support personnel utilization.

(2) Resource Management. Describe professional and paraprofessional productivity; determine accurate workload for justifying existing budget, staffing, and programs; objectively plan support requirements for new services.

(3) Continuous Quality Improvement/Risk Management. Quantify minimal staffing for safe care; ensure appropriate utilization of medical staff by programming adequate support staff; identify high volume, high risk nursing activities for QA monitoring; ensure appropriate numbers of professional and paraprofessional staff are programmed to provide patient and staff satisfaction.

(4) Efficiency Review. Plan staffing for new practice patterns and services; reorganize existing staffing for services according to patient care requirements in coordination with work center analysis and planning for efficient work flow, information technology and medical equipment support, and training program support.

B. PLAN OF ACTION FOR THE AC/WMSN. Naval Medical Data Services Center has been tasked to initiate life cycle management for the automation of the AC/WMSN by the Director, Navy Nurse Corps.

1. Automation. Use of acuity based workload data requires automation of the data base for summary reporting to higher authority. The Naval Medical Data Services Center (NAVMEDATASERVCEEN) is coordinating with the OASD(HA) Office of Management Support (OMS) to initiate an automation project for the AC/WMSN.

2. Implementation. With approval of the Department of the Navy Bureau of Medicine and Surgery, naval medical treatment facilities (MTFs) may use acuity-based workload data in planning nursing manpower requirements. In addition to quantifying the number and skill level of nursing and support staff according to patient care workload, the AC/WMSN can be used in total quality management initiatives and in efficiency reviews. For example, quality monitoring criteria such as patient compliance with treatments and follow up, incidence or prevention of complications, patient and staff satisfaction, and costs can be reviewed and compared among different staffing levels at, below, or above the calculated requirements.

3. Research. Approximately 56-73% of the workload in naval emergency and outpatient departments (ED/OPD) can be documented using the ACPCI. Multi-specialty teaching hospitals averaged 56% coverage of their workload by the AC/WMSN; general hospital and freestanding ambulatory care facilities averaged 73% coverage of their workload by the AC/WMSN. The ten ambulatory care areas included in the development of the ACPCI were:

Emergency Dept/Urgent Care
Military Medicine
Obstetric/Gynecology
Internal Medicine
General Surgery

Primary Care/Family Practice
Pediatric
Immunization/Allergy
Orthopedics
Gastroenterology

4. Future Studies. The AC/WMSN acuity based workload model may be useful in the following services pending further study:

Cardiology Clinic
Hematology/Oncology Clinic
Neurology Clinic
Otolaryngology Clinic
Plastic Surgery Clinic
Neurosurgery Clinic
Urology Clinic

Dermatology Clinic
Nephrology Clinic
Ophthalmology Clinic
Pulmonary Clinic
Psychiatric Clinic
Rheumatology Clinic

CHAPTER 2

DIRECT CARE COMPONENT

A. DEVELOPMENT OF THE ACPCI

1. Background. Direct care timings for each activity on the ACPCI were collected in seven naval MTFs in 1986-1987 and were averaged across the ten clinical areas. Timings for these activities were also averaged across five types of facilities in the AC/WMSN, including large teaching hospitals, medium and small size hospitals, and large and small free-standing ambulatory care facilities. The ACPCI timings included care given by registered nurses (RNs); paraprofessionals (licensed practical or vocational nurses (LPN/LVNs), Hospital Corpsmen (HM), technicians, nurses aides (NA), and clerks. The instrument is based on 4,000 timings of nursing activities by reserve nurse and hospital corps personnel specifically trained by the principal investigator in work measurement techniques. These activities were identified in a 1986 survey of 567 (67 percent of total) military and civilian RNs working in ambulatory care services in naval MTFs. The documentation of ambulatory care workload is based upon the ambulatory care patient classification instrument (ACPCI) validated in seven MTFs in 1988.

a. Clinical Services. The direct care timings took place in seven MTFs over a four month period in 1987. The investigators targeted ten ambulatory care clinical areas: primary care, military medicine, pediatrics, orthopedics, obstetrics/gynecology, general surgery, immunization/allergy, gastroenterology, internal medicine, emergency and/or urgent care.

b. Type of Personnel. This historical data can be used to generate a staffing plan for professional and paraprofessional (PARAs) nursing, and clerical staff assigned to provide ambulatory care patient services.

(1) Types of Staff Included. The AC/WMSN model includes the charge nurse, senior enlisted person, staff RNs, PARAs (including technicians), and clerks.

(2) Types of Staff Not Included. The AC/WMSN does not quantify requirements for physicians, physician assistants, allied health care professionals, independent duty Hospital Corps personnel, nurse practitioners, nurse clinical specialists, nursing supervisor or department head, education & training officer/petty officer, or administrative assistant.

2. ACPCI Data Collection Time. The patient classification instrument was designed to account for direct care nursing hours delivered and documented in the patient treatment record. This data can be collected retrospectively from medical treatment records, concurrently during the patient visit, or during the disposition of the patient when a staff member reviews the patient visit with the patient in a clinic or emergency room disposition.

a. Duration of Data Collection. The ACPCI data collection period required to accurately predict manpower requirements depends upon the work center variability. Once a baseline is established for the work center, repeat data collection can be scheduled at sample intervals. A significant change in staffing activities due to change in technology, patient load, or clinical provider practice would indicate a need to reestablish the baseline throughout a representative period.

b. Rationale for Data Collection. The use of the AC/WMSN can potentially document significant variation in staffing requirements in the case of similar numbers of patient visits. The ACPCI is objective and can be used to relate nursing resource intensity to other patient classification methods derived from medical expense resource models, or diagnosis/procedure coding schemes.

3. Type of Classification Instrument. The ACPCI is based upon a factor evaluative classification model rather than a medical or nursing diagnosis, disease staging, or health risk model. The factor evaluative approach is patient-centered: it documents nursing care activities carried out for each patient. This approach is objective, easily modified with changes in technology, and accomplishes the objective: quantifying nursing and Hospital Corps staff time spent in patient care. The necessity of carrying out and documenting required care activities is reinforced by this approach. The instrument used in the research is in Appendix A.

B. DESCRIPTION OF THE ACPCI

1. Point System. Points assigned reflect average times obtained from repeated timings of the same activity in different sizes and types of MTFs, and different clinical areas. One point is equal to 7.5 minutes. Point values are rounded to the nearest half point for the nursing activities, or critical indicators.

2. Factor System. Six general factors incorporate 42 critical indicators: Log in/out (type of visit), Assessment and Teaching, IVs and Medications, Diagnostic Tests and Measures, Other Procedures, and Continuous Care. Continuous Care is also a critical indicator, and is appropriate for adding staff time in one on one care, as in special appointments, procedures, post-anesthesia recovery periods, or ambulance transport.

3. Critical Indicators. The ACPCI identifies 42 critical indicators carried out by ambulatory care staff that serve as the basis for determining patient acuity-based workload and required staffing. Appendix B contains the operational definitions and point values assigned to each "activity code (ACTCODE)."

4. Directions to ACPCI. Appendix C contains directions to the ACPCI as manually collected in the research study (not recommended for application to routine data collection).

C. INTER-RATER RELIABILITY (IRR)

1. Standardization. IRR refers to the consistency of patient classification from user to user. To ensure different work groups are using the ACPCI correctly and generating useful information, IRR should be established initially, in the training phase of implementation of the ACPCI, and at quarterly intervals. To determine inter-rater reliability (IRR), two raters (one outside the work group) compare a match of factors and acuity category of a sample of patients classified in the one work center. Agreement of 85% or greater is acceptable. Lower IRRs point to a need for clarification or re-training.

2. Frequency of IRR. The IRR is not applied when using the ACPCI with estimates of average workload, but is necessary only when the ACPCI is used to document nursing care recorded for individual patients. Although the AC/WMSN should be automated for routine patient classification and staffing reporting, the function of IRR is a manual process. The IRR procedure is described in Appendix D.

CHAPTER 3

INDIRECT CARE COMPONENT

A. INDIRECT CARE PATIENT-RELATED NURSING ACTIVITIES. Indirect care (nursing care that takes place outside the presence of the patient) has been standardized across the ten clinical areas and five types of facilities in the AC/WMSN. The separate measurement of indirect care apart from direct is because indirect activities can be for one or more patients, or for the unit or staff preparation in general for patient care. Direct care activities were measured by time and motion studies, whereas the indirect care component was measured by work sampling. The following care categories were defined and measured in the research.

a. Leave. Non-available time for medical/dental care, compensatory time, special liberty, inprocess/outprocessing, annual/sick/convalescent leave, military duties/inspection, mandatory training sessions (equal opportunity, advancement in rate, etc.).

b. Personal Activities/Delay Time. Meals, breaks, personal phone calls, unavoidable wait/delay time. This category was standardized according to industrial engineering standards for workers (15-17%) for an average of 16%.

c. Off Unit Activities. Errands, meetings, staff meetings or professional or collateral duties that occur outside the work center.

d. Communication. Verbal or phone communication by staff.

e. Preparation of Medications, Supplies, and Equipment. Setup, stocking, or cleaning of patient care medications, supplies, equipment, checking emergency carts, handwashing, preparing lab specimens.

f. Charting, Chart Reference, Clerical Activities. Checking, reading careplans or charts, transcription of orders, writing on patient care documents, recording vital signs, reading X-rays, filling/filing lab requests.

g. Conferences. Change of shift report, medical or nursing rounds, patient care conferences, patient care planning.

h. Travel and Transportation. Transporting patients, specimens, charts, equipment; traveling in and off-unit in house.

i. Administration. Scheduling, filling out reports, chart audits, reading professional materials, ordering supplies, personnel evaluations, and other managerial duties.

j. Environmental Control. Cleaning, linen or trash pick up.

k. Ambulance/Medevac Transport. Preparation for and time involved in ambulance/medevac transport.

l. Direct Patient Care. Care given in the presence of the patient. This category of activity was work sampled and compared to the direct care calculated from patient charts using the ACPCI. No significant difference was found in the research study, which was indicative of the validity of the instrument.

B. INDIRECT CARE FORMULA. To factor in the indirect care multiplier, first derive the direct care points from the ACPCI (Appendix A) for the scheduled time period by date (daily). Direct care points are summed by date and multiplied by .125 hours since 1 point equals 0.125 hr.

1. Indirect Care Multiplier. Table 1 lists the indirect care multiplier (ICM) derived from the staffing formula combining direct and indirect care. Derivation of the ICM in manually calculating estimated required hours is described in Appendix E.

Clinical Service	Indirect Care Multiplier
Emergency Dept (ED)	2.94
Gastroenterology (GI)	3.13
General Surgery (GENSURGCL)	2.56
Immunization/Allergy (I/A)	2.78
Internal Med Clinic (INTMEDCL)	2.86
Obstetrics/Gynecology (OBGCL)	3.03
Orthopedics (ORTHOCL)	2.94
Pediatrics (PEDCL)	2.63
Primary Care Clinic (PCC)	3.13
Military Medicine (MILMED)	3.13

Table 1. Indirect Care Multiplier by Clinical Service Across Facility Types in 1986-88

2. Calculation of Required Nursing Hours. The following describes the use of the non-automated AC/WMSN. An example is found in Appendix F.

a. Monthly Workload. Determine the actual or potential average number of monthly patient visits to the ambulatory work center type (taking into account constraints of clinician staff, space, demand or other utilization criteria).

b. Visit Type. Determine the type visit to the work center (with or without vital signs, escort, standby). Multiply the monthly workload by the points allowed for the average visit of this type on the ACPCI. Do not count phone visits since the indirect care component covers this activity.

c. Direct Care Additive. Determine the average number of procedures listed on the ACPCI performed monthly either from operational audit (interview of experienced work center personnel) or by a sample. Multiply the frequency of each of the average number of procedures per month by the point value, and sum the points for all procedures. The continuous care category is the generic place to enter resource intense activities (see Appendix A).

d. Direct Care Nursing Hours. Total the points for visits and procedures and multiply by 0.125 to determine the monthly direct care hours.

e. Total Required Nursing Hours. Calculate the total required nursing hours by multiplying the direct care hours by the indirect care multiplier (ICM) for the clinical area listed on Table 1. The derivation of the basic indirect care factor is described in Table 5. If the ICM is not listed for the clinical area in the analysis, estimate using the nearest similar nursing practice pattern. The total direct and indirect care nursing workload is the productive time required for personnel to be on duty. This figure must be divided by 145 hours per full-time equivalent (FTE) per month to incorporate the standard non-available time.

3. Other Requirements. If the division officer and senior enlisted have full time management positions, their positions should not be included in the patient care staff. Requirements identified outside of the patient care staff could be added if justified by efficiency review (clinical specialist, community health nurse, staff development (EMT training, etc.)).

4. Staffing Allocation and Work Flow Management. Using the calculated required FTEs, schedule the work flow in view of the available staffing. For example, the nurse can schedule appointments for patient education, counseling, or pre-op preparation during non-peak clinic hours. Peak volume work times can be monitored and given support by float personnel, volunteers, or part-time personnel. Peak volume clinics can be scheduled for different work centers at different times, so that cross trained personnel can provide assistance as required.

IC CATEGORY	ER	GI	I/A	INTMEDCL	OBGYNCL	ORTHOCL	PEDCL	MILMED PCC	GEN SURGCL
UNAVAILABLE ^a	26-34	20-28	20-27	31	26-29	28-34	31-34	32-33	29-30
CONFERENCE ^a	1- 2	1- 3	0- 1	2	0- 1	3	1	1- 2	1- 2
ADMINISTRATN ^a	6- 8	12-15	8- 9	12-19	8-14	5-10	12	8- 9	8-19
CLEANING ^a	1- 2	1- 3	0- 1	1- 2	1- 2	2	1	1- 2	2- 5
OFF UNIT ^b	5-12	5-10	4-10	7-13	5-7	11-16	6-11	8-13	10-11
COMMUNICATION ^b	9-13	8-14	12-13	11-15	12-13	9	11-13	11-13	9-10
MEDS/SUP/EQ ^b	4- 5	5- 8	5- 9	1	3- 4	2- 6	2- 4	1- 2	3- 4
CHARTING ^b	4- 5	3- 6	1- 9	4- 7	8- 9	4- 6	4- 5	8- 9	1- 4
TVL/TRANSPORT ^b	5- 8	4-12	2	3- 7	5- 7	4- 5	3- 4	4- 6	2- 7
DC AVERAGE	27	25	35	16	24	20	23	20	19
ICf+v	66	68	64	65	67	66	62	68	61
1 - ICf+v	34	32	36	35	33	34	38	32	39
ICF ^c	1.94	2.13	1.78	1.86	2.03	1.94	1.63	2.13	1.56

^a IC_{fixed} - unavailable (personal breaks/delay time is leveled at standard 16%), conference (1.5%), administration (10.8%), cleaning (1.7%) across all clinical areas all facility types.
^b IC_{variable} - off unit duties, staff communication, preparation of meds/supplies/equipment, charting, and travel/patient transport varies with clinical area.
^c ICF - The Indirect Care Factor is the base of indirect care multiplier which is equal to 1 + ICF.

Table 2. PERCENT INDIRECT CARE ACTIVITY 1986-88 BY WORK CENTER TYPE ACROSS STUDY SITES

CHAPTER 4

THE AMBULATORY CARE STAFFING SYSTEM

A. STAFFING METHODOLOGY

1. Allowed Non-productive Time. To determine total required FTEs, calculate total direct and indirect care hours for the month and divide by 145 hours (Department of Defense and Bureau of Medicine and Surgery standard available monthly manhours that account for nonavailable time from days off, vacation, sick time, and military training). Time for a meal break is added to the work shift above the required shift and is not accounted for in the formula. Time for hospital orientation has been accounted for in the non-available time standard for work center staff. Non-productive time was standardized at 40% (i.e., out of a 30 day period, an eight hour full-time equivalent (FTE) was available 145 hours/month.

2. Administration. The required FTEs must be adjusted by the administrative overhead: one charge nurse and one senior enlisted person daily for 8 hours each weekday non-holiday period. If the minimum number of personnel required to staff the work center (see paragraph 5) is not increased due to calculated total required nursing hours from the ACPCI, the charge nurse and senior enlisted are not added to the minimum. The minimum will cover the overhead requirement.

3. Continuing Education and Readiness (CONT ED/R). At this time, a CONT ED/R allowance is not added to the AC/WMSN. The required continuing education could be scheduled on the job during low volume workload, or planned before or after the scheduled work hours. In the research, significant differences were documented for military and civilian positions. See Appendix G. The ambulatory care professional and paraprofessional personnel had greater requirements for continuing education than allowed for inpatient nursing personnel in the JHMS (4-6.5 hours/month). Emergency and outpatient department military personnel had 9-12 hours of CONT ED/R per month. Emergency and outpatient department civilian personnel had 1.5-3.5 hours of CONT ED/R training per month. The surgical and medical invasive clinics, and those with technician rated paraprofessionals such as orthopedics and general surgery, have additional advanced training requirements similar to the training hours required for personnel in inpatient intensive care areas. Skills in the speciality areas are learned over time and must be factored in by specialty.

4. Skill Mix. The ratio of RN to paraprofessionals is recommended to be 50:50 in ED, and one RN per clinical specialty area in the outpatient clinics. These minimums can be increased as the ambulatory care nursing role definition and practice patterns evolve into expanded practice. The MTF may justify varying skill ratios due to experience, technology, and educational training program support for the level of practice in the ambulatory care specialty.

5. Minimum Staffing. The minimum staffing for an ambulatory care clinic specialty is one RN and one paraprofessional. Small medical treatment facilities still require this staffing due to the extra collateral duties. The minimum staffing for the emergency department is 6 RNs and 6 PARAS for shift rotation purposes.

B. DESCRIPTION OF THE DATA BASE

1. Weighted Average Acuity. To describe the weighted average acuity of the patient population of the work center, the nursing workload is categorized into a range of four acuity categories according to points derived from nursing care. See Table 3. Departments with patients in higher classes have patients requiring greater amounts of nursing care. This information can be analyzed over monthly or annual time periods to plan for future nursing manpower requirements.

Patient Class	Wt	Clinic A OPVs	Clinic B OPVs	Emergency Dept OPVs
I	1	80 (80)	75 (75)	60 (60)
II	2	15 (30)	14 (28)	30 (60)
III	3	5 (15)	10 (30)	7 (21)
IV	4	0 (0)	1 (4)	3 (12)
Total Visits (Wtd Visits)		100 (125)	100 (137)	100 (153)
Weighted Avg Acuity		1.25	1.37	1.53

Table 3. Weighted Average Acuity

2. Workload Index. To describe the relative workload in easily compared outpatient visits (OPVs), the Class I OPV is used as a base (see Table 3). The number of patients in other classes are multiplied by the Index Factor which is a number derived from the relative amount of nursing care given to patients. An example of this is described for three departments who each have 100 OPVs: their relative outpatient index (OPI) in terms of nursing resource intensity is 135, 163, and 185 nursing outpatient index (OPWI).

Patient Class	Index Multiplier	Clinic A OPVs (OPI)	Clinic B OPVs (OPI)	Emergency Dept OPVs (OPI)
I	1	80 (80)	75 (75)	60 (60)
II	2	15 (30)	14 (28)	30 (60)
III	5	5 (25)	10 (50)	7 (35)
IV	10	0 (0)	1 (10)	3 (30)
Total Visits (OPWI)		100 (135)	100 (163)	100 (185)

Table 4. Outpatient Workload Index

END NOTES

1. Joint Commission on Accreditation of Healthcare Organizations. (1991) Accreditation Manual for Hospitals, 1991. (p. 143). Chicago, IL: JCAHO.
2. AAANA Standards Committee. (1987) American Academy of Ambulatory Nursing Administration and Practice Standards (p. 17). Pitman, NJ: Jannetti, Inc.
3. AAANA Management and Clinical Practice Committee. (1991) AAANA President's Annual Report, American Academy of Ambulatory Nursing Administration Standards, 1990-91 (Appendix I). Pitman, NJ: AAANA.

Information on obtaining background research studies is given in Appendix H.

APPENDIX A

AMBULATORY CARE PT CLASSIFICATION

(1 point = 7.5 minutes nursing time)

DIRECT CARE NURSING ACTIVITIES		points	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
LOG IN / LOG OUT	1 Admission Procedure	(1.0)																				
	2 Chart Screening/Tine/CMI	(0.5)																				
	3 Clinic Visit (No VS)/ IA Visit	(1.0)																				
	4 Clinic Visit (VS/Escort)	(1.5)																				
	5 Clinic Visit (VS/Escort/Standby)	(2.0)																				
	6 ER Visit	(2.5)																				
ASSMT TEACH	7 Nursing Interview	# x (0.5)																				
	8 Physical/Psychosoc Assmt	# x (0.5)																				
	9 Teaching Session	# x (0.5)																				
IVS / MEDS	10 IV Start + Blood Sample (1:1)	# x (1.0)																				
	11 IV Start + Blood Sample (2:1)	# x (3.5)																				
	12 Medication/Cleanse/Soak/Ice	# x (0.5)																				
	13 Nebulizer	# x (1.5)																				
	14 Wound - Local Anesthesia	(1.0)																				
DX TESTS / MEASURES	15 Allergy Testing + Reading	(3.5)																				
	16 Arterial Blood Gas	# x (1.0)																				
	17 Audiogram	(1.5)																				
	18 Blood Sample/Culture (1:1)	# x (0.5)																				
	19 Blood Sample/Culture (2:1)	# x (3.0)																				
	20 Culture (Wound/Throat)	(0.5)																				
	21 EKG	(1.5)																				
	22 Infant Weight/Length	(0.5)																				
	23 IPG/OPG	(1.0)																				
	24 Lancet	(1.0)																				
	25 Pulmonary Function Test	(1.0)																				
	26 Tonometry + Color Vision Test	(0.5)																				
	27 UA Routine/Dip-Spin/Culture	# x (0.5)																				
	28 Visual Acuity	(0.5)																				
	29 Vital Signs/BP/Temp/FHTs	# x (0.5)																				
OTHER PROCEDURES	30 Ace Wrap/Arm Sling	# x (0.5)																				
	31 Cast - LE/UE	# x (3.0)																				
	32 Cast Remove	# x (1.0)																				
	33 Catheterization	(1.5)																				
	34 Crutches	(1.0)																				
	35 Dressing	# x (1.5)																				
	36 Irrigation-NG/wound/eye/ear	# x (1.5)																				
	37 NG Tube Insert	(1.5)																				
	38 Splint - LE/Torso	# x (2.0)																				
	39 Splint - UE/Neck	# x (1.0)																				
	40 Suture + Dressing	(5.5)																				
	41 Suture Remove	(1.0)																				
	42 CONTINUOUS CARE POINTS																					
	43 SUB-TOTAL POINTS																					
	44 PATIENT ACUITY CATEGORY																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Facility: _____ Unit: _____ Date: _____ Name: _____

PATIENT CATEGORY	NURSING CARE	POINT RANGE	NURSING TIME (MIN)	APPROX NSG TIME	NO. OF PATIENTS BY ACUITY CATEGORY
I	LIGHT CARE	1-3.9	1-29	15	
II	MODERATE CARE	4-7.9	30-59	30	
III	EXTENSIVE CARE	8-11.9	60-89	75	
IV	EXTENDED CARE	12+	90+	150	
					TOTAL POINTS _____
					TOTAL PATIENTS _____

AMBULATORY CARE PT CLASSIFICATION

(1 point = 7.5 minutes nursing time)

DIRECT CARE NURSING ACTIVITIES			points
LOG IN / LOG OUT	1	Admission Procedure	(1.0)
	2	Chart Screening/Tine/CMI	(0.5)
	3	Clinic Visit (No VS) / IA Visit	(1.0)
	4	Clinic Visit (VS/Escort)	(1.5)
	5	Clinic Visit (VS/Escort/Standby)	(2.0)
	6	ER Visit	(2.5)
ASMT TEACH	7	Nursing Interview	# x (0.5)
	8	Physical/Psychosoc Asmt	# x (0.5)
	9	Teaching Session	# x (0.5)
IVS / MEDS	10	IV Start + Blood Sample (1:1)	# x (1.0)
	11	IV Start + Blood Sample (2:1)	# x (3.5)
	12	Medication/Cleanse/Soak/Ice	# x (0.5)
	13	Nebulizer	# x (1.5)
	14	Wound - Local Anesthesia	(1.0)
DX TESTS / MEASURES	15	Allergy Testing + Reading	(3.5)
	16	Arterial Blood Gas	# x (1.0)
	17	Audiogram	(1.5)
	18	Blood Sample/Culture (1:1)	# x (0.5)
	19	Blood Sample/Culture (2:1)	# x (3.0)
	20	Culture (Wound/Throat)	(0.5)
	21	EKG	(1.5)
	22	Infant Weight/Length	(0.5)
	23	IPG/OPG	(1.0)
	24	Lancet	(1.0)
	25	Pulmonary Function Test	(1.0)
	26	Tonometry + Color Vision Test	(0.5)
	27	UA Routine/Dip-Spin/Culture	# x (0.5)
	28	Visual Acuity	(0.5)
	29	Vital Signs/BP/Temp/FHTs	# x (0.5)
OTHER PROCEDURES	30	Ace Wrap/Arm Sling	# x (0.5)
	31	Cast - LE/UE	# x (3.0)
	32	Cast Remove	# x (1.0)
	33	Catheterization	(1.5)
	34	Crutches	(1.0)
	35	Dressing	# x (1.5)
	36	Irrigation-NG/wound/eye/ear	# x (1.5)
	37	NG Tube Insert	(1.5)
	38	Splint - LE/Torso	# x (2.0)
	39	Splint - UE/Neck	# x (1.0)
	40	Suture + Dressing	(5.5)
	41	Suture Remove	(1.0)
	42	CONTINUOUS CARE POINTS	

Facility: _____ Unit: _____ Date: _____ Name: _____

TOTAL
POINTS _____
TOTAL
PATIENTS _____

APPENDIX B

AMBULATORY CARE WMSN OPERATIONAL DEFINITIONS

The operational definitions and point values of the critical indicators in the Ambulatory Care/Workload Management System for Nursing (AC/WMSN) are provided below, followed by directions to using the ACPCI.

Log In/Log Out

1. Admission procedure - 1.0 point is assigned to each admission to an in-house critical or non-critical care bed, or to another facility and:

a. **Includes** confirming patient eligibility, bed availability, completing paperwork and inventory of valuables, communicating with and assisting patient and family;

b. **Does not include** transport time outside of the unit (indirect care additive), ambulance transport to another facility (use ACTCODE 42, continuous care points), nor is it added to patients already on continuous care points.

2. Chart Screening/Time/CMI administration or reading PPD reading only - 0.5 point is assigned for each patient logged-in for Time test, reading, or record screening and:

a. **Includes** logging in patient, confirming eligibility, reviewing history, documenting immunizations, communicating with patient or family, administering or reading tuberculin preparation or antigen preparation (e.g., Cell Mediated Immunity (CMI) multi-stick test for anergic response determination), and instructing patient or family regarding follow-up schedule of care;

b. **Does not include** administration of PPD (use ACTCODE 4), or readings of positive TB tests with appropriate counseling (use ACTCODES 8 and 9) for physical assessment and teaching session, or logging in patients for appointments with physician (use ACTCODE 3, clinic visit (without VS)).

3. Clinic visit (no vital signs)/Immunization/Allergy Visit- 1.0 point is assigned to each patient logged in and out of clinics who do not have vital signs taken, and for each patient receiving injections in the Immunization/Allergy (I/A) clinic and:

a. **Includes** logging in patient/confirming eligibility, obtaining informed consent, reviewing and recording on immunization or allergy records, communicating with patient or family, instructing patient or family regarding waiting time and follow-up schedule of care; includes I/A clinic log in and administration of one more injections;

b. **Does not include** taking vital signs, measures, or provide escorts or standby; does not include IA tuberculin or CMI ("prick") administration chart screening only (use ACTCODE 2).

4. **Clinic visit (with vital signs/escort)** - 1.5 point is assigned to each patient logged-in and checked out in clinics who routinely take vital signs and:

a. **Includes** confirming eligibility and appointment, recording in log and chart, taking vital signs and a standing weight, communicating with patient or family, stamping lab requests and prescriptions, giving follow-up appointment instructions or directions to other departments;

b. **Does not include** interviewing (use ACTCODE 7), instructing (use ACTCODE 27) the patient, or performing a urine dipstick.

5. **Clinic visit (VS/Escort/Stand-by)** - 2.0 points is assigned to each patient logged in and checked out clinics who routinely take vital signs, escort patient to provider's office, and provide stand-by assistance during routine patient exams and:

a. **Includes** confirming eligibility and appointment, recording in log and chart, taking vital signs and standing weight, urine dipstick reading, communicating with patient or family, standing by for patient exam, stamping lab requests and prescriptions, giving follow-up appointment instruction or directions to other departments; includes all obstetric and gynecology routine clinic patients;

b. **Does not include** interviewing (use ACTCODE 7), health or prenatal teaching (use ACTCODE 9), or obtaining urinalysis (use ACTCODE 27).

6. **ER visit** - 2.5 points are assigned to each emergency room/department (ER) patient logged in, checked out or admitted, who is not on continuous care during the initial log in and:

a. **Includes** performing immediate triage and eligibility screening; assessing the initial complaint and vital signs; recording in log and chart; communicating with patient, family, and staff; giving follow-up schedule of care; changing

linen/paper on exam table or gurney; and assisting patient with personal hygiene, general comfort, escorting, or providing stand-by for an exam;

b. **Does not include** carrying out nursing interview (use ACTCODE 7), physical assessment (use ACTCODE 8), health teaching (use ACTCODE 9), or activities accounted for under continuous care category (use ACTCODE 42).

Assessment or Teaching

7. **Nursing interview** - 0.5 point is assigned for each documented professional nursing interaction with patient or family member for patient care planning and care coordination and:

a. **Includes** communicating with patient and family, documenting a problem-focused or general assessment of existing/potential health problems for the purpose of establishing or revising a documented plan of care/emergency triage/appropriate access to system;

b. **Does not include** carrying out physical or psychosocial assessment (use ACTCODE 8), teaching (use ACTCODE 9), allergy testing (use ACTCODE 15), or continuous care (use ACTCODE 42).

8. **Physical/psychosocial assessment** - 0.5 point is assigned for each professional or paraprofessional nursing documentation of each non-invasive assessment. May occur multiple times during the course of the patient visit and:

a. **Includes** but is not limited to the following physical and psychosocial assessments: integumentary (wound & skin), cardiopulmonary, abdominal, musculoskeletal, central or peripheral neurological state, trauma site, vaginal bleeding, cardiac monitor, mental/emotional state; (e.g., wound observation and neurological assessment are 2 x 0.5 or 1 point);

b. **Does not include** observations accounted for under continuous care points (use ACTCODE 42).

9. **Teaching session** - 0.5 point is assigned for patient teaching that is documented by professional or paraprofessional nursing staff. May occur multiple times during the course of a patient visit and:

a. **Includes** an informal or a planned interaction with patient or family member to explain, instruct, train and/or educate regarding health care services, procedures, tests, medications or potential/actual health care risks; also includes

determining the patient or family's level of knowledge and readiness for instruction. During a group teaching session of one hour or more, each patient in attendance is assigned 0.5 point;

b. **Does not include** lengthy individual patient sessions which can be accounted for in the continuous care category (use ACTCODE 42).

IVs/Medications

10. **IV start with or without blood samples (1:1)** - 1.0 point is assigned for each venipuncture site using a 1:1 staff:patient ratio to start a peripheral venipuncture for a cooperative patient or providing one staff member to assist a medical care provider. May occur multiple times during the course of the patient visit and:

a. **Includes** preparing supplies and equipment, instructing patient, starting IV or heparin lock, hanging first IV solution, obtaining samples as required, adjusting flow rate as required, occasional monitoring of flow rate, documenting, and cleaning up;

b. **Does not include** mixing IV solution with medication or changing IV bag (use ACTCODE 12) starting a central venous or arterial line (use ACTCODE 42, continuous care category).

11. **IV start with or without blood samples (2:1)** - 3.5 points

Are assigned to each 2:1 staff:patient ratio for a peripheral venipuncture or providing two staff members to assist medical care provider with venipuncture and:

a. **Includes** above activities in addition to providing emotional support and/or restraining as required for uncooperative patient or young pediatric patient;

b. **Does not include** central venous or arterial lines (use continuous care points).

12. **Medication/cleansing/soak/ice application** - 0.5 point is assigned for each separate medication administration or application; may occur multiple times during the course of a patient visit and:

a. **Includes** PO, IM, SQ & IV medications, solutions, or immunizations (if not accounted for in Immunization/Allergy Clinic visit), preparing supplies and equipment, hanging IV solutions with or without additions, administering SQ xylocaine prior to IV start, applying ice, moist heat, therapeutic soak, instructing patient, documenting, and cleaning up;

b. **Does not include** ointments applied during dressings, irrigations, extensive cleansing/debriding procedures (continuous care), the first IV solution hung unless it was mixed by nurse (included with IV start), nebulizer treatments (use ACTCODE 13), subcutaneous xylocaine administration for anesthetizing wounds (use ACTCODE 14), tuberculin or antigen preparations immunization/allergy injections (use ACTCODE 3), intrathecal, or IV blood product transfusion (use ACTCODE 42, continuous care points).

13. **Nebulizer treatment** - 1.5 points are assigned for each inhalation medication administration for patient-administered, supervised treatments. May occur multiple times during course of a patient visit and:

a. **Includes** preparing equipment and medication, instructing patient, initiating treatment, checking vital signs, documenting, and cleaning up.

14. **Wound - Local Anesthesia** - 1.0 point is assigned to the local subcutaneous anesthetic injection (assisting or performing) for wound anesthesia and:

a. **Includes** preparing supplies, assisting with or administering local anesthetic, checking site for anesthesia, documenting, and cleaning up;

b. **Does not include** time for the wound suture (use ACTCODE 40) a minor surgical procedure (use ACTCODE 42, continuous care), or xylocaine injection prior to IV start (use ACTCODE 12).

Measures & Diagnostic Tests:

15. **Allergy test/reading** - 3.5 points are assigned and:

a. **Includes** reviewing chart and history, preparing patient, gathering supplies, instructing patient, administering multiple allergens by topical, prick, or intradermal injection, observing the patient, assessing reactions, documenting, and cleaning up;

b. **Does not include** time required to care for patient with systemic reaction (use ACTCODE 42, continuous care).

16. **Arterial blood gas** - 1.0 point is assigned and:

a. **Includes** preparing supplies, assisting with or performing arterial puncture and site pressure, preparing sample, documenting, and cleaning up;

b. **Does not include** transport of specimen to lab, (indirect care component) or analysis of blood gas.

17. **Audiogram** - 1.5 points are assigned and:

a. **Includes** instructing patient, performing audiogram, and documentation.

18. **Blood samples/culture (1:1)**- 0.5 point is assigned to a 1:1 staff:patient ratio to obtain a peripheral venous blood specimen (assist or perform). May occur multiple times during the course of patient visit; multiply 0.5 point by number of venipunctures (not number of lab tests) and:

a. **Includes** preparing patient/gathering supplies assisting with or drawing blood, preparing specimens and lab requests, documenting, and cleaning up;

b. **Does not include** blood samples drawn during IV start (use ACTCODE 10/11) or arterial blood samples (use ACTCODE 15).

19. **Blood samples/culture (2:1)** - 3.0 points are assigned to a 2:1 staff:patient ratio to obtain a peripheral venous blood specimen (can be assisting or performing; multiply the number of venipunctures (separate sticks required) by 3 points and:

a. **Includes** above activities in addition to providing extra emotional support and restraining as required for an uncooperative or young pediatric patient.

20. **Cultures (wound/throat)** - 0.5 point per patient (not culture site) is assigned for obtaining culture specimens and:

a. **Includes** wound/throat/sputum/penile/rectal sites);

b. **Does not include** vaginal (accounted for in visit with standby (use ACTCODE 5).

21. **Electrocardiogram** - 1.0 point is assigned and:

a. **Includes** preparing and obtaining 12 lead ECG or automated ECG (CAPOC) with or without modem link, documenting, and cleaning up;

b. **Does not include** applying continuous bedside cardiac monitor, running strips, or interpretation of EKG (use ACTCODE 8) (or can be accounted for in continuous care points).

22. **Infant weight/length** - 0.5 point is assigned and:

a. **Includes** balancing scale, measuring weight/length, documenting, and cleaning up;

b. **Does not include** vital signs.

23. **IPG/OPG** - 1.0 point is assigned for each leg Impedance Phlebograph (2 points for both legs) or 1 point for Ocular Phlebograph and:

a. **Includes** (IPG) preparing the patient, exposing and elevating leg, applying electrode paste and electrode, applying cuff, attaching to machine, carrying out procedure, documenting, and cleaning up, for OPG, preparing the patient, applying ophthalmic anesthesia, applying eye cups, carrying out procedure, giving patient instructions, and cleaning up.

24. **Lancet** - 1.0 point is assigned and:

a. **Includes** preparing request slip, gathering supplies, obtaining blood sample using lancet and capillary tubes and/or PKU request, preparing specimen, documenting, and cleaning up.

25. **Pulmonary function test** - 0.5 point is assigned and:

a. **Includes** preparing equipment, instructing patient, administering PFT (3 loop) or spirometer and documenting;

b. **Does not include** an entire pulmonary function work-up (use ACTCODE 42).

26. **Tonometry and color vision test** - 0.5 point is assigned when both tests are performed and:

a. **Includes** the puff tonometry test for intraocular pressure and the color vision test;

b. **Does not include** visual acuity (use ACTCODE 28)

27. Urinalysis, routine + culture + dip/spin - 0.5 point is assigned to obtaining clean-catch urine specimen for analysis, reagent strip dip (+ spin), or culture and:

a. **Includes** instructing patient or family member, preparing specimen, lab request, documenting, cleaning up, dipping reagent strip with/without centrifuging;

b. **Does not include** lab specimen obtained by and accounted for in catheterization procedure (use ACTCODE 33).

28. Visual acuity - 0.5 point is assigned to vision test using Snellen chart or the Armed Forces Vision Tester and:

a. **Includes** instructing the patient, determining visual acuity, and documenting.

29. Vital signs (TPR & BP) Blood Pressure(BP)/Temperature Fetal Heart Tones (FHTs) - 0.5 point is assigned to each combined measurement of TPR and BP, or individually ordered temperature or blood pressure or FHT (since vital signs are taken concurrently, time would be approximately the same for combined or individual measures) and:

a. **Includes** preparing equipment, taking measure, documenting; multiply 0.5 point by three in tilt test (3 BPs).

Other Procedures

30. Ace wrap/arm sling - 0.5 point is assigned each to ace wrap or arm sling and:

a. **Includes** wrapping and supporting arm or knee with elastic bandage or placing arm in sling;

b. **Does not include** splint application (use ACTCODE 38/39).

31. Cast, Upper Extremity (UE)/Lower Extremity (LE) - 3.0 points are assigned for each UE/LE plaster or fiberglass cast or for reinforcement of each of these type casts and:

a. **Includes** preparing patient, gathering supplies, applying long or short cast with or without outrigger, thumb spica, extensions onto torso, walker, hinge, or boot, documenting, instructing patient or family, and cleaning up; also include applying custom cast splints;

b. **Does not include** cast removal (use ACTCODE 32), hip spica or body casts (use ACTCODE 42, continuous care points).

32. Cast, remove - 1.0 point is assigned to plaster cast removed by cast saw and:

a. Includes preparing patient, gathering equipment, removing cast, cleaning skin, observing, documenting and cleaning up;

b. Does not include removal of fiberglass cast (use ACTCODE 42, continuous care points).

33. Catheterization - 1.5 points are assigned to Foley or straight catheter procedure and:

a. Includes preparing patient, gathering supplies, instructing patient, catheterizing bladder, obtaining urine specimen, observing, documenting, preparing urine specimen and lab request, and cleaning up;

b. Does not include bladder irrigation (use ACTCODE 36).

34. Crutches - 1.0 point is assigned and:

a. Includes adjusting crutches to proper length, instructing patient on crutch-walking, observing and documenting.

35. Dressing/Unna Boot - 1.0 point is assigned to each dressing or Unna Boot and:

a. Includes preparing patient, gathering supplies, applying small or large, wet or dry, gauze/tubular/steri-strip, medicated gauze wound pack or ointment to dressing, instructing patient or family, documenting, and cleaning up;

b. Does not include medications for burns or multiple, extensive dressings (use ACTCODE 42, continuous care).

36. Irrigation per liter - 1.5 points are assigned to each liter used in irrigation of wound, stomach, ear, eye, or bladder and:

a. Includes preparing supplies and equipment; irrigating wound, stomach, ear, eye, or bladder; observing and documenting; and cleaning up;

b. Does not include nasogastric tube insertion (use ACTCODE 37 or may be accounted for under continuous care category).

37. Nasogastric (NG) tube insertion - 1.5 points are assigned and:

a. Includes preparing patient, gathering supplies and equipment, inserting NG tube, checking placement, instructing patient, observing, documenting, cleaning up;

b. Does not include irrigation (use ACTCODE 36) or instillation of medication (use ACTCODE 12).

38. Splint, upper extremity (UE)/neck - 1.0 point is assigned and:

a. Includes preparing patient; gathering supplies/equipment; applying cervical collar, clavicle strap, and ready made arm/finger/elbow splints; instructing patient; observing; documenting; and cleaning up;

b. Does not include cast splints (use ACT CODE 31) or arm sling (use ACTCODE 30).

39. Splint, Lower Extremity (LE)/torso orthotic - 2.0 points are assigned and:

a. Includes preparing patient; gathering supplies and equipment; applying knee cast splint, posterior leg splint, non-cast leg splint, knee or back orthotics, LE dressing immobilizer, or corset; instructing patient; observing; documenting; and cleaning up.

40. Suture - 5.5 points are assigned for assisting or carrying out procedure and:

a. Includes preparing patient, gathering supplies and equipment, cleansing wound, one staff member performing suture or assisting the medical provider, dressing wound, instructing patient or family, observing, documenting, and cleaning up;

b. Does not include anesthesia (use ACTCODE 14), closing surgical incisions, or suturing extensive wounds (use ACTCODE 42, continuous care).

41. Suture/staple/clip removal - 1.0 point is assigned for assisting or carrying out procedure and:

a. Includes preparing patient, gathering supplies and equipment removing suture/staples/clips, observing, documenting, instructing patient, and cleaning up;

b. Does not include applying steri-strips or dressing (ACTCODE 35).

Continuous Care

42. **Continuous Care** - points are assigned to ambulatory care nursing time which involves one or more staff to one patient, such as during procedures involving sedation, during periods of acute or urgent illness, or emergencies.

a. **Staff:Patient Ratios.** Points in continuous care depend upon the **required staff ratio** according to the department policy and the time required by the patient from the initial to final disposition. Examples of common staff:patient ratios include the following:

(1) 1:2 - one staff member to two patients in caring for patients **recovering from sedation and invasive procedures**;

(2) 1:1 - one staff member to one patient in caring for a patient who has **significant chest pain, trauma**, or who is undergoing an **invasive procedure**;

(3) 2:1 - two staff members to one patient in caring for a patient who is undergoing a **minor surgical procedure** (one to circulate and one to scrub), or **ambulance transport** (one driver, one attendant).

(4) 4:1 - four staff members to one patient in providing **life support** (cardiac, pulmonary, medication and IVs, charting and coordinating).

b. **Intermittent One on One.** If the patient required varying numbers of staff in constant attendance during the course of the visit, start to finish times for each level are added. For example, when a patient has a colonoscopy the start-to-finish time for the procedure (1:1) are added to the start-to-finish time for recovery room which is (1:2). Continuous care points are calculated by multiplying the period of time by the number of staff required in that period of time and dividing by 7.5 minutes. If the continuous care staff ratio and time are known, then no other documentation of nursing activities is required unless personnel in addition to those accounted for in continuous care points provided care for the patient.

c. **Additional Points.** Additional activities may be added to the continuous care points by selecting activities from the 41 listed above. For example, a patient on cardiac protocol requires one on one (1:1) continuous care by a paraprofessional (which includes the ER/ED visit, documentation, transporting, starting IVs, oxygen, monitoring, taking vital signs and blood specimens). However, ABGs, IV medication, and professional nursing assessments can be added to the continuous care points (if documented by RN).

d. Use of ACTCODE 42 as a Generic Activity. Times for procedures not listed in 1-41 may also be documented in the continuous care category. If routine procedures are not accounted for in ACT CODES 1-41, and the procedure occurs frequently and takes over 3.5 minutes of nursing staff time, please forward this information to the Workload Management System for Nursing Project Officer for potential refinement of the patient classification instrument.

APPENDIX C

DIRECTIONS TO ACPCI PATIENT CLASSIFICATION

The use of the AC/WMSN in manual data collection would be labor intensive, and is not recommended unless using in a sample patient population. This representative patient sample would provide data that could assist managers in efficiency review for staffing.

1. Classify patients according to documented nursing activities from health records or logs; do not add points for procedures that are not signed off by nursing service or Hospital Corps personnel which may have been carried out by medical care providers.
2. Enter points (multiplied by the number of times the activity was carried out) in the appropriate box of ACT CODES 1-41.
3. Enter points in continuous care category (ACT CODE 42) obtained from multiplying the total time in minutes of constant attendance by the number of staff and dividing by 7.5 minutes.
4. Sum the points for continuous care and ACT CODES 1-41 as applicable and round to the nearest 0.5 point. Determine acuity category of patient according to points (Table 1).

Patient Class	Nursing Care	Point Range	Nursing Time (min)	Approx. Nsg Time
I	Light	1 - 3.9	1 - 29	15
II	Moderate	4 - 7.9	30 - 59	30
III	Extensive	8 - 11.9	60 - 89	75
IV	Extended	12+	90+	150

Table 5. Ambulatory Care Patient Acuity Categories

5. Enter the total points and number of patients by acuity category at the bottom of the sheet.
6. Multiply the total points for the day by .125 hours to sum the required daily direct care nursing hours. This figure is multiplied by the indirect care multiplier to calculate total required daily nursing hours.

APPENDIX D

INTER-RATER RELIABILITY

A. SPECIAL INSTRUCTION. The evaluation of reliability of the ACPCI instrument is evaluated by having two individuals classify the same patients independently on the ACPCI. Unless the ACPCI is being used for classifying all patients for the shift, the IRR does not apply.

1. IRR testing should be conducted by an independent, expert patient classifier appointed by nursing administration.

2. IRR testing is to be done by all nursing units or divisions involved in patient classification.

3. Results of IRR testing should be tabulated and shared with the general nursing staff.

4. Testing should occur on different days of the week and always during the shift on which classification is conducted.

5. A minimum of 85% agreement by category should be maintained among classifiers.

6. If the percentage of agreement by category is below 85%, efforts should be made to increase agreement by discussing the definitions and application of the ACPCI. Revert to monthly testing if the IRR score is below 85%.

B. IRR TESTING PROCEDURE

1. Arrive unannounced on the nursing division, close to, but after the time classification is completed.

2. Randomly select a minimum of 25% of the patients' charts, or all of the records if less than ten.

3. Using the ACPCI, classify the selected patients based on documented nursing activities charted in the patient's medical record.

4. Compare the classifications done by the division charge or staff nurse; discuss differences.

5. Fill out the AC/WMSN IRR Testing Form (enclosed). Fill in the nursing unit (ED/Clinic), date, and census (for the shift). The signature of the person conducting the test is necessary for accountability. Complete the form:

a. Total the patients in the sample and census rows and compute the percent selected (should be 25% or minimum of 10).

b. Enter the patient's log number or last four of their SSN for patients in sample in column "PT ID."

c. Enter the nursing division's original patient acuity category under the column "Acuity Category ORIG."

d. Enter the IRR Rater's patient acuity category under the column "Acuity Category IRR."

e. Enter an "x" for each patient in which the original and the IRR rater agreed under the column "Acuity Category Agree."

f. Compute the percent agreement by category by dividing the number of patients in the sample into the total number agreed classifications.

g. Select one or two factor groups (Log in/Log out, Assessment/Teaching, IVs/Meds, Diagnostic tests/Measures, Other Procedures, Continuous care). Evaluate agreement within each factor by comparing each critical indicator and points under the factor between the nursing division rater and the IRR rater. If both raters did not select a critical indicator, that is considered a match. Compare the number of critical indicators which match by the maximum possible. A perfect match of critical indicators is a Factor agreement; less than perfect match is a factor disagreement. Total the number of patients with factor agreement and divide by the number of patients in the sample. Average the two agreement by factor percentages if two were selected for review.

h. Document and discuss differences between the nursing division head and the IRR rater.

AC/WMSN INTER-RATER RELIABILITY TEST FORM

MTF NH Anywhere Unit Military Med Clinic DATE 6/12/91Sample = 35 35 % selected IRR Rater LT @ Nurse
Census 100

Pt ID (Log#/SSN)	Acuity Category (x)			Factor: N/MEDS	Factor: DX TEST/MEDS
	ORIG	IRR	Agree	#Crit Ind Agree per tot (5)	#Crit Ind Agree per tot (15)
1 1210	1	1	x	5/5	15/15
2 1212	1	1	x	(4/5)	15/15
3 1214	1	1	x	5/5	15/15
4 1216	1	1	x	5/5	15/15
5 1219	2	1	()	(2/5)	(13/15)
6 1221	1	1	x	5/5	15/15
7 1225	2	2	x		
8 1231	2	2	x		
9 1236	2	2	x		(2/15)
10 1237	3	3	x		5/15
11 1241	1	1	x		
12 1242	1	1	x		
13 1244	1	1	x		
14 1246	1	1	x		
15 1251	1	1	x		
16 1252	2	2	x		
17 1254	2	2	x		
18 1261	2	2	x		
19 1264	2	1	()	(1/5)	(4/15)
20 1265	1	1	x	5/5	15/15
21 1269	1	1	x		
22 1268	1	1	x		
23 1270	1	1	x		
24 1273	1	1	x		
25 1274	1	1	x		
26 1281	1	1	x		
27 1283	1	1	x		
29 1291	1	1	x		
30 1292	1	1	x		
31 1293	1	1	x		(13/15)
32 1294	1	1	x		(14/15)
33 1296	1	1	x		15/15
34 1297	1	2	()	(2/5)	
35 1299	1	1	x	5/5	
36					
37					
38					
39					
40					

Agreed Pt Category = .32# Pts in Sample 3591 % AGREEMENT BY CATEGORY# tot agreed Factor = .31# Pts in Sample 3587 % AVG AGREEMENT BY FACTOR

AC/WMSN INTER-RATER RELIABILITY TEST FORM

MTF _____ Unit _____ DATE _____

Sample = _____ % selected IRR Rater _____
Census

Pt ID Log#/SSN	Acuity Category (x)			Factor: #CritInd Agree per tot	Factor: #Crit Ind Agree per tot
	ORIG	IRR	Agree		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
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16					
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36					
37					
38					
39					
40					

Agreed Pt Category = _____ #tot agreed Factor= _____

Pts in Sample # Pts in Sample

_____ % AGREEMENT BY CATEGORY _____ % AVG AGREEMENT BY FACTOR

APPENDIX E

DERIVATION OF THE INDIRECT CARE MULTIPLIER

TOT NSG CARE HOURS = DIRECT CARE HRS + INDIRECT CARE COMPONENT

Indirect Care Component = DC x $\frac{\text{Fixed} + \text{Variable IC}}{1 - \text{Fixed} + \text{Variable IC}}$

or

DC x $\frac{\text{IC}}{1 - \text{IC}}$

let Indirect Care Factor (ICF) = $\frac{\text{IC}}{1 - \text{IC}}$

then

TOT NSG CARE HOURS = DC + (DC X ICF) = DC (1+ICF)

let Indirect Care Multiplier (ICM) = 1 + ICF

then

TOT NSG CARE HOURS = DC x ICM

APPENDIX F

EXAMPLE OF USE OF AC/WMSN

An emergency department (ED) averages 3000 visits per month in a 100 bed hospital, and is open 7 days a week, 24 hours a day. The hospital has an acute care clinic and an orthopedic clinic open 0800-1630 Monday through Friday, and an orthopedic technician on call after normal working hours. Their para-professional staff assist in the ambulance transports for the surrounding military installation. The physician staff is permanently assigned on the day and evening shift, with duty physicians covering during nights, weekends, and holidays.

The charge nurse (CH NS) and senior paraprofessional (PARA) is responsible for ED nursing personnel management and staff training. The charge nurse supervises and assists in patient nursing care, and the senior paraprofessional assists in patient care and coordinates supplies for the ED and the ambulance. The RN staffing usually is two per shift, with paraprofessional coverage usually assigned as four on days and evenings, and two on nights, with one paraprofessional on call, totalling 9 RNs and 14 PARAs.

The ED CH NS can use the AC/WMSN to estimate required staff RN and PARA hours as follows (also see ACPCI sample):

1. ACPCI estimates or averages are identified by factor:

a. LOGIN/LOGOUT - avg 60 admissions/mo (ACTCODE 1) and 3000 visits/mo (ACTCODE 6);

b. ASSESSMENT/TEACHING - ea patient receives at least one nursing assessment (ACTCODE 8) and discharge teaching (ACTCODE 9); an estimated 2 patients/day or 60/month require a nursing interview (patient care plan/coordination with outpatient department with follow-up, ACTCODE 7); an estimated 10 patients/ day or 300/month require additional nursing assessments (cardiac, wounds, lungs, sutures, etc., ACTCODE 8).

c. IVS/MEDS - estimated 3 patients/day or 90/month require IVs (ACTCODE 10); only 2 IVs per month are required for uncooperative/young pediatric patients (ACTCODE 11); estimated 10 patients/day or 300 patients/ month require MEDs (ACTCODE 12); estimated 1 patient/day or 30 per month require nebulizers (ACTCODE 13); estimated 2/day or 60 per month require local anesthetic for suturing;

d. DIAGNOSTIC TESTS/MEASURES - estimated average 5 ABGs/ month (ACTCODE 16), 40/day or 1200/month require blood samples

(ACTCODE 18), 2/month are uncooperative or young pediatric patients requiring blood samples (ACTCODE 19), 3/day or 90/month require cultures, 2/day or 60/month require ECGs (ACTCODE 21), 2 require infant scale weight (ACTCODE 22), 3/day or 90/month require urine samples (ACTCODE 27), 10 patients/day or 300 require extra vital signs (ACTCODE 29).

e. OTHER PROCEDURES - 2 patients/day or 60/month require ace wrap/slings (ACTCODE 30), 5 patients/month require catheterization, 30 per month require crutches (ACTCODE 34), 100/month require dressings (ACTCODE 35), 50/month require irrigations (ACTCODE 36), 5/month require NGs (ACTCODE 37), 3/month require lower extremity splints (ACTCODE 38), 20/month require upper extremity/neck splints (ACTCODE 39), 15/month require suture assists (or military paraprofessional sutures active duty patient, ACTCODE 40), 60/month require suture removal (ACTCODE 41).

f. CONTINUOUS CARE - ambulance transports average 3/day with average round trip of 30 minutes, or $3 \times 30 \times 30 \text{ days} = 2700 \text{ min}$ or 360 points/month in transports; an average of 2/day or 60/month require one on one care not accounted for in care estimated above, with average ED stays of 3 hours ($60 \times 3 \times .60 \text{ min} = 10,800 \text{ min}$ (at 7.5 min/point) or 1,440 points; the ED averages one cardiopulmonary arrest/month with 4 responders $\times$ 2 hours ($4 \times 2 \times 60 \text{ min} = 540 \text{ min}$ or 72 points. Total = $360 + 1,440 + 72 = 1,872$ points continuous care.

2. The above 1,788.4 direct care hours/month are multiplied by 2.94 (indirect care multiplier) to equal 5,258 total nursing care hours required per month.

3. The 5,258 required hours are divided by 145 hours/full time equivalent to equal 36 FTEs that are the estimated required staff for patient care and for scheduling standard non-available time for leave, days off, and training.

4. The charge nurse and leading petty officer are normally full-time management positions that are in addition to the required 36 FTEs for patient care.

5. The skill mix for the ED is recommended to be 50% RN and 50% PARA. The estimated required number of staff RNs is 18 and staff PARAs is 18. This incorporates ambulance transports, training, logistics (supply) support, patient follow up and teaching.

6. If the actual staff assigned is 9 RNs and 14 PARAs, and the average required staff estimated using the AC/WMSN is 18 and 18, then patient acuity has increased the staffing requirements. If the staff is not increased to within 75% compliance of the guide, and justification is not documented, then compliance with nursing services staff standards may be questioned by JCAHO. This example reveals a shortage of nine RNs and four Paras.

7. Use of the AC/WMSN Data. Given this evidence of a shortage of assigned staff, further information must be gathered to determine how the ED handled this shortage. There are efficiencies, support mechanisms, and daily staffing changes that could have affected the actual staffing hours available for care. For instance, hours given by "float" nurses or service contract assistance should be documented; leave and training could have been cut or scheduled after working hours; or extra duty or overtime should be documented; patient care could be given by the charge nurse and senior enlisted paraprofessional; the MTF could have established support systems for training, logistics, and transport of patients, specimens, and records to assist in decreasing the standard indirect care workload of the ED staff. This additional data must be available for review for compliance with Joint Commission inspections, and for planning manpower changes.

a. Manpower Application. Given that the actual required hours was greater than assigned FTEs, then the comparison of required hours per AC/WMSN can be the basis of reallocation of assigned personnel or justification of additional manpower (increase contract assistance, request additional positions). During this process, productivity of assigned staff should be monitored by measuring required hours per AC/WMSN divided by actual hours of assigned FTEs using a sampling process. Quality assurance monitoring of patient care, staff training, and staff and patient satisfaction will help identify problems related to staffing numbers/skill mix that will assist in justification of changes in workload or staffing.

b. Re-evaluation. Re-evaluation of staffing requirements is necessary if workload is expected to decrease due to changes (decrease) in physician coverage; routing of patients to an expanded work hour primary care clinic in house; or increased community support by a newly opening nearby primary care or urgent care facility that is open in the evening.

AMBULATORY CARE PT CLASSIFICATION

(1 point = 7.5 minutes nursing time)

DIRECTCARE NURSING ACTIVITIES			points	AVG MONTHLY NUMBER x Points =	MONTHLY POINTS
LOG IN / LOG OUT	1	Admission Procedure	(1.0)	60 x 1 =	60
	2	Chart Screening/Tine/CMI	(0.5)		
	3	Clinic Visit (No VS) /IA	(1.0)		
	4	Clinic Visit (VS/Escort)	(1.5)		
	5	Clinic Visit (VS/Escort/Standby)	(2.0)		
	6	ER Visit	(2.5)	3000 x 2.5 =	7500
ASSMT TEACH	7	Nursing Interview	# x (0.5)	60 x 0.5 =	30
	8	Physical/Psychosoc Assmt	# x (0.5)	3300 x 0.5 =	1650
	9	Teaching Session	# x (0.5)	3000 x 0.5 =	1500
VS / MEDS	10	IV Start + Blood Sample (1:1)	# x (1.0)	90 x 1.0 =	90
	11	IV Start + Blood Sample (2:1)	# x (3.5)	2 x 3.5 =	7
	12	Medication/Cleanse/Soak/Ice	# x (0.5)	300 x 0.5 =	150
	13	Nebulizer	# x (1.5)	30 x 1.5 =	4.5
	14	Wound - Local Anesthesia	(1.0)	60 x 1.0 =	60
DX TESTS / MEASURES	15	Allergy Testing + Reading	(3.5)		
	16	Arterial Blood Gas	# x (1.0)	5 x 1.0 =	5
	17	Audiogram	(1.5)		
	18	Blood Sample/Culture (1:1)	# x (0.5)	1200 x 0.5 =	600
	19	Blood Sample/Culture (2:1)	# x (3.0)	2 x 3.0 =	6
	20	Culture (Wound/Throat)	(0.5)	90 x 0.5 =	45
	21	EKG	(1.5)	60 x 1.5 =	90
	22	Infant Weight/Length	(0.5)	2 x 0.5 =	1
	23	IPG/OPG	(1.0)		
	24	Lancet	(1.0)		
	25	Pulmonary Function Test	(1.0)		
	26	Tonometry + Color Vision Test	(0.5)		
	27	UA Routine/Dip-Spin/Culture	# x (0.5)	90 x 0.5 =	45
	28	Visual Acuity	(0.5)		
	29	Vital Signs/BP/Temp/FHTs	# x (0.5)	300 x 0.5 =	30
OTHER PROCEDURES	30	Ace Wrap/Arm Sling	# x (0.5)		
	31	Cast - LE/UE	# x (3.0)		
	32	Cast Remove	# x (1.0)		
	33	Catheterization	(1.5)	5 x 1.5 =	7.5
	34	Crutches	(1.0)	30 x 1.0 =	30
	35	Dressing	# x (1.5)	100 x 1.5 =	150
	36	Irrigation-NG/wound/eye/ear	# x (1.5)	50 x 1.5 =	7.5
	37	NG Tube Insert	(1.5)	5 x 1.5 =	7.5
	38	Splint - LE/Torso	# x (2.0)	3 x 2.0 =	6
	39	Splint - UE/Neck	# x (1.0)	20 x 1.0 =	20
	40	Suture + Dressing	(5.5)	15 x 5.5 =	82.5
	41	Suture Remove	(1.0)	60 x 1.0 =	60
	42	CONTINUOUS CARE POINTS			1,872
		TOTAL MONTHLY POINTS			14,307

Points x 0.125 HRS

Estimated AVG 1,788 HRS Direct Care/mo.

Facility: NH ANYWHERE Unit: E.D.

Date: AVG MONTHLY Name: LT IMA NURSE

ESTIMATE
(MAY '91)

TOTAL
POINTS 14,307
TOTAL
PATIENTS 3000/mo

APPENDIX G

CONTINUING EDUCATION AND READINESS TRAINING (In Average Annual Hours)

	REGISTERED NURSE MILITARY/CIVILIAN	PARAPROFESSIONAL MILITARY/CIVILIAN
EMERGENCY	104/40	120/18
OUTPATIENT CLINICS	104/14	120/14

Emergency Department (Course/Approximate Hrs/Yr):

Military RN: BCLS(4), ACLS(12), ARREST PROTOCOL(4), MMART(64),
EMERGENCY CART(3), CPR DRILLS(3), IV DRIPS(8), BLOOD ADMIN(2),
EKG(4);

Civilian RNS all except MMART.

Military PARA: BCLS, ARREST PROTOCOL, MMART, EMERG CART, CPR
DRILLS, EMT(16), SUTURE(8), EKG, EVOC(14);

Civilian PARA: NO MMART/EMT/SUTURE/EVOC.

Outpatient Clinic (Course):

Military RN: Same as emergency if covering ER on duty;

Civilian RN: BCLS, ARREST PROTOCOL, EMERG CART, CPR DRILLS.

Military PARA: Same as emergency, if covering ER/Ambulance duty;

Civilian PARA: BCLS, ARREST PROTOCOL, EMERG CART, CPR DRILLS.

APPENDIX H

METHODS TO OBTAIN STUDIES

WMSN studies may be obtained from the following sources:

Department of Defense libraries may obtain government studies with an AD# from:

Defense Technical Information Center (DTIC)
ATTN: DTIC-DDR
Cameron Station
Alexandria, VA 22304-6145
AV 284-7633/34/35
C (703) 274-7633/34/35

DoD libraries may obtain studies with HRP# or PB# from:

U. S. Department of Commerce
National Technical Information Services (NTIS)
5285 Port Royal Road
Springfield, VA 22161
C (703) 487-4650/4700, 800-336-4700

Non-DoD users may obtain studies with AD, HRP, or PB# at NTIS. When ordering, indicate whether report is desired in microfiche, paper copy, magnetic tape, microfilm; Current prices of reports are obtained from the agency.

AC/WMSN technical reports to date include:

Warren, C. S., et. al. (1987) Delineating the Ambulatory Care Nursing Activities in the Navy Medical Department; Phase I of the Workload Management System for Nursing Ambulatory Care Project (NSHS #S-2-87) NTIS ADA-186-501.

Warren, C. S., et. al. (1987) Operational Definitions of Ambulatory Care Nursing Activities; Phase II of the Workload Management System for Nursing Ambulatory Care Project (NSHS #S-3-87) NTIS ADA-187-339.