Alaska Community Health Aide/Practitioner
Clinical Practice Description

Prepared for CHAP Directors,
Tribal Health Directors/Organizations
& CHAP Training Centers

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ALASKA COMMUNITY HEALTH AIDE/PRACTITIONER CLINICAL PRACTICE DESCRIPTION

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HIGHLIGHTS OF METHODS, FINDINGS AND RECOMMENDATIONS

Background

Village-based Community Health Aide/Practitioners (CHA/Ps) provide primary medical care in rural Alaskan communities. A statewide curriculum guides CHA training.

Purpose

Although the Community Health Aide Program (CHAP) has trained CHA/Ps for over 25 years, a comprehensive evaluation of CHA/P practice has never been undertaken. Therefore, this project's purpose was to evaluate statewide CHA/P clinical practice by collecting and analyzing data reflecting CHA/P practice across Alaska. This review collected data which are available now to guide future curriculum development.

Methods

We examined de-identified patient visit data from 15 tribal health organizations and 150 village clinics for 2005 and 2006. Data came from Daily Medical Logs (DMLs), information submitted to the Indian Health Service National Patient Information Reporting System (NPIRS), or from both sources. The criteria for visit data included date of visit, age, sex, diagnosis, and care provided in a village clinic by a CHA/P. From NPIRS, we used all of the visit data that fit the criteria. For the DML data, a random sample of 25% of DML entries was selected; all visits from this sample that fit the criteria were used. We analyzed the visit data by looking at CHA/P assessments by region, age group, and procedures done; and compared the results to the statewide curriculum.

Results

NPIRS data: Of 272,241 patient visits in FY 2005 and FY 2006, 51% were female. Forty-five percent of patients were less than 20 years old. Twenty-eight percent of patient visits were for medication activity without another assessment.

Of the visits with a clinical assessment, 41% were for Respiratory/Ear, Nose, and Throat (ENT) problems; 9% for circulatory problems; 6% for skin problems; 5% for preventive care; 5% for injuries; and 5% for musculoskeletal problems that were not injuries. Of respiratory problems, 25% were pharyngitis; 20% were colds; 18% were otitis media; and 8% were chronic lung disease. Most circulatory problems were hypertension visits. Of the skin problems, over half of the visits were for an abscess, cellulitis, and/or Methicillin Resistant Staphylococcus Aureus (MRSA).

DML data: Age and sex proportions were similar to the NPIRS data. Of the 16,071 health problems identified, 31% were for Respiratory/ENT problems; 6% for circulatory problems; 6% for skin problems; 12% for preventive care; 9% for injuries; 6 % for digestive problems; and 6% for musculoskeletal problems that were not due to injuries. The most frequent respiratory problems were pharyngitis and upper respiratory infections which accounted for 42% of all respiratory visits. Half of the circulatory visits were for hypertension. Other minor differences between the data sets were noted.

The most common life-threatening event visits were for severe respiratory distress (mean of 17 per village per year); followed by ischemic chest pain (10 episodes per village per year); pregnancy emergencies; dehydration; and stroke symptoms (each two (2) episodes per village per year). Cancer and diabetes each accounted for <1% of clinic visits.

Conclusions

The first statewide evaluation of CHAP practice and comparison with the curriculum provides the following conclusions and recommendations:

- CHA/Ps provide an enormous amount of health care to rural residents in Alaska.
- CHA/Ps need high quality relevant training to continue to provide high quality health care.
- In general, CHAs are being taught what they need to know in basic training.
- Training decisions must take into account the difficulty of the material and the risk of the skill not being learned, as well as the frequency of the health problem being seen in clinic.
- Emergency care:
    - Ensure that CHA/Ps are very comfortable with treating respiratory distress, especially in infants and elders;
    - Emphasize early recognition of heart attacks as well as knowledge of the plan of care;
    - Expand emergency childbirth instruction in Session I to include bleeding in pregnancy and preterm labor.
- EKGs: teach in basic training; refresh in field training.
- Circulatory problems: Introduce in Session I, with emphasis on hypertension prevention and treatment.
- Medication activity: This is a large part of the CHA/P's job. Ensure that it is discussed adequately in either basic training or field training.
- In the future: Ensure that CHAP training centers have access to robust data gathering tools or data sources that can be shared across the state to further advise curriculum revision and development.

ALASKA COMMUNITY HEALTH AIDE/PRACTITIONER CLINICAL PRACTICE DESCRIPTION

EXECUTIVE SUMMARY

INTRODUCTION

Background

Village-based Community Health Aides and Community Health Practitioners (CHA/Ps) are the backbone of rural health care delivery in Alaska. Health statistics published by the Alaska Native Tribal Health Consortium Division of Technology, Data Management and Analytics in 2005 showed that CHA/Ps provided care for over 250,000 patient encounters per year. Their scope of practice is defined by the Community Health Aide Program Certification Board (CHAPCB) *Standards and Procedures* and guided by regional physicians; along with the *Alaska Community Health Aide/ Practitioner Manual*, 4th edition, published in 2006 and known as the "CHAM." This scope of practice includes emergency, acute, chronic, and preventive health care for community members of all ages.

CHA/P clinical practice has changed radically since the 1950s, when the program was first established. Community Health Aides and Practitioners state that they are caring for more patients with diabetes, cardiovascular disease, cancer, and trauma. In the past, CHA/Ps identified having the skills and training to prepare them for their daily work as being an important part of job satisfaction.

CHA/P training is guided by a statewide curriculum which includes both classroom and clinical work. Curriculum revisions took place in 1993, 1997, 2005, and are ongoing today. In past years, Daily Medical Logs (DML) from village clinics were collected monthly for statistical review. Changes implemented under The Indian Self-Determination and Education Assistance Act of 1975 (PL 93-638) altered the way health information is shared around Alaska. As a result, there is no longer any formalized way to consistently share tribal CHA/P clinical visit data from around the state.

Purpose

A comprehensive evaluation of CHA/P clinical practice across the state has never been conducted. Therefore, this project's purpose was to collect and interpret data that were representative of the CHA/P practice and experience across the state; to identify patterns and acuity of village health problems for which CHA/Ps provide medical care; and to provide that information to the Association

of Alaska Community Health Aide Program Directors (AACHAPD) known as CHAP Directors and their Academic Review Committee (ARC) as a resource for future curriculum revisions. This data represents the work of CHA/Ps in their village clinics. It does not include work done by physicians, mid-level providers, or other caregivers in village clinics.

Approvals and Permissions

CHAP Directors approved the project in principle in December 2005. The Alaska Tribal Health Directors approved the project on February 1, 2006. In April 2006, the Alaska Area Institutional Review Board reviewed this project and determined that this study was not research, but program evaluation.

The Community Health Aide Program (CHAP) received permission from individual Tribal Health Directors for the following organizations which are a part of the Alaska Tribal Health System (ATHS):

- Aleutian Pribilof Islands Association, Inc. (APIA)
- Bristol Bay Area Health Corporation (BBAHC)
- Chugachmiut
- Copper River Native Association (CRNA)
- Council of Athabascan Tribal Governments (CATG)
- Eastern Aleutian Tribes (EAT)
- Karluk Tribal Council
- Kodiak Area Native Association (KANA)
- Maniilaq Association
- Mt. Sanford Tribal Consortium (MSTC)
- Native Village of Tyonek
- Ninilchik Traditional Council
- North Slope Borough Department of Health & Social Services (NSB-DHSS)
- Norton Sound Health Corporation (NSHC)
- Southcentral Foundation (SCF)
- SouthEast Alaska Regional Health Consortium (SEARHC)
- Tanana Chiefs Conference (TCC)
- Yukon Kuskokwim Health Corporation (YKHC)

These organizations generously provided funding and collaborated on this project:

- ❖ Alaska Native Tribal Health Consortium (ANTHC), Division of Community Health Services:
  CHAP Training Center;

CHAP Statewide Services;
Alaska Native Epidemiology Center;

- ANTHC Department of Data Management and Analytics;
- University of Alaska Fairbanks, College of Rural and Community Development;
- State of Alaska Community Health Aide Training and Supervision Grants.

METHODS

De-identified patient visit data was examined from 15 Tribal Health Organizations for 2005 and 2006. While some Tribal Health Organizations collected data electronically, others collected data on Daily Medical Logs (DMLs), and some used both systems. Data for this review was obtained from Daily Medical Logs (DMLs), the National Patient Information Reporting System (NPIRS), or from both sources. Minimum visit data criteria included date of visit, age, sex, and diagnosis. All visits fitting criteria in NPIRS data were used. For the DML data, a random sample of 25% of DML entries was selected; all visits from this sample that fit the criteria were used. Analysis with SAS software (SAS Institute, Inc, Cary, NC) looked at CHA/P assessments by region, age group, sex and procedures done.

RESULTS

NPIRS Data

NPIRS data were received from the following Tribal Health Organizations:

- BBAHC
- Chugachmiut
- CATG
- EAT
- Maniilaq Association
- NSB–DHSS
- NSHC
- SCF
- SEARHC
- TCC

A total of 272,242 visits from a total of 150 villages were recorded in NPIRS data for FY 2005-FY 2006.

Of these encounters, 197,190 had recorded assessments. Most (>95%) of the 75,052 visits without an assessment were pharmacy activities such as assisting patients with their medication refills or giving patients previously prescribed medications.

Assessments reviewed in the NPIRS data were the first assessments listed with the exception of emergency diagnoses. Table I shows the distribution by tribal organization.

Table I. Distribution of NPIRS CHA/P Encounters with Assessments by Tribal Health Organization in Alaska, FY 2005-FY 2006

THO Organization	Encounters with Assessments *n* =197,190	(%)
BBAHC	28,289	(14.4)
CATG	1,207	(0.6)
Chugachmiut	2,562	(1.3)
EAT	851	(0.4)
Maniilaq	3,316	(1.7)
NSB-DHSS	4,535	(2.3)
NSHC	6,295	(3.2)
SCF	1,783	(0.9)
SEARHC	2,761	(1.4)
TCC	4,336	(2.2)
YKHC	141,255	(71.6)

DML Data

DMLs were received from:

- APIA
- Chugachmiut*
- CRNA
- EAT*
- Karluk Tribal Council
- KANA
- Maniilaq Association*
- NSB-DHSS*
- SCF*
- SEARHC*
- TCC*

*Indicates NPIRS and DML data were received

A random sample review (25% of all DMLs received) yielded 18,090 visits from 56 villages. Of the 18,090 visits, 5,109 encounters lacked indicators for sex, age or both. A total of 12,981 encounters met the minimum visit criteria and contained 16,071 identifiable health problems. DML data reviewed included all of what the CHA/P wrote on the selected DMLs. Therefore, some of the DML entries included more than one assessment or health problem.

Table II shows the distribution of DML health problems by tribal organization.

Table II. Distribution of CHA/P DML Health Problems by Tribal Health Organization in Alaska, 2006

THO Organization	Health Problems *n* = 16, 071	(%)
APIA	109	(0.7)
Chugachmiut	170	(1.1)
CRNA	1,154	(7.2)
EAT	56	(0.3)
KANA	1,013	(6.3)
Karluk	49	(0.3)
Maniilaq	7,047	(43.8)
NSB-DHSS	1,648	(10.2)
SCF	170	(1.1)
SEARHC	1,687	(10.5)
TCC	2,968	(18.5)

The Hughes Health Clinic in Hughes, Alaska

Age and Sex Distributions

Overall, 57% of encounters were females and 43% were males. Age distributions were divided into groups consistent with clinical decisions and training. Table III shows the age group distribution for NPIRS and DML data.

Table III. Distribution Comparing NPIRS (FY 2005-FY 2006) and DML (2006) Age Data for Reviewed CHA/P Encounters in Alaska

Age Group	NPIRS Encounters *n* = 197,190 (%)		DML Health Problems *n* = 16,071 (%)	
< 1 year	13,874	(7.0)	845	(5.2)
1-5 years	31,271	(15.9)	1,823	(11.3)
6-12 years	22,717	(11.5)	1,444	(8.9)
13-19 years	20,285	(10.3)	1,689	(10.5)
20-65 years	85,325	(43.3)	7,453	(46.3)
65+ years	23,718	(12.0)	2,817	(17.5)

Reasons for Clinic Visit

Reviewing clinical assessments was the primary purpose for this study. However a review of NPIRS and DML assessments revealed that patients visited clinics often for non-clinical reasons:

- Additional Reasons for a Clinic visit:
  - Pharmacy activities without another assessment: NPIRS 28% and DML 8% of total encounters.
  - Paperwork and other administrative duties: 7-8% of total NPIRS and DML encounters.
  - Lab work without an assessment: <1% NPIRS and 3% DML encounters.

- Acute or Chronic Health Problems:
  - Health problems were sorted into major categories of assessments and then into minor and subcategories for ease of analysis.
  - Table IV lists the major assessment categories and shows percents found in the NPIRS and DML data sets. After the table there are brief explanations of significant findings for each of the major assessment categories.

Table IV. Major Categories of Clinical Assessments by Alaska CHA/Ps in Reviewed Encounter Data for NPIRS, FY 2005-FY 2006 and DML, 2006

Rank	Major Assessment Categories	% of All NPIRS Visits *n* = 175,992	Cum %	% of All DML Health Problems *n* = 12,581	Cum %
1	Respiratory/Ear, Nose and Throat problems	40.8%		31.0%	
2	Circulatory problems	8.9%		5.9%	
3	Skin problems	6.1%		5.5%	
4	Preventive care	5.4%		12.3%	
5	Injuries	5.3%		9.2%	
6	Digestive/Abdominal	5.2%		6.4%	
7	Musculoskeletal problems	4.4%		6.1%	
8	Fever/Other problems	3.8%	≈79%	3.2%	≈80%
9	Eye problems	3.2%		2.3%	
10	Pregnancy	2.9%		2.3%	
11	Nervous system	2.2%		2.0%	
12	Genital problem	2.1%	≈90%	2.9%	
13	Infections not otherwise classified	2.0%		0.3%	≈90%
14	Mental health problems	1.6%		2.1%	
15	Endocrine	1.6%		1.4%	
16	Urinary system	1.5%		2.5%	
17	Dental problems	1.5%		2.7%	
18	Pediatric problems	0.8%		—	
19	Blood problems	0.6%		1.2%	
20	Breast problems not cancer	0.3%		0.2%	
21	Cancer	0.2%		0.4%	
22	Nutritional problems	0.2%		—	
	Total percents	**100%**	**100%**	**100%**	**100%**

Notes on Table 4:

- Total counts for both NPIRS and DML data reflect visits with clinical assessments and not visits solely for medications, paperwork, or lab tests. See previous page for those visits.

- NPIRS data represents 2 years of clinical activity. DML data is a 25% sample of one year of clinical activity. Therefore, the estimated total count for DML visits for two years is 100,648 encounters.

- NPIRS data reviewed included first diagnoses only. DML data reviews looked at all of what the CHA/P wrote on the DML. Reasons for this are found in Limitations in the main paper.

1. Respiratory Problems

- 41% NPIRS visits and 31% DML visits.
- This is the largest group of health problems cared for by CHA/Ps over all age groups.
- This category included problems associated with the lungs, ears, nose, throat, and sinuses.
- Pharyngitis alone accounted for 11% of all visits in the NPIRS data set and 5% of all DML visits.
- Ear problems accounted for 9% of all NPIRS visits and 7% of all DML visits and included otitis media, otitis externa, pain, injury, hearing loss, vertigo, and ear checks.
- Otitis media accounted for 80% of all ear problems.
- Lung problems comprised 13% of all NPIRS visits and 8% of all DML visits and accounted for approximately (≈) 1/3 all respiratory problems.
- Most lung problems were bronchitis or bronchiolitis, although the NPIRS data also had a large number of chronic lung disease assessments.

2. Circulatory Problems

- 9% of NPIRS visits and 6% of DML visits.
- This category included any problem related to the heart or circulation, as well as nontraumatic shock.
- Over half were for hypertension.
- About 1% of all visits statewide were for acute ischemic symptoms such as chest pain, heart attacks and angina in both data sets.

3. Skin Problems

- 6% of NPIRS visits and 5% of DML visits.
- This category included any problem related to the skin except cancer.
- More than half of skin problem visits were for infections. Depending on the data set, 50-80% of the infections were cellulitis, abscesses, or Methicillin Resistant Staphylococcus Aureus (MRSA). Up to 2.4 % of all visits to a Health Aide were for cellulitis, a skin abscess, or MRSA.

4. Preventive Care

- 5% of NPIRS visits and 12% of DML visits.
- This category included all preventive care visits, as well as rechecks without another assessment.
- Immunizations accounted for almost 1/3 of preventive visits in NPIRS data and approximately 1/4 of preventive visits in DML data.
- Well Child Care, coded separately from immunizations, occurred in about 13% of the NPIRS data for preventive care and about 14% in the DML data.
- Health checks that were not well child care such as: BP check, weight check, etc. were about 30% of the DML preventive visits.
- Dental prophylaxis accounted for about 1/3 of NPIRS preventive visits.
- Home visits, coded only in DML data, comprised 16% of preventive visits.

5. Injuries

- 5% of NPIRS visits and 9% of DML visits.
- This category included all visits for intentional and unintentional injuries, as well as cold-related problems.
- The most common injury was a laceration followed by a sprain and/or strain.

6. Digestive Problems

- 5% of NPIRS visits and 6% of DML visits.
- This category included all visits related to the digestive, hepatic, biliary, and pancreatic organs, as well as dehydration.
- 1/3 gastroenteritis or gastroenteritis-like symptoms.
- 1/3 abdominal pain.
- 1/6 gastroesophageal reflux disease, ulcers, and gastritis as different from abdominal pain.
- <1/10 of all digestive problem visits were for hepatitis.

7. Musculoskeletal Problems Not Associated with Injury

- 4% of NPIRS visits and 6% of DML visits.
- This category included all musculoskeletal problems not directly caused by injury.
- Approximately 1/4 arthritis; 1/4 back and neck problems; and 1/3 non-arthritis joint problems.

8. Fever/Other Problems

- 4% of NPIRS visits and 3% of DML visits.
- This category included all problems which did not easily fit into other major categories.
- Fever without another diagnosis accounted for 2-3% of all visits to a Health Aide in both data sets.

9. Eye Problems

- 3% of NPIRS visits and 2% of DML visits.
- This category included all problems associated with the eyes, eye lids, or vision.
- 1/2 for conjuctival problems, most of which were conjunctivitis.

10. Pregnancy

- 3% of NPIRS visits and 2% of DML visits.
- This category included all pregnancy related visits.
- Approximately 50% of pregnancy visits were for routine prenatal care and 50% for problems in pregnancy.
- 11% of all pregnancy-related visits in the NPIRS data were for emergencies of which 15 were actual deliveries. The rest were for bleeding, labor, high blood pressure, etc.
- 2% of pregnancy visits in the DML data were for labor or childbirth.

11. Nervous System Problems

- 2% of visits from both sets of data.
- This category included problems related to the central and peripheral nervous system, as well as altered level of consciousness and sleep problems.
- Headaches: Approximately 38% of nervous system problems in NPIRS data set and 50% in DML data set.
- Seizures were 33% of NPIRS nervous system problems and 11% of DML health problems.

- Paralysis and stroke-like syndromes without level of consciousness changes comprised 15% of nervous system problems in the DML data set and 3% in the NPIRS data set.

12. Genital Problems

- 2% of NPIRS visits and 3% of DML visits.
- This category included family planning, male and female genital problems and sexually transmitted infections. Male genital problems included prostate problems.
- 50% were for family planning.
- 29-35% were for female genital problems which included Women's Health Care visits and pap smears done by Health Aides.
- 7% were for male genital problems, of which 30-50% were for prostate problems.
- Of the visits for sexually transmitted infections, approximately 66% were for Chlamydia and approximately 33% for all other sexually transmitted infections. (Note: Human Immunodeficiency Virus (HIV) not included here.)

13. Infections Not Otherwise Classified

- 2% of NPIRS visits and <1% of DML visits.
- This category included septicemia, mycoses, Human Immunodeficiency Virus (HIV), infectious contact, and many other infections.

14. Mental Health Problems

- Approximately 2% of total visits in both data sets.
- This category included psychiatric disorders, as well as substance abuse disorders.
- Psychiatric disorders accounted for 75% of all NPIRS visits for a mental health problem and 56% of all DML visits for a mental health problem.
- Substance Abuse problems comprised 13% of NPIRS visits and 45% of DML visits.

15. Endocrine Problems

- Approximately 1.5% of both NPIRS and DML visits.
- This category included diabetes, thyroid disorders, and other endocrine problems.
- The majority of endocrine problem visits were for diabetes.

16. Urinary System Problems

- 1.5% of NPIRS visits and 2.5% of DML visits.
- This category included urinary infections, kidney problems, dysuria, hematuria, and other problems associated with the urinary system but not prostate problems.
- Urinary Tract Infection (excluding kidney infection) was the most frequent diagnosis.

17. Dental Problems

- 1.5% of NPIRS visits and 3% of DML visits.
- This category included dental decay, pain, infection, injury, and nonspecific problems.

18. Pediatric Problems

- <1% of NPIRS visits.
- This category included pediatric problems not easily classified elsewhere, such as fussy babies, jaundiced newborns, etc.
- All DML visits for pediatric care were either classified elsewhere or under Preventive/Well Child Care.

19. Blood and Immune Problems

- 0.6% of NPIRS visits and 1.2% of DML visits.
- This category included anemias, coagulation problems, immune disorders, lymphadenopathy, and other blood-related problems.
- Anemia was the most frequent diagnosis in this major category.

20. Breast Problems

- 0.3% of NPIRS visits and 0.2% of DML visits.
- This category included breast feeding problems and other breast problems, but not cancer.

21. Cancer

- 0.2% of NPIRS visits and 0.4% of DML visits.
- Cancer is a very small proportion of visits to the CHA/P, as reported via NPIRS and DML. NPIRS data reported 308 visits for FY 2005-FY 2006, while DML data showed 48 visits for 2006. This is less than 0.5% of all visits. Types of cancers were fairly evenly divided among body systems.

22. Nutritional Problems

- 2% of NPIRS visits.
- This was solely a NPIRS set of patient assessments.

Serious Events

Serious events were defined as those that were potentially disabling or life-threatening. NPIRS data reviewed included all of the diagnoses listed per encounter (not just the first diagnosis).

Highlights:

- Respiratory Distress: Average 17 events per village per year in the NPIRS data set. This is the most common emergency in infants and elders.
- Symptoms of Heart Attack or Ischemia: Average 9 episodes per village per year.
- Pregnancy-related emergencies: Average 2 emergencies per village per year.

Treatments and Procedures

Treatment and Procedure data were not directly comparable between the two data sets because of differences in coding.

- Ten procedures accounted for about 98% of all procedures done in both data sets. The ten most common procedures were oxygen saturation testing, antibiotic injections, immunizations, other injections, nebulizer therapy, blood draws, respiratory testing, injury care, performing EKGs, and collecting cultures. EKGs are not currently taught in basic training.

Curriculum Analysis

The current curriculum was examined. Attention was paid to hours spent on each topic and order of instruction. A comparison was made between percent of visits and hours spent in training for major categories of health problems.

CONCLUSIONS

General Conclusions

CHA/Ps provide an enormous amount of health care to rural residents. They are essential to Alaska's rural health care delivery system. Community Health Aide programs and training centers provide the support Health Aides and Practitioners need to practice good medicine.

This review describes actual numbers and events of CHA/P clinical practice. A review of this scope has not been done in the past.

The data are not complete and the data contributed by tribal health organizations are not in proportion to their patient numbers. If this review is to be repeated, better methods of data collection should be sought. If we are moving toward electronic recordkeeping, it is important that we have a robust electronic record that accurately and more completely captures CHA/P practice.

In general, CHA/Ps are being taught what they need to know in basic training. Decisions made regarding training are not simply based on proportion of visits and proportion of teaching hours. Clearly judgments need to be made relative to the difficulty of the material; time allowed for training CHA/Ps; and the risk of the skill not being learned.

Curriculum Implications and Recommendations

- Emergency Care:
  - Ensure CHAs are very comfortable caring for respiratory distress in infants and elders before they leave training;
  - Emphasize early recognition of heart attacks, and CHA comfort with a plan consistent with remote clinical care;
  - Continue to teach pregnancy emergencies early in training:
    - Change childbirth class to include basic treatment of other emergencies in pregnancy such as bleeding and preterm labor.
- EKGs: Add instruction in EKG technique to basic training. EKGs are being done by CHA/Ps as frequently as other tests and procedures that are part of basic training.
- Circulatory Problems: This is the second most common reason for visiting a CHA/P. Consider moving the initial introduction to Session I with emphasis on hypertension prevention and treatment.
- Skin: Emphasize care and prevention of bacterial infections.
- Medication Activity: This is a large part of a CHA/P's job. Addressing this specifically in Session I would add to patient safety. In regions that utilize direct mailing of refills this may be less of an issue.
- There is a discrepancy between training hours and proportion of visits for respiratory/ENT problems. However, this may not necessitate an increase in training hours. After receiving a solid foundation in Sessions I and II, Health Aides have ample opportunities to practice and hone these skills.
- Consider modestly increasing hours of training for both digestive and musculoskeletal problems.
- Consider decreasing hours of training for genital problems.

- Look at the impact of Behavioral Health Aides and consider decreasing hours spent on mental health problems.
- Electronic data collection captured different proportions of each tribal organization's CHA/P clinical practice. In addition, NPIRS and DML data sets provide somewhat different answers to the same questions. As the electronic health record is adopted in more places in the state, consider how data collection can be standardized and data shared in order that future evaluations of CHA/P clinical practice can easily be accomplished.

Future Plans

- Provide each individual Tribal Health Director with the data for their respective Tribal Health Organization, with a comparison to the state as a whole.
- Consider methods of providing ongoing feedback to the Academic Review Committee regarding CHA/P practice.
- Consider using this data to conduct a qualitative review on how well CHA/Ps feel they are prepared for each subset of clinical problems.
- Abbreviate and summarize a paper for submission to an appropriate medical journal.

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ALASKA COMMUNITY HEALTH AIDE/PRACTITIONER CLINICAL PRACTICE DESCRIPTION

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INTRODUCTION

Background

Village-based Community Health Aides and Community Health Practitioners (CHA/Ps) provide most of the primary medical care in rural and remote Alaskan communities. Health statistics published by the Alaska Native Tribal Health Consortium Division of Information Technology, Data Management and Analytics in 2005 showed that CHA/Ps provided care for over 250,000 patient encounters per year. Their scope of practice is defined by the Community Health Aide Program Certification Board (CHAPCB) *Standards and Procedures* and guided by regional physicians; along with the *Alaska Community Health Aide/ Practitioner Manual*, 4th edition, published in 2006 and known as the "CHAM." This scope of practice includes emergency, acute, chronic, and preventive health care for community members of all ages.

CHA/P clinical practice has changed radically since the 1950s, when the program was first established. Not only have demographic characteristics of the served population changed, but the patterns of illness for which patients seek care have changed as well. Health Aides and Community Health Practitioners have stated that they are caring for more patients with diabetes, cardiovascular disease, cancer, and trauma. In the past, CHA/Ps identified having the skills and training to prepare them for their daily work as being an important part of job satisfaction (Landon, Loudon, Selles, Doucette, 2004; p. 225; Quick, Bashur, 1991; p.163).

CHA/P training is guided by a statewide curriculum which includes both classroom and clinical work. Curriculum revisions took place in 1993, 1997, 2005, and are ongoing today. For the 1993 revision, Daily Medical Logs (DML) with one line descriptions of

patient demographics, the reason for visit, and treatment given were kept by most village clinics.

Changes implemented under the Indian Self-Determination and Education Assistance Act (PL93-638) altered the way health information is shared around Alaska. As a result, there is no longer any statewide data collection that can provide feedback to guide CHA/P curriculum development or revision. What CHA/Ps need to know is based on the health care needs of their communities. The Academic Review Committee's goal of relevant training is best served with an up-to-date evidence-based curriculum.

These organizations generously provided funding and collaborated on this project:
- Alaska Native Tribal Health Corporation (ANTHC), Division of Community Health Services:
  CHAP Training Center;
  CHAP Statewide Services;
  Alaska Native Epidemiology Center;
- ANTHC Department of Data Management and Analytics;
- University of Alaska Fairbanks, College of Rural and Community Development
- State of Alaska Community Health Aide Training and Supervision Grants.

Purpose

A comprehensive evaluation of CHA/P clinical practice across the state has never been conducted. Therefore, this project's purpose was to collect and interpret data that were representative of the CHA/P practice and experience across the state; to identify patterns and acuity of village health problems for which CHA/Ps provide medical care; and to provide that information to the Association of Alaska Community Health Aide Program Directors (AACHAPD) known as CHAP Directors and their Academic Review Committee (ARC) as a resource for future curriculum revisions. This data represents the work of CHA/Ps in their village clinics.

Approvals and Permissions

CHAP Directors approved the project in principle in December 2005. The Alaska Tribal Health Directors approved the project on February 1, 2006. In April 2006, the Alaska Area Institutional Review Board reviewed this project and determined that this study was not research, but program evaluation.

Permission was also obtained for access and use of de-identified patient visit information for each participating THO in the Alaska Tribal Health System (ATHS). Participating tribal health organizations included:

- Aleutian Pribilof Islands Association, Inc. (APIA);
- Bristol Bay Area Health Corporation (BBAHC);
- Chugachmiut;
- Copper River Native Association (CRNA);
- Council of Athabascan Tribal Governments (CATG);
- Eastern Aleutian Tribes (EAT);
- Karluk Tribal Council;
- Kodiak Area Native Association (KANA);
- Maniilaq Association;
- Mt. Sanford Tribal Consortium (MSTC);
- Native Village of Tyonek;
- Ninilchik Traditional Council;
- North Slope Borough Department of Health & Social Services (NSB-DHSS);
- Norton Sound Health Corporation (NSHC);
- Southcentral Foundation (SCF);
- SouthEast Alaska Regional Health Consortium (SEARHC);
- Tanana Chiefs Conference (TCC);
- Yukon Kuskokwim Health Corporation (YKHC).

METHODS

Data Collection

The data identified for this project came in two different forms:

- Daily Medical Logs (DML), which are handwritten one-line entries summarizing patient encounters in a village clinic;
- National Patient Information Reporting System (NPIRS) data; a set of computer-collected records of patient encounters, stored with Indian Health Service (IHS);
- Some Tribal Health Organizations (THO) used both systems of data collection.

Copies of all DMLs for calendar year 2006 were obtained from the Tribal Health Organizations. NPIRS data for federal fiscal years 2005 and 2006 were received from Indian Health Service.

National Patient Information Reporting System (NPIRS) Data

Data were received from the Indian Health Service National Patient Information Reporting System (NPIRS) for those Tribal Health Organizations that electronically reported patient encounters. A one-time set of reports was generated containing data of patients receiving health care from CHA/Ps in village clinics for FY 2005 and FY 2006.

Files received included one record per patient visit and were ordered by location of encounter and then by date. Non-Native patient files were included. The records included location of encounter; community of residence; date of visit; age, sex, disposition, and whether or not injections were given; ICD-9-CM diagnostic codes, injury codes, and some procedural and exam codes. Records did not include patients' names, dates of birth, or other personal identifiers. No attempt was made to identify repeat visits.

ICD-9-CM diagnosis codes were grouped together into clinical service categories. Categories included a minimum of 10 or more encounters. Categories with less than 10 encounters per category were combined into larger categories. A full list of this categorical hierarchy is found in Appendix B (available on the CHAP website, www.akchap.org.). Individual ICD-9-CM codes were used to place the patient encounter into an appropriate category. Given the large numbers of NPIRS encounters and the convention that the most immediate health problems be listed first, only the first-listed diagnoses were analyzed in the NPIRS data set. The exception to this was potentially high risk occurrences. See *Serious Events* for delineation of these events.

Daily Medical Log (DML) Data

DML Sample Selection

Approximately 80,000 patient encounters were received via daily medical logs (DMLs). Because these were entered into the data set by hand, resources dictated that the DML records needed to be sampled. To avoid seasonal or other sampling bias, all of the clinics from each tribal health organization were listed alphabetically by village and a 25% sample (20,000) was obtained by selecting one week from each month for each tribal health clinic. Weeks were selected based on a rotating schedule. The sequence was: The first week of January was chosen from the first clinic, the second week of January was chosen from the second clinic and so forth. If there were more than four clinics in a tribal organization, the sequence was repeated. In subsequent months the sequence began with the second week of the month being assigned to the first clinic and the fourth clinic being assigned to the first week of the month. This sequence continued in a rotating fashion throughout the year.

DML Data Entry and Organization

DML entries included location of encounter; date and time of visit; age; sex; reason for visit; treatment given; disposition; and whether or not the CHA/P consulted another provider or transferred the patient. Data were entered into a Microsoft Office Access 2003 database (Microsoft Corp, Redmond, WA) exactly as written by the CHA/P.

The wording of reasons for visit and treatment were interpreted by medical staff and entered as 1-5 key words or phrases that were translated into ICD-9-CM class equivalent CHAM assessments. A list of assessments and treatments was developed (Appendix C [available on the CHAP website, www.akchap.org]). Because all DML entries were handwritten, two different observers agreed on what the CHA/P wrote and the assignment of assessment and treatment standardized terms. In addition, assessments were grouped together into major, minor, and subcategories that included no less than 10 encounters (Appendix D [available on the CHAP website, www.akchap.org]).

NPIRS and DML Visit Definition

For both groups of data, a complete visit was defined as an encounter with age, sex, and reason for visit or diagnostic code; with the provider being a CHA/P and the location, a tribal health clinic. The data does not include work done by physicians, mid-level providers, or other caregivers in village clinics.

The NPIRS and DML record reviews did not include patients' names. Therefore no effort was made to identify repeat visits. There was also no way to identify singular visits that might be counted in both the NPIRS the DML data sets.

Data Analysis

SAS software (SAS Institute, Inc, Cary, NC) was used to analyze the data collected in the one-time NPIRS report from IHS and the DML database in Microsoft Access. SAS generated frequency distributions and cumulative percentages for the sex, age, assessment, and tribal organizational data shown in the tables of this report.

RESULTS

General Data Set Description

Total numbers of encounters and demographic data are discussed here separately for NPIRS data and DML data. Clinical assessments and reasons for visits are discussed below.

National Patient Information Reporting System (NPIRS)

Data were received for these Tribal Health Organizations:

- BBAHC
- Chugachmiut
- CATG
- EAT
- Maniilaq Association
- NSB-DHSS
- NSHC
- SCF
- SEARHC
- TCC
- YKHC

A total of 272,242 visits were recorded in NPIRS data for FY 2005-FY 2006, from a total of 150 villages. Of these encounters, 197,190 had recorded assessments. Most (>95%) of the 75,052 visits without an assessment were pharmacy activities such as assisting patients with their medication refills, giving patients medication for acute problems, and performing medication reconciliation for patients and their medications.

Table 1 shows each tribal health organization's number of encounters and the percentage those encounters represent as part of the total number of visits reviewed in the NPIRS data set. It also shows the number of visits that met visit criteria and their relative contributions to the statewide data set. It is these visits upon which this analysis is based. Finally, in the last column, Table 1 shows for each tribal health organization what percent of their original number of encounters had a clinical assessment and thus met visit criteria.

Table 1. Distribution of NPIRS CHA/P Encounters by Tribal Health Organization in Alaska, FY 2005-FY 2006

T H O	NPIRS Visits *N* = 272, 242 (%)		NPIRS Visits with Assessments *n* = 197,190	(%)	Visits with Assessments for THO (%)
BBAHC	29,522	(10.8)	28,289	(14.3)	(95.8)
CATG	3,158	(1.2)	1,207	(0.6)	(38.2)
Chugachmiut	4,844	(1.8)	2,562	(1.3)	(52.9)
EAT	881	(0.3)	851	(0.4)	(96.6)
Maniilaq	3,413	(1.3)	3,316	(1.7)	(97.2)
NSB-DHSS	6,897	(2.5)	4,535	(2.2)	(65.8)
NSHC	21,623	(7.9)	6,295	(3.2)	(29.1)
SCF	2,626	(1.0)	1,783	(1.0)	(67.9)
SEARHC	2,763	(1.0)	2,761	(1.4)	(99.9)
TCC	4,373	(1.6)	4,336	(2.2)	(99.2)
YKHC	192,142	(70.6)	141,255	(71.6)	(73.5)

Daily Medical Log (DML) Data

- DML records were received for these Tribal Health Organizations:

  - APIA
  - Chugachmiut
  - CRNA
  - EAT
  - Karluk Tribal Council
  - KANA
  - Maniilaq Association
  - NSB-DHSS
  - SCF
  - SEARHC
  - TCC

*Indicates NPIRS and DML data were received

A random sample of 25% of received DMLs, yielded 18,090 encounters from 56 villages. Of the 18,090 visits, 5,109 encounters lacked indicators for sex, age, or both. A total of 12,981 encounters met complete visit criteria with 16,071 health problems identified.

Table 2 shows each tribal health organization's number of visits and the percentage those visits represent as part of the total number of visits reviewed in the DML data set. It also shows the number of visits that met visit criteria and their relative contributions to the statewide data set. It is these visits upon which this analysis is based. Finally, in the last column, Table 2 shows for each tribal health organization the number of health problems identified and what proportion of the statewide data set those health problems represent.

Table 2. Distribution of Reviewed DML Health Problems by Tribal Health Organizations Recorded by CHA/Ps in Alaska, 2006

THO	DML Visits *n* = 18,090 (%)		DML Visits met Criteria *n* = 12,981 (%)		DML Health Problems *n* = 16,071 (%)	
APIA	142	(0.8)	84	(0.7)	109	(0.7)
Chugachmiut	321	(1.8)	147	(1.1)	170	(1.1)
CRNA	991	(5.5)	920	(7.1)	1,154	(7.2)
EAT	336	(1.9)	58	(0.5)	56	(0.3)
KANA	788	(4.4)	775	(6.0)	1,013	(6.3)
Karluk	38	(0.2)	38	(0.3)	49	(0.3)
Maniilaq	8,564	(47.3)	5,795	(44.6)	7,047	(43.8)
NSB-DHSS	1,959	(10.8)	1,285	(9.9)	1,648	(10.2)
SCF	185	(1.0)	139	(1.1)	170	(1.1)
SEARHC	1,899	(10.5)	1,333	(10.2)	1,687	(10.5)
TCC	2,867	(15.8)	2,407	(18.5)	2,968	(18.5)
Total percents		**(100%)**		**(100%)**		**(100%)**

Age and Sex Distributions

Overall, 57% of encounters were females and 43% were males. Age distributions were divided into groups consistent with clinical decisions and training. Table 3 shows the age group distribution for NPIRS and DML data.

Table 3. Distribution Comparing NPIRS and DML Age Data for All Reviewed CHA/P Encounters in Alaska, 2005-2006

Age Group	NPIRS Encounters *n* = 197,190 (%)		DML Health Problems *n* = 16,071 (%)	
< 1 year	13,874	(7.0)	845	(5.2)
1-5 years	31,271	(15.9)	1,823	(11.3)
6-12 years	22,717	(11.5)	1,444	(8.9)
13-19 years	20,285	(10.3)	1,689	(10.5)
20-65 years	85,325	(43.3)	7,453	(46.3)
65+ years	23,718	(12.0)	2,817	(17.5)

Reasons for Clinical Visits

Introduction

Patients come to Health Aide clinics for acute and chronic health problems as well as other related services. Acute and chronic health problems were sorted into major categories of assessments and then into minor and subcategories for ease of analysis. While these acute and chronic health problems were the primary purpose of this study, a review of NPIRS and DML assessments revealed that patients visited clinics often for different reasons, including prescription refills, lab tests, travel arrangements, and other administrative requests. These are described below.

Prescription Refills, Administrative Duties, and Lab Tests

- **Prescription Refills**
  Twenty-eight percent (28%) of NPIRS encounters did not list a diagnosis. On further analysis >98% of these encounters were coded as prescription activity. Of the remaining 197,190 NPIRS encounters, 6% listed "prescription refill" as the primary reason for the visit. For DML data, 8% of visits were for medication activities without another diagnosis.

- **Administrative Duties**
  Both NPIRS and DML data showed 4-8% of visits for paperwork or administrative duties alone. Paperwork included ordering medications and supplies; arranging follow up appointments and travel for patients; and other tasks associated with health care. Administrative duties included taking lab samples to the plane; picking up and delivering medications and supplies; and other similar tasks.

- **Lab Tests**
  Lab tests were coded under procedures in the NPIRS data. Lab tests in DML were sometimes the only assessment listed. Lab tests without another clinical diagnosis accounted for <1% of NPIRS and 3% of DML encounters.

Assessments and Health Problems by Diagnostic Group

These are visits with an associated clinical diagnosis. They do not include visits with a primary reason listed as medication refill, a lab test, or administrative work. Clinical assessments were sorted into major categories of medical problems and then into minor categories and subcategories for ease of analysis.

Table 4, on the next page, shows a comparison between NPIRS and DML data for major categories of assessments and health problems. Details of each major assessment category follow Table 4.

Table 4. Clinical Assessments made by Alaska CHA/P in Reviewed Encounter Data Recorded in NPIRS, FY 2005-FY 2006 and DML, 2006

Rank	Major Assessment Categories	% of All NPIRS Visits *n* = 175,992	Cum %	% of All DML Health Problems *n* = 12,581	Cum %
1	Respiratory/Ear, Nose and Throat problems	40.8%		31.0%	
2	Circulatory problems	8.9%		5.9%	
3	Skin problems	6.1%		5.5%	
4	Preventive care	5.4%		12.3%	
5	Injuries	5.3%		9.2%	
6	Digestive/Abdominal	5.2%		6.4%	
7	Musculoskeletal problems	4.4%		6.1%	
8	Fever/Other problems	3.8%	≈79%	3.2%	≈80%
9	Eye problems	3.2%		2.3%	
10	Pregnancy	2.9%		2.3%	
11	Nervous system	2.2%		2.0%	
12	Genital problem	2.1%	≈90%	2.9%	
13	Infections not otherwise classified	2.0%		0.3%	≈90%
14	Mental health problems	1.6%		2.1%	
15	Endocrine	1.6%		1.4%	
16	Urinary system	1.5%		2.5%	
17	Dental problems	1.5%		2.7%	
18	Pediatric problems	0.8%		—	
19	Blood problems	0.6%		1.2%	
20	Breast problems not cancer	0.3%		0.2%	
21	Cancer	0.2%		0.4%	
22	Nutritional problems	0.2%		—	
	Total percents	**100%**	**100%**	**100%**	**100%**

Details of Major Assessment Categories

1. Respiratory Problems

- 41% of all NPIRS visits and 31% of all DML visits.
- Respiratory distress is the most frequent reason for emergency care in the NPIRS data set with an average of more than 1 episode/village/month.
- Respiratory problems were divided into three minor categories for easier analysis as seen in Table 5. A more detailed analysis of each respiratory group can be found in Tables 6–8.

Table 5. Minor Categories of Respiratory Problems Recorded by CHA/Ps in Alaska, 2005-2006

Respiratory/ENT Assessments	% of All NPIRS Assessments *n* = 175,992	(%)	% of All DML Assessments *n* = 12,581	(%)
Nose/Throat/Sinus	32,423	(18.4)	2,017	(16.0)
Ear problems	16,662	(9.5)	889	(7.1)
Lung problems	22,657	(12.9)	996	(7.9)
All respiratory problems	**71,742**	**(40.8)**	**3,902**	**(31.0)**

- Nose, throat, and sinus problems were the largest subcategory of respiratory problems and are detailed below.

The new Port Lions Health Clinic at Port Lions, Alaska on Kodiak Island

Nose/Throat/Sinus Problems

- Nose, throat, and sinus problems encompassed ≈17% of all health problems in both data sets and almost half of all respiratory problems. They included pharyngitis, tonsillitis, upper respiratory infections, sinusitis, mouth sores, and others.
- Pharyngitis and tonsillitis, both viral and bacterial, accounted for ≈11% of all NPIRS visits and ≈5% of all DML visits for any reason.
- Upper respiratory infections accounted for ≈6% of all NPIRS visits and ≈ 8% of all DML visits.

Table 6. Nose/Throat/Sinus Subcategories of CHA/P Respiratory Encounters Recorded in Alaska, 2005-2006

Respiratory Problems Nose/Throat/Sinus	NPIRS *n* = 32,423 % of All Respiratory Problems	DML *n* = 2,017 % of All Respiratory Problems
Pharyngitis/Tonsillitis (includes peritonsillar abscess and laryngitis)	26.0%	17.0%
Upper Respiratory Infection (URI) (includes rhinitis and allergy symptoms)	14.0%	25.1%
Sinusitis (includes sinus pain)	4.0%	7.0%
Mouth Sores (includes herpes and others)	0.8%	1.2%
Thrush	0.2%	1.0%
Teething	—	1.0%
Salivary gland problem	0.1%	—
Nose bleed	—	0.4%
Total as percent of all respiratory problems	**45.2%**	**51.7%**

Ear problems

- Ear problems: 9% of all NPIRS visits and 7% of DML visits.
- Ear problems are almost 25% of all respiratory problems.
- Otitis Media, acute and chronic is the second most frequent reason for visiting a Health Aide. ≈ 8%NPIRS visits and ≈5% DML visits.

Table 7. Ear Problems Subcategory of CHA/P Respiratory Encounters Recorded in Alaska, 2005-2006

Respiratory Problem	NPIRS *n* = 16,662	DML *n* = 889
Ear Problems	**% All Respiratory Problems**	
Otitis Media (includes mastoiditis, acute, chronic, and serous otitis media; and tympanic membrane perforation)	18.7%	14.8%
Otitis Externa	1.4%	1.7%
Ear drainage	1.1%	1.0%
Ear pain	1.2%	1.3%
Ear injury	0.1%	—
Hearing loss	0.1%	—
Vertigo	0.1%	0.5%
Ear exam	0.1%	0.2%
Other Ear problems*	0.4%	3.3%
Total as percent of all respiratory problems	**23.2%**	**22.8%**

*Other Ear Problems include: foreign bodies in the ear; unspecified disorders of the ear; other disorders of ear; tinnitus, and hearing loss in DML data.

The Aleknagik North Shore Clinic at Aleknagik, Alaska in the Bristol Bay region

Lung Problems

- Lung problems comprised 13% of all NPIRS visits and 8% of all DML visits and accounted for ≈1/3 all respiratory problems.
- Bronchitis, bronchiolitis, and cough accounted for ≈5% of all NPIRS visits and ≈3% of all DML visits.

Table 8. Lung Problems Subcategory of CHA/P Respiratory Encounters Recorded in Alaska, 2005-2006

Respiratory Problem Lung Problems	NPIRS *n* = 22,657	DML *n* = 996
	% All Respiratory Problems	
Bronchitis/Bronchiolitis/Cough	11.3%	10.8%
Pneumonia and pneumonia follow up	3.3%	3.8%
Asthma/Wheezing/Reactive Airway Disease	3.0%	2.6%
Chronic Lung Disease	8.6%	1.2%
Respiratory Distress (includes shortness of breath, respiratory distress and breathing problem)	2.6%	2.3%
Other Respiratory Problems (flu, Tuberculosis, other infections, other problems and exam)	2.8%	4.8%
Total as percent all respiratory problems	**31.6%**	**25.5%**

The Chalkyitsik Village Clinic at Chalkyitsik in Interior Alaska

Circulatory Problems

- 9% of NPIRS visits and 6% of DML visits.
- This category included any problem related to the heart or circulation, as well as nontraumatic shock.
- Over half were for hypertension.
- In both data sets, about 1% of all visits statewide, for any reason, were for acute ischemic symptoms.

Table 9. Circulatory Problems Detail Found in CHA/P Encounters and Recorded in Alaska, 2005-2006

Circulatory Problems	NPIRS *n* = 15,708	DML *n* = 741
	% All Circulatory Problems	
Hypertension	69.9%	50.2%
Acute Ischemic problems	11.6%	16.2%
Heart Disease chronic care	3.3%	5.5%
Rheumatic Fever	2.8%	2.0%
Heart Rate problem	5.0%	5.5%
Lipid disorders	4.7%	11.1%
Valvular disease	0.1%	—
Artery/Vein problems	0.3%	3.0%
Circulatory exam	0.1%	—
Hypotension and shock (nontraumatic)	0.2%	0.7%
Other circulatory problems*	2.0%	5.8%
Total percent all circulatory problems	**100%**	**100%**

*Other circulatory problems included: pericarditis, endocarditis, transplants, undiagnosed murmurs, etc.

3. Skin Problems

- 6% of NPIRS visits and 5% of DML visits.
- This category included any problem related to the skin except cancer.
- More than half of skin problems were infections.
- 80% of skin infections in the NPIRS data set and 50% of skin infections in the DML data set were cellulitis, abscesses, or Methicillin Resistant Staphylococcus Aureus (MRSA). This means up to 2.4% of all visits to a Health Aide were for cellulitis, a skin abscess or MRSA.

- The rest of the infections were lice, scabies, fungal infections, noncellulitic bacterial infections, viral infections, etc. Approximately 8% of all skin problems had impetigo as a diagnosis.

Table 10. Skin Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Skin Problems	NPIRS *n* = 10,654	DML *n* = 693
	% All Skin Problems	
Dermatitis	10.7%	14.6%
Infections*	58.2%	48.2%
Acne	0.7%	—
Other skin problems**	30.4%	37.2%
Total as percent all skin problems	**100%**	**100%**

*See table below

**Other skin problems include skin lesions, nail problems, insect bites insect bites, pruritus, hives, cysts, and foreign bodies.

Table 11. *Skin Infections Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006 (48-58% of all skin problems)

Skin Infections	NPIRS *n* = 6,200	DML *n* = 334
	% All Skin Problems	
Cellulitis, boils, abscess, Methicillin Resistant Staphylococcus Aureus (MRSA)	40.0%	20.4%
Lice, scabies	2.7%	12.0%
Fungal infections***	1.6%	***
Viral (includes shingles)	1.7%	2.0%
Impetigo	10.7%	6.6%
Other skin infections	1.4%	7.2%
Total percent skin infections	58.1%	**48.2%**

***DML had only 6 fungal skin infections which were grouped with "Other skin infections."

4. Preventive Care

- 5% of NPIRS visits and 12% of DML visits.
- This category included all preventive care visits, as well as rechecks without another assessment.
- Immunizations accounted for almost 1/3 of preventive visits in NPIRS data and approximately 1/4 of preventive visits in DML data.
- Well Child Care, coded separately from immunizations, occurred in about 13% of the NPIRS data and about 14% in the DML data.
- Health checks that were not Well Child Care, such as: BP checks, weight checks, etc. were about 30% of the DML preventive visits.
- Dental prophylaxis accounted for about 1/3 of NPIRS preventive visits.
- Home visits, coded only in DML data, comprised 16% of preventive visits.

Table 12. Preventive Care Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Preventive Care	NPIRS *n* = 8,179	DML *n* = 1,314
	% All Preventive Care	
Immunizations	30.1%	23.0%
Prophylaxis (mostly dental prophylaxis)	24.4%	6.4%
Patient education	5.6%	2.8%
Recheck	17.5%	5.7%
Medical Exam/Health Check	8.7%	31.0%
Well Child Care	12.7%	14.5%
Newborn Care	0.6%	0.9%
Home visit	—	18.4%
Total as a percent of all preventive care	**100%**	**100%**

5. Injuries

- 5% of NPIRS visits and 9% of DML visits.
- This category included all visits for intentional and unintentional injuries, as well as cold-related problems.
- Lacerations most common: 46% NPIRS, 36% DML.
- Sprains and Strains were 14% of all injuries.
- Fractures and Dislocations were 4-8% of all injuries.
- Age-related injuries: See Tables 36-38: Frequent Causes of Injuries by Age.

Table 13. Injuries Detail Found in CHA/P Encounters Reported in Alaska, 2005-2006

Injuries	NPIRS *n* =9,396	DML *n* = 1,159
	% All Injuries	
Lacerations and wound care	46.3%	35.6%
Sprain/Strains	14.0%	14.2%
Fractures/Dislocations	4.2%	8.0%
Contusions	6.7%	4.1%
Burns	6.1%	2.4%
Poisoning	1.8%	0.8%
Head injury	0.7%	4.4%
Chest injury	0.3%	1.9%
Frostbite/Cold injury	0.7%	1.4%
Motor vehicle injury	0.1%	3.2%
Unspecified Musculoskeletal injuries	0.2%	18.4%
All other injuries*	18.9%	5.6%
Total as a percent of all injuries	**100%**	100%

*Other Injuries included non-classified trauma; abdominal, pelvic and genitourinary trauma; child abuse and neglect; domestic violence; GI foreign body; aspiration of foreign body; gunshot injuries, location unspecified; crush injuries; and amputations.

6. Digestive/Abdominal Problems

- 5% of NPIRS visits and 6% of DML visits.
- This category included all visits related to the digestive, hepatic, biliary, and pancreatic organs, as well as dehydration.
- 1/3 gastroenteritis or gastroenteritis-like symptoms.
- 1/3 abdominal pain.
- Gastroesophageal reflux disease, ulcers, and gastritis, 1/6 of all digestive problems.
- Hepatitis had a frequency of less than 1/10 of digestive problem visits.

Table 14. Digestive/Abdominal Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Digestive/Abdominal Problems	NPIRS *n* = 9,230	DML *n* = 806
	% All Digestive/Abdominal Problems	
Gastroenteritis-like illnesses (includes nausea and vomiting, diarrhea, and intestinal infections not specified)	30.2%	37.3%
Abdominal pain (includes known appendicitis)	33.0%	29.4%
Gastroesophageal Reflux Disease/Ulcer/Gastritis	15.1%	11.5%
Hepatitis and other liver disease	10.2%	2.0%
Constipation	5.2%	4.8%
Gastrointestinal Bleed	1.4%	3.7%
Dehydration	1.5%	5.2%
Other digestive problems*	3.4%	6.1%
Total as a percent of all digestive problems	**100%**	**100%**

*Other digestive problems included gallbladder disease; pancreatic problems; hernias; anal problems; and other gastrointestinal problems.

7. Musculoskeletal Problems Not Associated with Injury

- 4% of NPIRS visits and 6% of DML visits.
- This category included all musculoskeletal problems not directly caused by injury.
- Approximately 1/4 arthritis; 1/4 back and neck problems; and 1/3 non-arthritis joint problems.

Table 15. Noninjury Musculoskeletal Problem Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Noninjury Musculoskeletal Problems	NPIRS *n* = 7,815	DML *n* = 770
	% All Noninjury MS Problems	
Joint pain and problems (not arthritis)*	30.3%	34.6%
Arthritis**	29.2%	16.8%
Back and neck pain and problems	22.9%	24.6%
Other MS pain and problems	17.5%	17.8%
Infections	0.2%	6.4%
Total percent of all Noninjury MS problems	**100%**	**100%**

*Joint problems are assessments of knee pain, shoulder pain, wrist pain, etc. without a diagnosis of arthritis. This category also includes a small number of other joint problems such as unstable knee, joint replacement, etc.
**Arthritis: 1/3 Rheumatoid Arthritis; 1/3 other arthritis; 1/6 Osteoarthritis; and 1/30 gout.

8. Fever/Other Problems

- 4% of NPIRS visits and 3% of DML visits.
- This category included all problems which did not easily fit into other major categories.
- Fever was 63% of this subcategory in NPIRS and 41% of this subcategory in DML.
- A list of diagnoses in this category can be found in Appendix B and C on the CHAP web site: www.akchap.org.

Table 16. Fever/Other Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Fever/Other Problems	NPIRS *n* = 6,602	DML *n* = 401
	% All Fever/Other Problems	
Fever	62.6%	36.9%
Severe allergic reaction	2.5%	11.0%
Fatigue	2.3%	6.7%
Death/End of life care	0.2%	0.8%
Miscellaneous problems*	32.4%	44.6%
Total as a percent of all other problems	**100%**	**100%**

*Miscellaneous problems included pain, mass, edema, hypothermia, sarcoid, and others.

The Chugach village of Chenega Bay in Prince William Sound

9. Eye Problems

- 3% of NPIRS visits and 2% of DML visits.
- This category included all problems associated with the eyes, eye lids, or vision.
- 1/2 for conjuctival problems, most of which were conjunctivitis.

Table 17. Eye Problem Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Eye Problems	NPIRS *n* = 5,692	DML *n* = 285
	% of All Eye Problems	
Conjunctivitis	57.7%	41.1%
Eyelid problems (includes stye, blepharitis, etc.)	10.4%	11.2%
Eye trauma	4.0%	13.3%
Glaucoma	1.8%	—
Cataracts	0.3%	—
Vision changes	1.4%	6.3%
Eye exam	1.6%	4.2%
Other eye problems*	23.0%	23.9%
Total as a percent of all eye problems	100%	**100%**

*Other eye problems include: Ptyergium, subconjunctival hemorrhage; tear duct problems; keratitis, lens transplant; congenital disorders; retinal problems; periorbital cellulitis; iritis; corneal ulcers not due to trauma, etc.

10. Pregnancy

- 3% of NPIRS visits and 2% of DML visits.
- This category included all pregnancy related visits.
- In the NPIRS data, approximately 50% of pregnancy visits were for routine prenatal care and 50% for problems in pregnancy.
- In the DML data, routine prenatal was about 50%, problems in pregnancy occurred in about 16% of the visits and pregnancy tests were about 25% of the visits. Note that visits to rule out pregnancy were coded for only in the DML data.
- Up to 11% of all pregnancy-related visits in the NPIRS data were for emergencies. These included deliveries; impending deliveries; active labor both

preterm and term; premature rupture of membranes; early or late pregnancy bleeding; postpartum hemorrhage; ectopic pregnancy; maternal distress such as hypotension; renal failure, etc.; severe puerperal infection; retained placenta; and newborn distress.

- 2% of pregnancy visits in the DML data were for labor or childbirth.
- 21 actual deliveries of term and preterm infants in both data sets combined.

Table 18. Pregnancy Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Pregnancy	NPIRS *n* = 5,079	DML *n* = 291
	% All Pregnancy Visits	
Pregnancy care	41.6%	55.0%
Problems in pregnancy	56.7%	15.5%
Pregnancy rule out	—	27.5%
Childbirth and problems	1.7%	2.1%
Total as a percent of all pregnancy visits	**100%**	**100%**

Pregnancy Problems:

Problems in pregnancy were examined in more detail in the NPIRS data set:

- 14% of problems were bleeding in early pregnancy, most of which were classified as hemorrhage.
- 11% some sort of infection in pregnancy.
- 15% were a mental disorder complicating pregnancy.
- 7% were anemia complicating pregnancy.
- Other problems in pregnancy included hypertension; molar pregnancy; threatened labor; postdates; diabetes and other medical conditions complicating pregnancy; hyperemesis gravidarum; fetal growth restriction; excessive fluid; and others.

11. Nervous System Problems

- 2% of visits in each set of data.
- This category included problems related to the central and peripheral nervous system, as well as altered level of consciousness and sleep problems.
- Headaches: Approximately 38% of nervous system problems in NPIRS data set and 50% in DML data set.
- Seizures were 33% of NPIRS nervous system problems and 11% of DML health problems.

- Paralysis and stroke-like syndromes without level of consciousness changes comprised 15% of nervous system problems in the DML data set but only 3% in the NPIRS data set.

Table 19. Nervous System Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Nervous System Problems	NPIRS *n* = 3,947	DML *n* = 313
	% All Nervous Problems	
Headaches (approximately 1/3 were identified as migraines)	37.6%	50.0%
Seizure	33.1%	11.3%
Dizziness/Syncope	15.8%	17.6%
Stroke-like syndromes	2.9%	14.9%
Sleep problem	4.5%	6.3%
Degenerative disorder	2.6%	—
Peripheral nerve problem	1.0%	—
Altered level of consciousness	0.3%	<1.0%
CNS infection	0.4%	—
Other nervous system problem	2.0%	—
Total as a % of all nervous system problems	**100%**	**100%**

- Other than Headaches, there were a lot of differences between DML and NPIRS data. This may reflect the difficulty of diagnosing nervous system problems without advanced training or laboratory testing. In addition, the DML data contained fewer than 10 encounters for altered level of consciousness and CNS infection, so these were grouped with "Other nervous system problems" in the DML data.

12. Genital Problems

- 2% of NPIRS visits and 3% of DML visits.
- This category included family planning, male and female genital problems and sexually transmitted infections. Male genital problems included prostate problems.
- 50% were for family planning.
- 29-35% were for female genital problems which included Women's Health Care visits and pap smears done by Health Aides.

- 7% were for male genital problems, of which 30-50% were for prostate problems.
- Of the visits for sexually transmitted infections, approximately 66% were for Chlamydia and approximately 33% for all other sexually transmitted infections. (Note: Human Immunodeficiency Virus (HIV) not included here.)
- Female genital problems detailed in Table 21 below.

Table 20. Genital Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Genital Problems	NPIRS *n* =3,756	DML *n* = 380
	% All Genital Problems	
Family planning	58.5%	42.1%
Female genital problems	29.3%	35.3%
Male genital problems	7.8%	6.0%
Sexually transmitted infection	3.6%	16.6%
Other genital problems	1.0%	—
Total as a percent of all genital problems	**100%**	**100%**

Table 21. Female Genital Problems Subset of Genital Problems Detail Found in CHA/P Encounters and Recorded in Alaska, 2005-2006

Female Genital Problems	NPIRS *n* = 1,100	DML *n* = 134
	% All Genital Problems	
Menstrual problem	5.5%	8.2%
Other problems (include vaginitis, cervicitis, etc.)	18.2%	18.4%
Menopause and problems	1.1%	—
WHC exam with pap test	4.5%	8.7%
Total percent of all genital problems	**29.3%**	**35.3%**

13. Infections Not Otherwise Classified

- 2% of NPIRS visits and <1% of DML visits.
- Include septicemia, mycoses, Human Immunodeficiency Virus, infectious contact, and many other infections.
- Itemized list in Appendix B, D. See Table of Contents.

14. Mental Health Problems

- ≈2% of total visits in each data set.
- This category included psychiatric disorders, as well as substance abuse disorders.
- Psychiatric disorders accounted for 75% of all NPIRS visits for a mental health problem and 56% of all DML visits for a mental health problem.
- Substance Abuse problems comprised 13% of NPIRS visits and 45% of DML visits.

Table 22. Mental Health Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Mental Health Problems	NPIRS *n* = 2,847	DML *n* = 264
	% All Mental Health Problems	
Alcohol, drug, tobacco abuse (includes abuse, withdrawal, and overdose)	13.0%	44.7%
Anxiety	26.9%	17.4%
Depression/Bipolar disease	15.5%	20.5%
Schizophrenia/Psychosis	29.8%	5.7%
Other mental health problems	3.4%	11.7%
Delirium/Dementia	0.8%	—
Developmental delay	1.2%	—
Attention Deficit Hyperactivity Disorder	9.4%	—
Total as a percent of all mental health problems	**100%**	**100%**

15. Endocrine Problems

- Approximately 1.5% of both NPIRS and DML visits.
- This category included diabetes, thyroid disorders, and other endocrine problems.
- The majority of endocrine problem visits were for diabetes.

Table 23. Endocrine Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Endocrine Problems	NPIRS *n* = 2,829	DML *n* = 173
	% All Endocrine Problems	
Diabetes	80.3%	72.8%
Thyroid problems	13.1%	17.3%
Other endocrine	6.7%	10.0%
Total as a percent of all endocrine problems	**100%**	**100%**

16. Urinary System Problems

- 1.5% of NPIRS visits and 2.5% of DML visits.
- This category included urinary infections, kidney problems, dysuria, hematuria, and other problems associated with the urinary system but not prostate problems.
- Urinary Tract Infection (excluding kidney infection) was the most frequent diagnosis.

Table 24. Urinary System Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Urinary System Problems	NPIRS *n* = 2,588	DML *n* = 381
	% All Urinary Problems	
Urinary Tract Infection/Cystitis	62.7%	73.5%
Kidney problems (include infections, stone, kidney failure, etc)	7.5%	10.5%
Other problems (include dysuria, hematuria, and other problems)	29.8%	16.0%
Total as a percent of all urinary problems	**100%**	**100%**

17. Dental Problems

- 1.5% of NPIRS visits and 3% of DML visits.
- This category included dental decay, pain, infection, injury, and nonspecific problems.

18. Pediatric Problems

- <1% of NPIRS visits .
- This category included pediatric problems not easily classified elsewhere, such as fussy babies, jaundiced newborns, etc.
- All DML visits for pediatric care were either classified elsewhere or under Preventive/Well Child Care, with the exception of 7 visits coded as "sick child." Because this was below the threshold for coding as a separate group these visits are with the fever/other problems category.

Table 25. Pediatric Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Pediatric Problems	NPIRS *n* = 145	DML
	% All Pediatric Problems	
Fussy, crying	53.1%	—
Jaundice in Newborn	12.4%	—
Other Newborn problems	34.5%	—
Total as a percent of all pediatric problems	**100%**	**—**

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Manokotak Village Clinic at Manokotak, Alaska in the Bristol Bay region

19. Blood and Immune Problems

- 0.6% of NPIRS visits and 1.2% of DML visits.
- This category included anemias, coagulation problems, immune disorders, lymphadenopathy, and other blood-related problems.
- Anemia was the most frequent diagnosis in this major category.

Table 26. Blood and Immune Problems Detail Found in CHA/P Encounters Recorded in Alaska, 2005-2006

Blood and Immune Problems	NPIRS *n* = 996	DML *n* = 152
	% All Blood and Immune Problems	
Anemia	65.6%	73.0%
Coagulation/Platelet disorders	18.8%	19.7%
Lymphadenopathy	9.7%	7.2%
Immune problems	1.0%	—
Other blood problems	4.9%	—
Total percent of all blood and immune problems	**100%**	**99.9%**

20. Breast Problems

- 0.3% of NPIRS visits and 0.2% of DML visits.
- This category included breast feeding problems and other breast problems, but not cancer.

21. Cancer

- 0.2% of NPIRS visits and 0.4% of DML visits.
- Cancer is a very small proportion of visits to the CHA/P, as reported via NPIRS and DML. NPIRS data reported 308 visits for FY 2005-FY 2006, while DML data showed 48 visits for 2006. This is less than 0.5% of all visits. Types of cancers were fairly evenly divided among body systems.

22. Nutritional Problems

- 2% of NPIRS visits.
- This was solely a NPIRS set of patient assessments.

Table 27. Nutritional Problems Detail Found in CHA/P Encounters Recorded in Alaska, FY 2005-FY 2006

Nutritional Problems	NPIRS *n* = 272	DML
	% of All Nutritional Problems	
Vitamin deficiency	31.3%	—
Metabolic disorders	15.8%	—
Obesity	8.1%	—
Other nutritional problems	44.9%	—
Total as a percent of all nutritional problems	**100%**	—

Serious Events

Serious events were defined as those that were potentially disabling or life-threatening. Serious events were reviewed in any NPIRS encounter with at least one ICD-9-CM code, not just the first ICD-9-CM code. ICD-9-CM codes were grouped as for other diagnostic categories and are listed in Appendix E (available on the CHAP website, www.akchap.org). This study identified 10,552 serious events in the NPIRS data for FY 2005-FY 2006 and 606 serious events in DML for 2006.

- Roughly 5% of all visits to a Community Health Aide are for some sort of serious emergency.
- On average Health Aides from every village care for patients with respiratory distress more than once a month. Many of those patients are infants and children.
- Acute cardiac ischemia is the second most common emergency.

Table 28. Serious Events Seen and Recorded in NPIRS Data by CHA/Ps in Alaska, FY 2005-FY 2006

Serious Event	NPIRS FY 2005-2006 *n* = 10,552	Serious Events Averaged Per Village Per Yr *N* = 150
Respiratory distress	5,007	16.7
Acute Ischemic problems	2,848	9.5
Pregnancy-related emergencies*	549	1.8
Dehydration	520	1.7
Paralysis & Stroke	369	1.2
Suicide/Suicide Attempt	179	0.6
Drug/Alcohol Withdrawal/Overdose	178	0.6
Gastrointestinal Bleed	177	0.6
Nosebleeds	159	0.5
Eye Trauma & Serious problems**	139	0.5
Peritonsillar abscess	135	0.5
Chest Injury	29	0.1
Hypotension	96	0.3
Gunshot injury	62	0.2
Allergic reaction severe	45	0.2
Central Nervous System infection	24	0.1
Death & End of Life care	18	0.1
Altered Level Of Consciousness	18	0.1
Total Events Identified in 2 years	10,552	35.2
Total Number of Villages	150	
Total Visits	175,992	

*Pregnancy-related emergencies: These included deliveries; impending deliveries; active labor both preterm and term; premature rupture of membranes; early or late pregnancy bleeding; postpartum hemorrhage; ectopic pregnancy; maternal distress such as hypotension, renal failure, etc.; severe puerperal infection; retained placenta; and newborn distress.

**Eye Trauma and Serious problems: These included open wounds; burns, or contusions of eyeball or surrounding tissue; injury to the optic nerve or its pathways; retinal detachments; and keratitis.

Table 29. Serious Events Seen and Recorded in DML Data by CHA/Ps in Alaska, FY2005-FY 2006

Serious Events	DML 2006 *n* = 606	Serious Events Estimated Per Village Per Year *n* x 4/56
Acute Ischemic problems	120	8.5
Drug/Alcohol Withdrawal/ Overdose	118	8.4
Respiratory distress	90	6.4
Allergic reaction severe	44	3.1
Dehydration	42	3.0
Paralysis & Stroke	38	2.7
Eye Trauma & Serious problems**	38	2.7
Gastrointestinal Bleed	30	2.1
Peritonsillar abscess	23	1.6
Nosebleeds	16	1.1
Suicide/Suicide Attempt	12	0.9
Gunshot injury	10	0.7
Chest Injury	7	0.5
Pregnancy-related emergencies*	6	0.4
Hypotension	5	0.4
Death & End of Life care	3	0.2
Altered Level Of Consciousness	3	0.2
Central Nervous System infection	1	0.1
Total Events Identified in sample	606	
Total Number of Villages	56	
Total Visits in sample	12,581	

*Pregnancy-related emergencies: These included deliveries; impending deliveries; active labor both preterm and term; premature rupture of membranes; early or late pregnancy bleeding; postpartum hemorrhage; ectopic pregnancy; maternal distress such as hypotension, renal failure, etc.; severe puerperal infection; retained placenta; and newborn distress.

**Eye Trauma and Serious problems: These included open wounds; burns, or contusions of eyeball or surrounding tissue; injury to the optic nerve or its pathways; retinal detachments; and keratitis.

Health Problems by Age Group

CHAP Training currently has several classes devoted to health care for specific age groups. The most frequent assessments for different age groups are noted below.

Infants Less than 1 Year Old

- Children less than 1 year old comprised 7.6% of all NPIRS visits and 5.7% of all DML visits.
- The most frequent problems encountered were bronchiolitis or other lung problems, followed by ear infections.
- Well Child Care was 7% of NPIRS visits and 22% of DML visits for this age group.
- Serious Events in < 1 year old: In the NPIRS data, respiratory distress accounted for 90% of all emergency visits in infants. In the DML data, respiratory distress and dehydration combined made up 66% of infant emergencies.

Table 30. Most Common Health Problems in Infants Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age <1 Year	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n* = 13,026 (%)**		***n* = 712 (%)**	
Respiratory/Ear, Nose, and Throat problems	8,002	(61.4)	384	(54.0)
Fever/Other problems	1,456	(11.2)	51	(7.1)
Preventive care	954	(7.3)	149	(21.0)
Pediatric problems	866	(6.6)	14	(2.0)
Digestive/Abdominal problems	553	(4.3)	60	(8.4)
Skin problems	530	(4.1)	38	(5.3)
Eye problems	326	(2.5)	14	(2.0)
Dental problems	128	(1.0)	—	—
Nervous system problems	122	(0.9)	1	(0.1)
Infections not otherwise classified	89	(0.7)	1	(0.1)
Total counts and percents	**13,026**	**100%**	**712**	**100%**

Children 1–5 Years Old

- Children aged 1-5 years old comprised 17% of NPIRS visits and 12% of DML visits.
- Most common respiratory problems were otitis media; cough and/or bronchiolitis; URI; and pharyngitis.
- Well Child Care was 9% of NPIRS visits and 13% of DML visits for this age group.
- Serious Events in 1-5-year olds: Respiratory distress accounted for 86% of all serious events in NPIRS data. Allergic reaction, dehydration, and respiratory distress combined were the top 72% of emergencies in DML data.

Table 31. Most Common Health Problems in Young Children Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age 1-5 Years	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n*= 28,631 (%)**		***n* = 1,479 (%)**	
Respiratory/Ear, Nose, and Throat problems	17,342	(60.5)	838	(56.6)
Preventive care	2,520	(8.8)	192	(13.0)
Fever/Other problems	2,434	(8.5)	81	(5.4)
Skin problems	1,687	(5.9)	111	(7.5)
Injuries	1,071	(3.7)	57	(4.0)
Eye problems	975	(3.4)	25	(1.6)
Digestive/Abdominal problems	896	(3.1)	96	(6.4)
Infections not otherwise classified	718	(2.5)	8	(0.5)
Dental problems	566	(2.0)	71	(5.0)
Pediatric problems	422	(1.4)	—	—
Total counts and percents	**28,631**	**100%**	**1,479**	**100%**

Children 6 – 12 Years Old

- Children aged 6-12 years old comprised 12% of NPIRS visits and 10% of DML visits.
- Most common respiratory problems: pharyngitis, otitis media, and URI.
- Skin problems and Injuries were more often reasons for clinic visits than was Well Child Care.
- Serious Events in 6-12-year olds: The majority of emergencies in NPIRS data were respiratory distress. In DML data, injuries accounted for 32% of all emergencies for this age group, followed by allergic reactions and respiratory distress.

Table 32. Most Common Health Problems in Elementary School-Aged Children Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age 6-12 Years	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n* = 21,585 (%)**		***n* = 1,302 (%)**	
Respiratory/Ear, Nose, and Throat problems	12,862	(60.0)	582	(45.0)
Skin problems	1,536	(7.1)	111	(9.0)
Injuries	1,435	(7.0)	167	(13.0)
Eye problems	1,052	(5.0)	41	(3.1)
Digestive/Abdominal problems	837	(4.0)	62	(5.0)
Other problems	746	(3.4)	28	(2.2)
Infections not otherwise classified	689	(3.2)	2	(0.2)
Preventive care	583	(3.0)	61	(5.0)
Dental problems	407	(2.0)	129	(0.0)
Musculoskeletal problems	355	(2.0)	27	(2.1)
Total counts & percents	**21,585**	**96.7%**	**1,302**	**94.6%**

Youth 13 –19 Years Old

- Children aged 13-19 years old comprised 11% of NPIRS visits and 11% of DML visits.
- Problems in this age group and older groups are more evenly spread, requiring more than 10 categories to find >95% of health problems. Most common respiratory and ear problems: pharyngitis, URI, and otitis media.
- Serious Events in 13-19-year olds: In the NPIRS data set, 33% were respiratory emergencies with the rest being a combination of injuries, dehydration, and childbirth. Mental health emergencies (26%) and injuries (38%) were the largest categories in the DML data.

Table 33. Most Common Health Problems in Adolescents Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age 13-19 Years	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n* = 18,756 (%)**		***n* = 1,415 (%)**	
Respiratory/Ear, Nose, and Throat problems	8,081	(43.1)	423	(30.0)
Injuries	1,757	(9.4)	252	(18.0)
Skin problems	1,391	(7.4)	97	(7.0)
Eye problems	996	(5.3)	46	(3.2)
Pregnancy	943	(5.0)	68	(5.0)
Digestive/Abdominal problems	818	(4.4)	75	(5.3)
Musculoskeletal problems	660	(3.5)	77	(5.4)
Infections not otherwise classified	645	(3.4)	4	(0.3)
Genital problems	607	(3.2)	74	(5.2)
Dental problems	487	(2.6)	76	(5.4)
Subtotal percents		**87.3%**		**85.0%**
Next 5 Categories:				
Preventive care	485	(3.0)	87	(6.0)
Nervous system	432	(2.3)	17	(1.2)
Circulatory problems	411	(2.2)	18	(1.3)
Other problems	319	(2.0)	22	(1.6)
Mental health problems	315	(2.0)	28	(2.0)
Total percents		**99.0%**		**97.0%**

Adults 20–65 Years Old

- Adults aged 20-65 years old comprised 42% of NPIRS visits and 44% of DML visits.
- Serious Events in 20-65-year olds: In both DML and NPIRS data sets, chest pain or acute ischemic events comprised 25-33% of the emergencies.

Table 34. Most Common Health Problems in Young Adults Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age 20-65 Years	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n* = 73,535 (%)**		***n* = 5,556 (%)**	
Respiratory/Ear, Nose, and Throat problems	20,656	(28.1)	1,285	(23.0)
Circulatory problems	9,389	(13.0)	386	(7.0)
Skin problems	4,919	(7.0)	254	(5.0)
Musculoskeletal problems	4,929	(7.0)	519	(9.3)
Digestive/Abdominal problems	4,799	(6.5)	359	(6.5)
Injuries	4,540	(6.1)	578	(10.4)
Pregnancy	4,129	(6.0)	222	(4.0)
Preventive care	2,776	(4.0)	382	(7.0)
Genital problem	2,882	(4.0)	214	(4.0)
Mental health problems	2,135	(3.0)	195	(3.5)
Subtotal percents		**85.0%**		**79.7%**
Next 5 Categories				
Nervous system problems	2,154	(3.0)	179	(3.2)
Eye problems	2,003	(3.0)	129	(2.3)
Infections classified elsewhere	1,675	(2.3)	17	(0.3)
Urinary system problems	1,669	(2.3)	18	(0.3)
Endocrine problems	1,686	(2.3)	95	(2.0)
Total percents		**98.0%**		**88.0%**

Elder Adults Greater than 65 Years Old

- ≈75% of Circulatory Problems was hypertension; ≈7% were acute ischemic problems; and ≈6 % were chronic heart problems.
- ≈33% of Respiratory Problems was chronic lung disease; ≈20% was cough or pneumonia; and ≈8% was respiratory distress.
- Serious Events in elders over 65 years old: In the NPIRS data set, the top three categories were respiratory distress; ischemic events; and stroke-like syndromes. The DML data showed ischemic events most commonly, followed by respiratory distress and then dehydration.
- Details on assessments and serious events are available if needed.

Table 35. Most Common Health Problems in Elder Adults Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Age >65 Years	**NPIRS**		**DML**	
Top 10 Assessment Categories	***n* = 19,228 (%)**		***n* = 1,982 (%)**	
Circulatory problems	5,672	(29.0)	322	(16.0)
Respiratory/Ear, Nose, and Throat problems	4,799	(25.0)	371	(19.0)
Musculoskeletal problems	1,643	(9.0)	130	(7.0)
Digestive/Abdominal problems	1,327	(7.0)	112	(6.0)
Endocrine problems	922	(5.0)	74	(4.0)
Preventive care	895	(5.0)	387	(20.0)
Nervous System problems	602	(3.0)	58	(3.0)
Skin problems	591	(3.0)	82	(4.0)
Injuries	515	(3.0)	89	(5.0)
Other problems	509	(3.0)	88	(4.0)
Subtotal percents		**92%**		**88%**
Next 3 Categories				
Urinary System problems	457	(2.0)	67	(2.0)
Eye problems	340	(2.0)	30	(1.0)
Blood problems	309	(2.0)	82	(3.0)
Total percents		**98%**		**94%**

Injuries by Age Group

This lists the most frequent causes of injury as well as those injuries that could be life threatening.

Cause of injury is available for NPIRS data from ICD-9 E-codes. E-codes were grouped together with descriptions below as necessary.

- Medical mishaps include accidental cuts or bleeding from medical procedures and adverse drug reactions.
- Other nonintentional injuries: all those that are not motor vehicle crashes, other vehicles, falls, water, or air accidents.
- Environmental injuries include injuries caused by heat and cold, air pressure changes, hunger, thirst, exposure, and neglect, venomous plants, animals, storms, floods, volcanoes, earthquakes, and tidal waves.
- Overexertions are those causes of injury such as excessive physical exercise and strenuous movements.
- Tables 36–38 describe most frequent causes of injury by age group.

Table 36. Frequent Causes of Injuries for Infants and Young Children in NPIRS Data Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Frequent Causes of Injury Age < 1 year	**NPIRS Count *n* = 171**	**% of All Causes of Injury**	**Frequent Causes of Injury Age 1-5 years**	**NPIRS Count *n* = 1,677**	**% of All Causes of Injury**
Medical mishaps	63	37.0%	Other unintentional injuries	706	42.0%
Other unintentional injuries	35	21.0%	Falls	298	18.0%
Fire-caused injuries	22	13.0%	Environmental injuries	185	11.0%
Falls	16	9.0%	Fire-caused injuries	109	7.0%
Percent of injuries for age		**80.0%**	Motor Vehicle crashes	105	6.0%
			Other injuries	82	5.0%
Other Causes of Injury		**%**	**Percent of injuries for age**		**89.0%**
Poisonings	6	4.0%			
Gun Accidents/Explosives	1	0.1%	**Other Causes of Injury**		**%**
			Assaults/Homicide	14	0.8%
			Suicide	1	0.1%
Total percent		**84.0%**	**Total percent**		**90.0%**

Table 37. Frequent Causes of Injuries for Elementary School-Aged Children and Adolescents in NPIRS Data Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Frequent Causes of Injury Age 6-12 years	**NPIRS Count *n* = 2,228**	**% of All Causes of Injury for Age**	**Frequent Causes of Injury Age 13-19 years**	**NPIRS Count *n* = 2,477**	**% of All Causes of Injury for Age**
Other unintentional injuries	1049	47.0%	Other unintentional injuries	1143	46.0%
Falls	422	19.0%	Falls	310	13.0%
Motor Vehicle crashes	211	10.0%	Motor Vehicle crashes	256	10.0%
Environmental injuries	201	9.0%	Overexertion	218	9.0%
Overexertion	82	4.0%	Environmental injuries	116	5.0%
Other injuries and undetermined injuries	81	4.0%	Assaults/Homicide	105	4.0%
Fire Caused injuries	46	2.0%	**Percent of injuries for age**		**87.0%**
Assaults/Homicide	44	2.0%			
Medical mishaps	40	2.0%	**Other Causes of Injury**		**%**
Percent of injuries for age		**99.0%**	Suicide	79	3.2%
			Gun Accidents/ Explosives	22	0.9%
Other Causes of Injury		**%**			
Gun Accidents/ Explosives	19	0.9%			
Suicide	4	0.2%			
Total percent		**100.0%**	**Total percent**		**91.0%**

Table 38. Frequent Causes of Injuries for Adults and Elders in NPIRS Data Seen by CHA/Ps and Recorded in Alaska, 2005-2006

Frequent Causes of Injury Age 20-65 years	**NPIRS Count *n* = 5,680**	**% of All Causes of Injury for Age**	**Frequent Causes of Injury Age 65+ years**	**NPIRS Count *n* = 659**	**% of All Causes of Injury for Age**
Other unintentional injuries	2,418	43.0%	Other unintentional injuries	215	33.0%
Falls	773	14.0%	Falls	207	31.0%
Overexertion	612	11.0%	Overexertion	57	9.0%
Motor Vehicle crashes	372	7.0%	Medical mishaps	52	8.0%
Assaults/Homicide	350	6.0%	**Percent of injuries for age**		**81.0%**
Percent of injuries for age		**81.0%**			
			Other Causes of Injury		**%**
Other Causes of Injury		**%**	Motor Vehicle crashes	33	5.0%
Environmental injuries	263	5.0%	Environmental injuries	22	3.0%
Fire-caused injuries	212	4.0%	Fire-caused injuries	18	3.0%
Suicide	95	2.0%	Assaults/Homicide	13	2.0%
Gun Accidents/Explosives	14	2.0%			
Total percent		**94.0%**	**Total percent**		**94.0%**

Procedures and Treatments

The data analyzed for Procedures and Treatments were not directly comparable between NPIRS and DML because of differences in coding. We were able to identify medications given during a DML patient encounter. Medications in NPIRS data only recorded injections and nebulizer treatments. However, there were 75,051 NPIRS prescription refills not associated with specific assessments. Similarly, NPIRS data picked up oxygen saturation testing which was not coded in the DML data. Comparisons that can be made are in the table below. An explanation follows the table.

Table 39. Procedures and Treatments Recorded by CHA/Ps in Alaska, 2005-2006

	NPIRS *n* = 53,386		DML *n* = 17,622	
Procedures or Treatments	**(%) All Procedures or Treatments**			
Antibiotic injection	6,342	(11.9)	305	(1.7)
Immunization (not flu)	3,785	(7.1)	227	(1.3)
Influenza immunization	1,039	(1.9)	164	(0.9)
All other injections*	1,322	(2.5)	557	(3.2)
Nebulizer therapy	1,485	(2.8)	173	(1.0)
Respiratory testing (peak flow, vital capacity)	1,168	(2.2)	—	—
Blood draw	1,748	(3.3)	388	(2.2)
Injury care**	1,754	(3.3)	474	(2.7)
Culture collection	1,002	(1.9)	74	(0.4)
Oxygen saturation	32,631	(61.1)	—	—
Other medication activity	—	—	8,790	(50.0)
Total % of all procedures		**98%**		**63.4%**

*All other injections include everything that is not a vaccine or an antibiotic.
**Injury care includes wound irrigation; packing and dressing; splint application; and skin closures. Percent (%)s will not equal 100% due to differences in coding and grouping.

- **NPIRS data:** Of the 197,190 visits in the NPIRS data set, 27% listed a procedure. Total encounters with procedures reviewed: 53,386. The ten procedures listed in Table 39 account for 98% of all procedures found.

- **DML data:** Of the 12,981 health encounters, 17,622 treatments were examined. The procedures listed above accounted for only 63% of all coded procedures in DML data. Further delineation of DML treatments and procedures are in the tables below.

DML Treatment Highlights and Discussion

Medications

Medications and activities with medications were 58% of all treatments.

- Activities that Health Aides describe as medication refills occurred 1,416 times or 8% of all treatments.
- Medication activity that was not assisting with refills or giving new medications included ordering meds; giving patients medications; delivering meds shipped in; and filling med boxes. These activities comprised 5% of all treatments and 10% of all medication-related treatments.
- New medications were administered or given at 36% of the visits. Most of these were oral medications. New medications are described in Table 40. Notes on different types of medications follow the table.

Table 40. Medication Activity by CHA/Ps and Recorded in DML Data in Alaska, 2006

Medications Administered/Given	DML *n* = 7,712	% of All DML Treatments *n* = 17,622
New oral meds	5,380	29.3%
New injection meds	1,238	6.7%
New topical meds	745	4.1%
New suppository meds	26	0.1%
New inhaler meds	96	0.5%
Meds nebulizer meds	173	0.9%
Oxygen	54	0.3%
Total % of all medications administered/given		**42.9%**

- **Injectable Meds**
  - 1,253 injections total. These included both new meds and refills.
  - 25% were intramuscular antibiotic injections.
  - 31% were immunizations.
  - Injections for pain were 12% of the total injections; 1/2 of those were Nonsteroidal Anti-inflammatory Drugs (NSAIDs).
  - Contraceptive injections and Promethazine intramuscular (IM) were each about 5% of all injections.
  - IV fluids comprised about 4% of all injections.

  - The rest of the injections given (20% of total injections) included Epoetin, Vitamin B12, antirheumatic, antianxiety, steroids, insulin, intravenous antibiotics; and intravenous Promethazine.

- **Topical Treatments**
  - 745 new prescriptions for topical meds.
  - 17% were ophthalmic antibiotics.
  - 16% were topical antibiotics.
  - 14% otic meds.
  - 10% antifungals.
  - 10% steroids.
  - 10% nasal sprays.
  - Other topicals included insecticides; burn and wound care ointments; antiseptics; nicotine patches; and contraceptive patches.
- **Suppositories**
  - Promethazine (50%).
  - Acetaminophen (34%).
- **Respiratory Meds**
  - Inhalers, nebulizers, and oxygen.
  - Together they accounted for 1.5% of all treatments.

Injury Care

- 2.7% of all treatments.
- Most of this was classified as general wound care (51% of injury care, or 1% of total treatments), which included nonspecific wound care; rechecks; gentle washing; applying Band-Aids; etc.
- Splints were applied 0.3 % of all treatments. Patient education in RICE (rest, ice, compression, elevation) was given another 0.3 %.
- Other treatments included sutures; suture removal; crutches; wound irrigation; incision and drainage of abscesses; and cast care.

Dental Care

- 0.88% of all treatments.
- Most of this category was dental care that wasn't specified, with exception of a few dental fillings or extractions by CHAs, not Dental Health Aides.

Other Patient Care

The DML data set reported 13% of all treatments as Other Patient Care. Table 41 lists the categories included in Other Patient Care. Brief explanations follow the table.

Table 41. Other Patient Care Given by CHA/Ps and Recorded in DML Data for Alaska, 2006

Other Patient Care	DML *n* = 2,390	% of All DML Treatments *n* = 17,622
Symptomatic care	504	2.7%
Patient education	490	2.7%
Recheck	329	1.8%
Medevac	134	0.7%
Transfers	446	2.4%
Referrals	330	1.8%
Consult	31	0.2%
Observation	106	0.6%
Continue current care	20	0.2%
Total % other patient care		**13.0%**

- Symptomatic care meant fluids, rest, heat, cold, and other care.
- Medevacs were emergency transfers by medevac personnel.
- Transfers were urgent transfers by commercial or private conveyance.
- Referrals were nonurgent transfers of care.

Lab Tests

- Lab tests included blood draws, TB testing, cultures, urine testing, EKGs, and X-rays.
- Lab tests accounted for 6.7% of all treatments.

Table 42. Lab Tests Done by CHA/Ps and Recorded in DML Data for Alaska, 2006

Lab Test	% All DML Lab Tests *n* = 982 (%)	% All DML Treatments *n* = 17,622 (%)
Blood draw	34.3%	2.2%
TB screening	11.6%	0.8%
Urine pregnancy test	6.8%	0.5%
Cultures	5.3%	0.4%
Rapid strep test	4.1%	0.3%
Hgb test	3.5%	0.2%
Urine testing/culture	3.5%	0.2%
EKG	3.0%	0.2%
Newborn Metabolic Screen	1.2%	0.09%
GC/Chlamydia test	1.1%	0.06%
Glucose tests	4.5%	0.3%
Other unspecified tests or lab paperwork	18.1%	1.2%
Total percent all lab tests	**97.1%**	**6.45%**

- Currently, EKG technique is not taught in basic training. However, CHA/Ps are conducting EKGs at similar rates as for Rapid Strep, Hemoglobin, and urine tests; and at a much higher rate than metabolic screening.

Exams as Treatments

Sometimes specific exams were listed as treatments by CHA/Ps. Most assessments made by CHA/Ps following the CHAM required an exam of some sort. The exams as treatments listed in NPIRS and DML data are simply recordings of what was written in the daily logs and may represent notable exams done by CHA/Ps.

Table 43. Selected Exams Done by CHA/Ps and Recorded in DML Data for Alaska, 2006

Types of Exams	DML *n* = 830	% of All DML Treatments *n* = 17,622
BP check or VS check	308	1.5%
Pregnancy care	131	0.6%
Screening PE, woman, sports	121	0.3%
WIC exam	77	0.4%
Health screening	63	0.3%
Well child care	54	0.3%
Weight check	22	0.1%
Eye exam	17	0.1%
Other exam	30	0.1%
Heart pacemaker check	7	0.3%
Total % of all exams		**4.0%**

Other Treatments

- Other patient care included foot care, chronic care undefined, eye care, home visits, catheter care, and ear irrigation.
- Paperwork as a separate category was part of 14% of all treatments.
- Miscellaneous included: 0.05% of patients declined service; 0.01% of treatments were childbirth; and 0.02% of treatments were listed as CPR and/or death.

Table 44. Other Treatments Given by CHA/Ps and Recorded in Alaska DMLs, 2006

Other Treatments	DML *n* = 2,870	% of All DML Treatments *n* = 17,622
Other patient special care	87	0.4%
Paperwork	2,692	14.6%
Miscellaneous	91	0.4%
Total percent all other treatments		**15.4%**

Curriculum Comparison

The current curriculum was generally analyzed. We compared major groups of assessments with the curriculum overall. The basic training curriculum is separated into classroom hours, skill hours, and clinical hours. It includes a total of 412 class and skills teaching hours combined over four sessions. CHA/P students must also complete 117 clinical hours. In this comparison, we did not include clinical hours because in clinics, multiple body systems are demonstrated and practiced. In addition this review did not include skills learned and practiced between basic training sessions.

Table 45 shows a comparison of the Community Health Aide Basic Training Curriculum with the averaged proportion of clinical encounters by Health Aides.

Table 45. Comparison of Community Health Aide Basic Training Curriculum Instructional Hours and Averaged Proportion of Clinical Encounters by CHA/Ps in Alaska 2005-2006

Major Assessment Categories	Visits %	Hours Training	Training Hours %	Comments
Respiratory/ENT	30-40%	11.0 Resp 11.0 Ear	5%	Also some time in sick child, TB, etc.
Circulatory	6-9%	9.0	2%	
Skin	5-6%	10.0	2%	
Emergencies	5-6%	23.0	6%	Comparison is with serious events not necessarily all injuries
Preventive care	5-12%	>24.0	6%	Difficult to estimate; these hours listed are well child, grade school child, and older adult; tobacco cessation; patient education; and adult health surveillance.
Digestive	5-6%	11.0	3%	
Musculoskeletal noninjury	4-6%	8.0	2%	
Eye problems	2-3%	5.0	1%	
Pregnancy	2-3%	20.0	5%	Includes labor and delivery
Genital problems	2-3%	15.5	4%	
Nervous problems	2%	8.0	2%	
Mental Health	2%	34.0	7%	
Urinary problems	1-2%	3.5	1%	
Paperwork	7-8%			Usually THO specific
Med refill	8-28%			Session IV: chronic disease; medicines; and older adult classes; as well as others scattered throughout sessions.

Notes on Table 45:

- The biggest discrepancy between the proportion of visits and the proportion of training is seen in the respiratory/ENT problem major category.
- Smaller discrepancies with a higher proportion of visits than proportion of training are seen in the digestive problem and noninjury musculoskeletal problem major categories.
- Areas of higher percent of training hours as compared to percent of visits are genital problems and mental health problems.

Another way of looking at assessments and training is to look at when specific assessments are taught. Below is a table that compares most frequent and most serious assessments and training. Note that the designation of most frequent is a rough estimation based on combining NPIRS and DML data.

Table 46. Selected Assessments and Training Sequence

Assessment or Diagnosis	Rough Frequency All CHA/P Visits or Designated as Serious Event (%)	Session Initially Taught
Pharyngitis/tonsillitis/abscess	8.0%	Session I
Otitis Media	6.0%	Session I
Bronchitis/Bronchiolitis	4.0%	Session I
Hypertension	4.0%	Session II
Lacerations	2.8%	Session I
Respiratory Distress	2.5%	Session I
Abdominal Pain (including Gastroesophageal Reflux Disease)	2.5%	Session I – acute abdomen Session II – pain from GERD
Cellulitis/Methicillin Resistant Staphylococcus Aureus (MRSA)	2.4%	Session I – cellulitis Session II – abscess
Immunizations/Injections	2.0%	Session I
Fever	2.0%	Session I
Gastroenteritis	1.8%	Session I
Conjunctivitis	1.5%	Session I
Diabetes	1.0%	Session II
Acute cardiac ischemia	1.0%	Session I
Headaches	1.0%	Head injury taught Session I; Headache taught Session II
Pregnancy-related emergencies	Serious event	Emergency childbirth, Session I All other serious problems, Session III
Drug/Alcohol Withdrawal/ Overdose	Serious event	Session I
Suicide/Suicide Attempt	Serious event	Session I
Dehydration	Serious event	Session I
Paralysis & Stroke	Serious event	Session II
GI Bleed	Serious event	Session I
Nose Bleed	Serious event	Session I
Eye trauma & serious problem	Serious event	Session I

LIMITATIONS

Limitations of Data Collection and Analysis

DML Data Limitations

1. Data Incomplete:

- Some villages and Tribal Health Organizations did not send a complete set of DMLs for the year. If one month was missing a week from another month was substituted. The week selected was either close to the missing month or from a time when rotating data collection left a 5-week gap. If there was more than one month of data missing for a village no substitutions were made. All of these changes are noted in Appendix F and available on request.
- Sometimes the week originally selected was a week when a consulting provider was present and there were almost no CHA/P visits. In these cases another week in the same month was selected, if possible, or another week in another month as above.
- DMLs filled out incompletely. Most frequent missing data were time of visit or age or sex of patient. Less frequently, assessments and treatments were missing. These were coded "assessment none" and for treatment as "none noted." Analysis of missing data showed no change in proportions of assessments across the whole data set. However one tribal organization's clinics had many fewer entries in the study due to incomplete DMLs. Sometimes the treatment area says "see PEF." The PEFs (Patient Encounter Forms) were not available so these treatments were coded as "see PEF."
- DMLs illegible. If the whole week or month was illegible another copy of the DML was sought. If that was unavailable or equally illegible another week was selected as above. If a few visit entries were illegible, their assessments were listed as "assessment unclear."

2. Problems with Assessments:

- Assessments are frequently symptoms and not diagnoses. If a diagnosis could be made from the symptoms it was interpreted that way, however most often it was recorded as the symptom. These findings cannot be used to determine incidence of certain diseases or conditions.
- Unclear Assessment: Sometimes the DML is legible but it does not easily make sense. An example is an assessment of "breathing." This could be interpreted as "check breathing," "breathing problems," "end of life care," etc. If an interpretation could not be made with assurance, then the entry was coded "assessment unclear."

3. Repeat Visits:

- Repeat visits were entered as if they were a new problem; with one exception as noted below. This was done because it was frequently unclear if the visit was a new problem; a recheck of an old one; or a complication of an old problem. In terms of the exam, making an assessment, and plan, the CHA/P is still required to think through the whole problem. As noted above, this study cannot be used to determine incidence of disease, only CHA/P workload and the range of assessments. The one exception to this was when the CHA/P wrote recheck or follow up, with no other assessment—in this case it was coded as "recheck no assessment."

NPIRS Data Limitations

1. Data Incomplete:

- Only about 56% of CHA/P workload is entered into RPMS and exported to NPIRS (Information from ANTHC DIT, DM&A Health Statistics for FY 2005).
- Norton Sound Health Corporation (NSHC) data for NPIRS FY 2006 was completely unavailable. NSHC makes up about 8% of CHA/P visits. To be sure we included NSHC data, we looked at information from FY 2005 and FY 2006 for all Tribal Health Organizations that use NPIRS. We compared age groups; sex distributions; and numbers of clinic visits for FY 2005 for NSHC, BBHAC, YKHC, and all other Tribal Organizations combined. We also examined the same variables for BBAHC, YKHC, and all other tribal organizations combined and compared FY 2005 to FY 2006. We found no significant differences, so NHSC data from FY 2005 was added to the data from both FY 2005 and FY 2006.

2. Repeat Visits:

- As with DML data, no provision was made to identify repeat visits.

Comparison of DML and NPIRS Data Sets

The two different methods of collecting and reporting data were not directly comparable. At first glance, it appeared that the Tribal Health Organizations reporting with NPIRS were providing the bulk of health care; so much so that DML data could be ignored. In reality, NPIRS visits were about twice the DML visits. To explain: NPIRS data were all data over two years. Due to sampling, DML data were 1/4 of 1 year of data. NPIRS visits total: 272,242; DML visits: 18,090 sampled, *4 weeks/month, *2 years = 144,720. Some Tribal Health Organizations used both methods of data collection.

It was hoped that data from both data sets would be similar. There were significant differences in the proportion of Respiratory/ENT problems and Circulatory problems in the two data sets. In the analysis of data from tribal organizations with data in both NPIRS and DML, one tribal organization had twice as many Respiratory/ENT problems in the NPIRS data than in the DML data. Another tribal organization had 3x the proportion of Circulatory problems in the NPIRS data than in the DML data. Both of these tribal organizations had more absolute numbers of patients in the DML data than in the NPIRS data. Without further study, future clinical practice evaluations will need to use both methods of data collection.

Data Generalizability

YKHC has about 30% of the villages and 40% of the CHA/Ps in Alaska. YKHC contributed more than 70% of the data to NPIRS. The question may be asked if YKHC data reflects the state as a whole or if its contribution to this data is skewing the results. A review of major assessment categories reveals a slightly higher proportion of respiratory and circulatory problems, but is in general, congruent with other clinical sites.

CONCLUSIONS

Community Health Aides and Community Health Practitioners are essential to the success of Alaska's rural health care delivery system. CHAP programs and training provide critical elements for that success. This project is the first known comprehensive look at what CHA/Ps are seeing and doing in their clinics. CHA/Ps see a wide variety of patient problems; the majority of which are related to the Respiratory or Ear, Nose, and Throat body systems. Respiratory distress accounts for the greatest number of life-threatening events, with CHA/Ps caring for an average of 17 episodes per village each year. Chest pain and heart attack-like symptoms average 10 occurrences in each village each year. Other frequent reasons for clinic visits are skin problems, injuries, and health screenings. Mental Health problems are the stated purpose of visits only 2% of the time. Cancer as a primary reason for visit occurred less than 1% of the time.

The data sets are not complete and the Tribal Health Organizations contributed data in disproportion to their patient numbers. If this review is to be repeated, other methods of data collection should be sought. If we are moving toward electronic recordkeeping it is important that we have a robust electronic record that can easily capture CHA/P practice.

This project looked at what CHA/Ps are doing in their clinics. In the future it would be helpful to know how prepared they feel with their training for each of the assessments, especially the high risk assessments. Differences in assessments between tribal organizations were noted. These may be real practice differences or differences in data recording. If the differences are real, it may be useful to consider curriculum variations for individual tribal organizations.

Current curriculum teaching hours emphasize emergency care, pregnancy, and mental health. CHA/Ps have expressed desire to have training that enables them to be competent in acute high risk situations and that is relevant to their daily clinical practice. The curriculum should be reviewed for consistency with CHA/P clinical practice; the difficulty of teaching various assessments and skills; and the inclusion of less likely but high risk assessments. Decisions made regarding training are not simply based on proportion of visits and proportion of teaching hours. Clearly, judgments need to be made relative to the difficulty of the material; the risk of the skill not being learned; and time allowed for training CHA/Ps.

Curriculum Implications and Recommendations

- In general, CHAs are being taught what they need to know in basic training.
- Emergency Care
    - Ensure CHA/Ps are very comfortable caring for respiratory distress in infants and elders before they leave training.
    - Emphasize early recognition of heart attacks; and CHA comfort with a plan consistent with remote clinical care.
    - Continue to teach pregnancy emergencies early in training; change childbirth class to include basic treatment of other emergencies in pregnancy such as bleeding and preterm labor.
- EKGs: Add instruction in EKG technique to basic training. EKGs are being done by CHA/Ps as frequently as other tests and procedures that are part of basic training.
- Circulatory Problems: This is the second most common reason for visiting a CHA/P. Consider moving the initial introduction to Session I with emphasis on hypertension prevention and treatment.
- Skin: Emphasize care and prevention of bacterial infections.
- Eye problems are up to 3% of problems seen and 1% of training hours. More training in eye care would be helpful.

- Medication Activity: This is a large part of a CHA/P's job. Addressing this specifically in Session I would add to patient safety. In regions that utilize direct mailing of refills this may be less of an issue.
- There is a discrepancy between training hours and proportion of visits for respiratory/ENT problems. However, this may not necessitate an increase in training hours. After receiving a solid foundation in Sessions I and II, Health Aides have ample opportunities to practice and hone these skills.
- Consider modestly increasing hours of training for both digestive and musculoskeletal problems.
- Consider decreasing hours of training for genital problems.
- Look at the impact of Behavioral Health Aides and consider decreasing hours spent on mental health problems.
- Electronic data collection captured different proportions of each organization's Health Aide practice. In addition, NPIRS and DML data sets provide somewhat different answers to the same questions. As the electronic health record is adopted in more places in the state, consider how data can be shared or harmonized so future evaluations of CHA/P practice can easily be done.

Future Plans

- Provide individual Tribal Health Organization data to each Tribal Health Director with comparison to the state as a whole.
- Consider methods of providing ongoing feedback to the Academic Review Committee regarding CHA/P practice.
- Consider using this data to conduct a qualitative review on how well CHA/Ps feel they are prepared for each subset of clinical problems.
- Abbreviated and summarized paper for submission to an appropriate medical journal.

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