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Reconceptualizing Long-Term Care in Rural Alaska

Jordan Lewis, PhD, Research Associate; Keri Boyd, MS, Graduate Research Assistant, both from the University of Alaska Fairbanks, Center for Alaska Native Health Research, Institute of Arctic Biology, Fairbanks, Alaska

Abstract

The need for culturally appropriate long-term care services provided by tribal communities has become the focus of Indian Country within the past few years. This paper highlights two regions of rural Alaska that participated in region-wide Elder Needs Assessments and what each region is doing to meet the needs of their growing elderly population. The assessments were both conducted in the spirit of community-based participatory research, enabling the communities and elders to drive the project, and interview findings highlight what they would like to see in their homes and communities.

"That would be good. The elders don't have to go somewhere and stay in a home. If they have a home here would be better. Their relatives could go visit them too. And maybe bring them little food to eat. That would be good."

Introduction

With the passage of the Affordable Care Act of 2010, the need for culturally appropriate long-term care services provided by tribal communities has become the focus of Indian Country. The challenge with this legislative mandate is the lack of funding allocated to the Indian Health Service (IHS). One of the challenges facing the tribal health care system in Alaska and throughout Indian Country is that the IHS does not directly fund long-term care for American Indian/Alaska Native (AI/AN) elders, and demand for these services is increasing. As the AI/AN aging population continues to grow, it will be important to explore options to deliver sustainable, and economically feasible, long-term care (LTC) and Home and Community-based Services (HCBS) that meets the unique social, cultural, and geographic needs of tribal communities.

This article highlights what two rural regions of Alaska are doing to meet the needs of their growing elderly population and presents interview findings on what LTC services and HCBS they would like to see in their communities. These regions are developing culturally appropriate LTC services unique to their culture, geography, and demographics. Elder Needs Assessments were conducted in the spirit of community-based participatory research (CBPR), enabling the communities and elders to drive the projects and determine how the findings were to be shared and presented.

Methods

In Bristol Bay, we worked collaboratively with four participating rural villages over the course of summer 2010. We administered the IHS Long-Term Care Needs Assessment surveys to elders, caregivers, family members, and community members during our community visits and meetings (n=69).

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The second half of this project consisted of Community Health Aide/Practitioner and Service Provider questionnaires (n=30), which explored the needs of elders in the communities, which services are being provided, and what is needed to maintain elders in their homes and communities.

In the Norton Sound subregion, we worked collaboratively with five participating rural Alaskan villages over the past year to conduct a two-phase, mixed-methods elder needs assessment. In Phase I we chose to use the Indian Health Service "Identifying Our Needs" survey instrument to establish a quantitative baseline understanding of elders' physical, emotional, and social needs. Phase I consisted of 134 Alaska Native elders age 60 years and older. Based on the results of Phase I data analysis, we developed a semi-structured, open-ended questionnaire to help gain a deeper understanding of elders' wants and needs. Phase II interviews were conducted with 22 community-nominated Alaska Native elders.

The two assessments consisted of 233 Alaska Native elders age 60 and older. Upon completion of the Elder Needs Assessments in the two regions, we have determined the most effective, efficient, and culturally congruent way to serve the Alaska Native elders in their communities based on the recommendations and experiences of the elders, CHAs, and community members.

LTC Funding

While the Medicaid program is the primary source of funding for the majority of long-term care services, it reimburses only IHS and tribal programs funded under P.L. 93-638. This has led to a lack of consolidation and coordination of services for elders. One way of enabling elders to remain independent is through the provision HCBS, health care and social services provided in the homes that enable elders and individuals with disabilities to remain independent as long as possible. These HCBS may provide a combination of traditional medical services (e.g., skilled nursing services) and nonmedical services (e.g., chore, respite services).

Alaska Challenges

Many communities throughout Alaska are geographically isolated, meaning they are only accessible by boat or plane. In addition to isolation, the extreme climate in Alaska makes it challenging to transport individuals, deliver health care services, or respond to medical emergencies. An important segment of the growing elderly population in Alaska are Alaska Native (AN) elders who are aging in place, living longer, and facing increasing health care needs. The current cohort of AN elders is comprised of those who grew up with a traditional subsistence lifestyle, have lived off the land, and have spent a majority of their lives in the community where they currently reside. As the AN elderly population continues to increase, the prevalence rates of chronic conditions will also rise dramatically, as well as the need for long-term care services. Rural communities realize the importance of providing services to their elderly residents, but are faced with the challenge of funding, administering, and sustaining LTC services.

Elder Needs Assessment Projects in the Northwest and Southwest Regions of Alaska

Over the past two years, needs assessments were conducted in two very culturally distinct regions of Alaska. One assessment was conducted in the Norton Sound subregion (northwest Alaska), and the residents were either Inupiat or Yup'ik Eskimo. A second assessment was conducted in Bristol Bay, Alaska (southwest Alaska) and the residents were Aleut, Athabascan, and Yup'ik Eskimo. Even though both regions included Yup'ik Eskimos, it is important that they are not lumped together, as there are great differences within the Yup'ik Eskimos, such as language dialect and subsistence activities.

Norton Sound Subregion

This assessment involved the Norton Sound subregion in a year-long, two-phase Elder Needs Assessment conducted to determine the currently existing, and needed, services to keep elders in their home and communities.

The first phase of this project consisted of a quantitative biomedical assessment of the elders' health care needs with a total of 134 elders, utilizing the Administration for Native Americans (ANA) Assessment survey tool. This phase of the project provided a comprehensive picture of the health status of Alaska Native elders (Inupiat Eskimo and Yup'ik Eskimo) in the five subregional communities.

The second phase of the project consisted of a qualitative, in-depth questionnaire focused on the specific health and long-term care needs of the elders. We conducted in-depth interviews with a total of 22 elders in the five participating communities. This phase of the assessment provided a more detailed picture of the health and long-term care service needs of elders in each community and what their preferences were for long-term care services.

We worked collaboratively with the ANA coordinators in each of the participating communities, who served as the key informant in each community and introduced us to the community and local elders. They were invaluable in their support and dedication in completing the surveys and assisting us with the project. They continued to serve an important role in the project during Phase II by coordinating and providing assistance in conducting the qualitative, in-person interviews with 22 elders in spring 2011. Finally, the general findings were presented and discussed at public meetings in each of the five communities.

Bristol Bay Area

This needs assessment explored the long-term care needs

of elders in the Bristol Bay region of southwest Alaska and was conducted in four communities comprised of Yup'ik Eskimos, Aleuts, and non-Natives. We used a survey approach to gathering information on the needs, challenges, and barriers elders face when they remain in their home and community. In addition to exploring the needs of the elderly residents, surveys were administered to Community Health Aides (CHAs) and service providers in the region. Obtaining data from both residents and health care providers provided a more comprehensive picture of the long-term care needs of the region and suggestions about what would enable elders to age in place.

Regional Assessments Findings

The elders shared stories of raising their families and grandchildren, the challenges of growing older in their community, and the LTC needs of their community; they also spoke of the importance of their culture, subsistence, and community. The communities in both regions are mixed cash and subsistence economies, and many residents still engage in subsistence activities to supplement their diet and income. One of the underlying themes of these projects was the importance family and community played in the elders' lives and the value placed on family at the end of life. These aspects of their lives are also integral to their identity as Alaska Natives and how they view their role in their family, community, and world.

These communities where the elders live have been their homes since birth, or at least a majority of their lives. Their knowledge and familiarity with the land, knowing the community, and being near their family were all reasons they wished to stay. When asked where they wish to live their remaining years, almost every elder listed their home and community, or fish camp.

Another major theme emerging in these assessments is the desire to maintain the elders in their homes and communities. This could be done through the construction of LTC facilities, the provision of Personal Care Attendant (PCA) services in the communities, or home based services such as visitors and chore services. A majority of the respondents indicated their desire to remain in their own home independently, or with their family as they get older, but are faced with challenges. A few of the most frequently mentioned challenges are the high cost of living, not being eligible for income assistance and benefits (i.e., Medicare, Medicaid), and the lack of available health care services in their community. Other recommendations not directly related to personal needs, were education and training opportunities for family members and caregivers in the communities as well as more activities in the communities that engage the elders.

These two assessments have sparked a dialogue among community, regional, and tribal leaders to think outside the box when it comes to providing services for their elders. These assessments will help all levels of service providers to better understand the LTC needs of elders and what is required to keep them in their homes and communities. It is important to note this study also found many elders are still living independently and remain healthy with minimal assistance, and plan to remain in their homes for as long as they are able.

Community-based LTC Recommendations

Without understanding the challenges of aging in a rural community, it is difficult to provide appropriate LTC services for elders. Understanding the LTC needs and challenges was enhanced in this study because recommendations, personal experiences, and barriers were elicited from the elders, community members, and health care providers. The respondents described what is happening in their communities, gave us recommendations about how to improve the LTC services, and expressed their concern for the lack of available LTC services. The following section details two examples of how these regions are thinking outside the box in delivering LTC services.

PCA services

The Norton Sound subregion is in the early stages of developing a PCA service agency to meet the growing needs of elders in the subregional communities. They have been working collaboratively with another tribal health corporation in Alaska that has a currently existing, and successful tribal PCA agency to learn how to start and develop an agency in their own region. This is another example of thinking outside the box and collaborating with others to address the unique challenges of providing services in remote settings across Alaska.

The Bristol Bay region has contracted with an urban-based PCA service agency to assess elders and provide services that would permit them to age in their own home, such as PCA and chore services, respite, or home modifications. This is a fairly new development, so there are very few data to support whether or not it is effective in preventing elders from relocating out of the region.

Home modifications

The Norton Sound subregion has contracted with the Cold Climate Housing Research Center (CCHRC) to develop housing plans exploring different options for home modifications that promote aging in place. The plan includes assessing homes in each community to be retrofitted for home modifications (i.e., ramps, handrails, etc.), which will enable elders to remain safe in their own home and community. There are also discussions about the development of "elder pods" that can be constructed in each community and attached to currently existing family homes. These would be constructed like a small apartment that could be added to a family home to add more living space that would enable the family to take care of the elder without sacrificing any of their living space. A third

plan is focused on developing and constructing small group homes that would house three to four elders with a common area and kitchen/cooking space. These three plans came from the findings from the Elder Needs Assessment.

These are examples of regions thinking creatively and working with other collaborators to develop efficient and sustainable plans that will also incorporate community input and guidance throughout the development and construction phases.

Conclusion: Future of LTC and HCBS in Alaska

As the population of Alaska continues to grow older and rural communities are faced with the challenges associated with providing LTC services, the need for innovative and culturally appropriate services will become more crucial. We are witnessing firsthand the unique challenges associated with aging and providing LTC services in rural Alaska. We did not focus on these challenges, but they serve as the foundation for the future direction, and from these challenges come innovative strategies to meet the growing LTC and HCBS demands of the elderly population.

It is important to note that many of these challenges are not unique to Alaska, but are found throughout Indian Country. The United States, as well as the world, is facing a global aging boom, and with this comes the need for community-driven strategies. As community psychologists, we understand the value of community engagement when tackling complex and important issues such as the growing elderly population. The results of these needs assessments provide support for a much needed paradigm shift in the way LTC is delivered, from the medical model of long-term care facilities, to more home-based, culturally responsive services that allow elders to live their remaining years in the community they call home.

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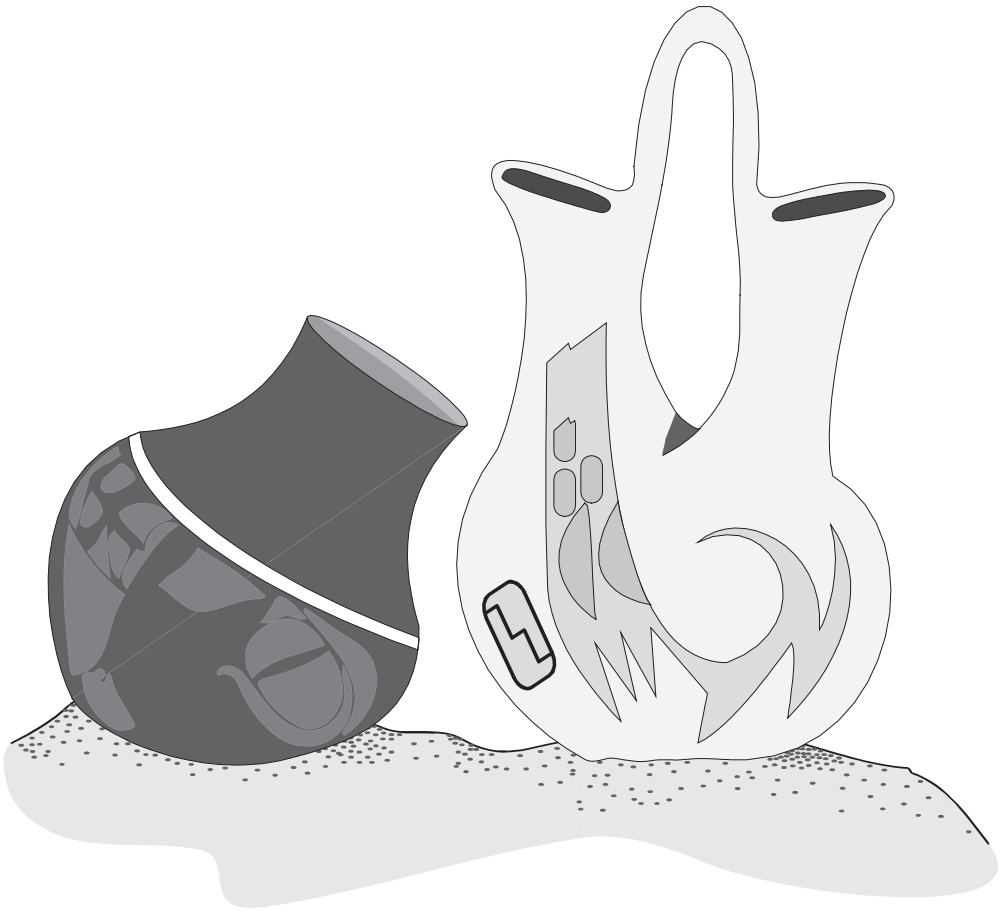


Integrating Pharmacy with the Transforming Primary Care Model at Northern Navajo Medical Center

Megan J Connelly, PharmD, PGY1—Resident 2010–2011; Kendall VanTyle, PharmD, BCPS, NCPS, Residency Director; Mark Strong, PharmD, Chief of Outpatient Pharmacy; and Thad Koppenhafer, PharmD, Pharmacy Director, all from the Northern Navajo Medical Center, Shiprock, New Mexico

Introduction

Northern Navajo Medical Center (NNMC) is a federally-funded Indian Health Service (IHS) facility located on the Navajo reservation in rural northwestern New Mexico. The facility provides both inpatient and outpatient services to American Indians and Alaska Natives. The pharmacy department at NNMC consists of 31 pharmacists and 19 technicians, and fills approximately 25,000 outpatient prescriptions per month. Ninety-day prescriptions are available at our site, and patients are encouraged to use an automated phone line to request medication refills. Prescriptions at NNMC are processed in a four-step process. They are "screened" by a pharmacist to determine the appropriateness of the order(s) to be processed, filled by an automated dispensing system or technician, and then "checked" by a different pharmacist to verify that the filled prescription matches the order. Finally, patients with new prescriptions or changes to old prescriptions, or those receiving narcotics and other selected medications are individually counseled by a pharmacist in a private counseling room. NNMC pharmacists are active in three primary roles: outpatient services, inpatient services, and direct patient care clinics, including anticoagulation, asthma, HIV, seizure, and heart failure management. The primary goal of this project is to enhance the delivery of outpatient pharmacy services beyond that of simply dispensing medications.

Prior to the start of this project, two decentralized pharmacists had been located in family medicine and internal medicine clinics for approximately one year, screening and processing medication orders. This resulted in increased utilization of the pharmacist by the medical staff during the clinical decision making process and allowed for increased collaboration. However, two pharmacists were insufficient to meet the demands of multiple providers in a busy, ambulatory care setting. The proposed restructuring of the primary care clinics into four primary care teams presented an opportunity to expand the number of decentralized pharmacists.

Previous residency projects at NNMC identified the prescribing of high-risk medications to the elderly and the effective evidence-based treatment of hypertension (HTN) as areas in need of improvement in our patient care delivery system. In addition, diabetic patients with controlled blood pressure <130/80 is a Government Performance and Results Act (GPRA) standard[10]; our success with respect to this standard influences our federal funding. In 2010, 29.9% of diabetic patients seen at our facility had controlled blood pressure; this was below our GPRA goal. By adding an increased and more consistent pharmacy presence on each primary care team, pharmacists could better serve the needs of the medical staff and patients by focusing on these and other medication-related issues.

Background Information

The Patient-Centered Medical Home (PC-MH) model of care coordination was first introduced in 1967 by the American Academy of Pediatrics in order to create a single source of all medical information about a patient. It has evolved over the past forty years into a partnership approach to provide high-quality, comprehensive health care and has been resurrected in the past several years as a hopeful alternative to our country's costly, fragmented health care system. The Joint Principles of the Patient-Centered Medical Home, published in 2007 by the American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, and American Osteopathic Association described the characteristics of the PC-MH.[1] In 2008, the National Committee for Quality Assurance (NCQA) set standards that describe clear and specific criteria for gaining recognition as a patient-centered medical home.[2] Most recently, the PC-MH was addressed in section 3502 of the Patient Protection and Affordable Care Act of 2010; it created a program to support the development of medical homes.[3]

The goals of a PC-MH model of care include that health care be accessible, accountable, affordable, compassionate, comprehensive, continuous, coordinated, effective, efficient, empowering, evaluated, evidence-based, personalized, proactive, high quality, safe, satisfying, and supported by information technology. The potential role of pharmacists in attaining these goals includes optimizing medication use, advocating for treatment adherence, encouraging cost-effective

care, reducing/preventing medication-related problems, minimizing poly-pharmacy, and thus improving overall health outcomes.[4-9] However, ". . . pharmacists are seldom mentioned in medical home discussions," even though they have proven to be a critical component of health care teams and effective in PC-MH settings.[7]

The PC-MH model is becoming increasingly more common; it is being implemented in both private and public health care systems. Improving Patient Care (IPC) is the IHS collaborative with the Institute for Healthcare Improvement (IHI) to redesign and improve its patient care delivery. The IPC provides tools, support, and guidance to IHS sites suited to their unique circumstances and the needs of their patients and community.

Transforming Primary Care (TPC) is our local initiative at NNMC to improve primary care. The goals of TPC are essentially synonymous with those of the PC-MH model and IPC and include assigning all patients a primary care provider, ensuring continuity of care, improving clinic productivity, increasing access to care, optimizing clinic flow, and improving overall quality of care for our patients. TPC at NNMC was launched on September 13, 2010 and created four teams integrating nursing, family medicine, urgent care, and internal medicine.

The objectives of this project were to determine how best to integrate pharmacy with the TPC model at NNMC, to establish pharmacy's role in the TPC model, to identify and oversee changes to pharmacy procedures as implementation progressed, to increase and improve collaborations with primary care clinicians, to decrease pharmacy wait times, and to improve quality across the continuum of care for our patients.

Methods

The number of decentralized pharmacists working in clinics was expanded from two to four daily (one per team). In an attempt to provide continuity of service, two pharmacists were assigned to each clinic and were rotated on a weekly basis. Team pharmacists were placed in a central location in each clinic, easily accessible to providers, nurses, and chart runners alike. Telephone and computer/network access were secured at each team pharmacist location. Also at each location, a team pharmacist binder was placed with hard copies of pertinent project information including guidelines, procedures, phone lists, and more. Team pharmacists were also given access to digital copies of this information.

Team pharmacists' hours in the clinics were extended to allow time for proactive pre-screening of charts for patients scheduled to be seen in their respective clinic that day. Pharmacists reported to their clinic at 0800 instead of 0930 as the two family and internal medicine pharmacists had done. Pharmacists remained in their clinics until 1630. Pre-screening priority was placed on elderly patients taking potentially inappropriate medication and on patients with hypertension. Finally, a pilot study was slated to transition the counseling process from the outpatient pharmacy to the clinics with the goal of improving patient wait times.

Outcomes were measured from January through May 2011, and included the number of clinical interventions made by team pharmacists and accepted by providers, the number of appointments avoided by refilling patient medications, as well as overall pharmacy waiting times. The pilot project took place in March 2011; measured outcomes included the time to screen and counsel in clinic, waiting times at the pharmacy, and responses to a patient satisfaction survey.

Throughout the project, pharmacists were encouraged to increase the quantity and quality of their interventions and recommendations to providers. As previously mentioned, HTN and potentially harmful medications in elders were specifically addressed by team pharmacists in pre-screening recommendations. HTN recommendations were based on the patient's medical history and JNC7 guidelines.[11] Recommendations on elders' medications were based primarily on the Beers List.[12] While efforts were made to anticipate and address the many contingencies that could arise during the project, it was also designed to be flexible and to meet the needs of a dynamic system. As new ideas emerged about how team pharmacists could be utilized or how workflow could be improved, they were analyzed using a performance improvement protocol and implemented whenever possible.

Team pharmacists tracked the recommendations they made to providers and questions asked of them by providers. They were responsible for determining and documenting if their recommendations were accepted or not. They ultimately entered their interventions into the IHS WebCident intervention reporting system. These data were collected biweekly. The investigator determined how many of the interventions were clinical versus procedural. Procedural interventions were defined as interventions dealing with workflow or established pharmacy policies and procedures; they included auto-substitution issues, resolving discrepancies between electronic health record (EHR) orders and documentation, and missing information on hard copy prescriptions. Clinical interventions included medication optimization, drug information questions, and ordering labs for medication monitoring. The investigator subcategorized clinical interventions into HTN, high risk medications in elders, and "other clinical interventions," and noted acceptance rates of recommendations in each category.

During the project, providers expressed concern about seeing patients in clinic for the sole purpose of refilling medications. It was decided that team pharmacists might be able to have an impact on preventing these unnecessary and costly visits. A policy was designed whereby when a patient presents to a clinic check-in window with a chief complaint of "medication refills," the clerk phones the clinic pharmacist who then investigates the request and refills the medication or

verifies that the patient needs to be seen by a provider that day. Ideally, the pharmacists would have time to educate the patient whenever possible about the most efficient way to refill their medication. Team pharmacists kept a log in clinic of the patients they were able to help in this way.

Patient wait times at the NNMC outpatient pharmacy have been measured since March 2010. Waiting slips tracking the processing of a prescription, as well as the time that a patient presented to the pharmacy window requesting medication, and the time that their medication was dispensed, are filled out by pharmacy staff. The data are then compiled and analyzed by pharmacy administration.

On select days in March 2011 when the investigator was able to secure time and available space in the clinic, patient medications were screened and patients were counseled immediately after seeing their provider. They received a special waiting slip to notify the pharmacy that they had already been counseled in clinic, as well as a patient satisfaction survey and a free pen. Data were collected daily and included the time to both screen and counsel the patient in clinic, the patient waiting time at the pharmacy, and the results of the patient satisfaction survey.

Table 1. Interventions

Month	Clini - Interventions (5,000 patient visits/month)	Clinical Interventions Made (%)	Clinical Interventions Accepted (%)
December	71	42 (59)	40 (95)
January	253	172 (68)	107 (62)
February	444	341 (77)	260 (76)
March	497	370 (74)	248 (67)
April	743	493 (66)	350 (71)

Table 2. Hypertension Interventions

Month	HTN Interventions Made	HTN Interventions Accepted (%)
December	0	N/A
January	39	20 (51)
February	49	20 (41)
March	60	24 (40)
April	86	47 (55)

Results

Table 1 shows the total number of clinic-based interventions made, clinical interventions made (and the percent of total), as well as the number and percent of clinical interventions made that were reported to be accepted. Clinic-based interventions increased from 71 in December to 743 in April. The percentage of interventions made that were considered to be clinical increased from 59 to 66% over that same time. Finally, the percent of clinical interventions accepted decreased over the project period, but total numbers increased from 40 to 350.

Table 2 shows the results of team pharmacist hypertension interventions. Hypertension interventions increased from none in December to 86 in April, while the percent of HTN interventions accepted remained around 50%. Table 3 shows changes in our facility's relevant GPRA indicator over this time period. The number of diabetic patients seen with controlled blood pressure increased during the study period.

Table 4 shows the results of elders interventions made by team pharmacists. These interventions increased from 1 in December to 7 in April, and acceptance rates by providers decreased from 100 to 29%, suggesting that there is room for improvement in educating pharmacists and providers about the importance of identifying potentially inappropriate medications in this population and switching them to less problematic alternative therapies.

Table 3. Diabetic patients with controlled blood pressure

Month	GPRA: Diabetes with controlled BP <130/80
October	29.9% of patients with diabetes seen had controlled BP
March	35.1% of patients with diabetes seen had controlled BP

Table 4. Elder medication interventions

Month	Elders Interventions	Elders Interventions Accepted (%)
December	1	1 (100)
January	11	6 (55)
February	9	4 (44)
March	8	4 (50)
April	7	2 (29)

Table 5. Patient medication refills

Team	Refill Patient Referrals 1/24-4/18	Refill Patients Able to be Processed	$ Saved (at $250/visit)
Piñon	74	42	$10,500
Sage	30	17	$4,250
Yucca	40	25	$6,250
Shandiin	15	8	$2,000
TOTAL	168	92	$23,000

Table 6. Patient medication counseling

# Patients Counseled in Clinic	Mean # Meds per Patient (SD)	Mean Time to Screen and Counsel (SD)	Mean Wait Time at the Pharmacy (SD)	# WebCident Error Reports
35	6 (4.0)	11 min. (3.9)	13 min. (18.6)	0

Table 5 shows the results of interventions to avoid unnecessary provider visits by investigating and refilling medication. In less than three months, 168 referrals were made by clerks to team pharmacists resulting in 92 patient's refills being processed and saving approximately $23,000 in clinic visit costs with an extrapolated annual savings of $94,000. These costs are calculated using a very conservative estimate of what it costs to see a patient in clinic. The billing cost of $240/visit was used.

Figure 1 displays the improvements in pharmacy wait times made over the project period. In fiscal year 2010, the average wait time at the outpatient pharmacy was 76 minutes. During the project period of fiscal year 2011, waiting times decreased from 72 to 46 minutes.

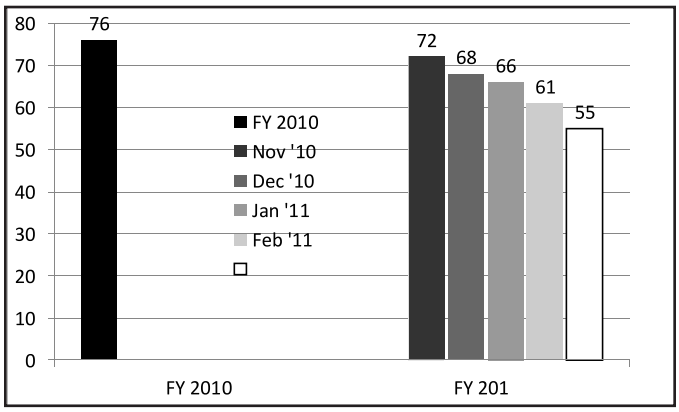
Results of the pilot project to examine the effects of counseling patients in clinic are shown in Table 6. Thirty-five patients were able to be counseled in clinic by the investigator, having a mean of six medications (SD 4.0). The mean time to both screen and counsel was eleven minutes (SD 3.9) and the mean wait time at the pharmacy for these patients was 13 minutes (SD 18.6). Error reports were investigated to ensure the safety of these interactions and none were found. If approximately 200 patients are seen in clinics daily, and the time to screen and counsel was extending to the upper limit of 15 minutes, then roughly 32 patients could be screened and counseled per day per clinic pharmacist. This estimation would require 6–7 pharmacists to screen and counsel all 200 clinic patients daily. Table 7 displays the results of the patient satisfaction survey. Twenty-eight surveys were recovered, equating to an 88% response rate. However, not all questions were answered by all patients. Overall, patients agreed with the

Table 7. Patient satisfaction

The pharmacist discussed with me any new medications and asked me about any refills.		
	Median	IQR
	4 (agree)	4-5
The pharmacist spent time with me and answered all my questions.		
	Median	IQR
	4 (agree)	4-5
The pharmacist carefully listened to what I had to say.		
	Median	IQR
	4 (agree)	4-5
Turning in my white slip at the pharmacy window and picking up my medications was an easy process to follow.		
	Median	IQR
	4 (agree)	4-5
I spent less time overall waiting for my medications.		
	Median	IQR
	4 (agree)	3.75-5
I liked meeting with the pharmacist in the clinic today.		
	Median	IQR
	4 (agree)	4-5

statements in the survey; they were satisfied with their experience.

Figure 1. Pharmacy waiting times



Discussion

Team pharmacists quickly discovered that they would have many additional roles in the clinics. They found themselves helping with the processing of refill requests from the automated telephone line, assisting providers by pre-ordering labs for patients to be seen that day, and providing EHR assistance. Team pharmacists were also called upon when tramadol was converted to a controlled substance and all active prescriptions needed a hard copy to be generated and signed by the prescriber. Finally, as changes in formulary were enacted throughout the project period, team pharmacists were at the forefront of provider education efforts and management of formulary issues.

There were many potential confounders in this project. The outpatient clinic floors were remodeled throughout the project period, and patients, providers, and team pharmacists were relocated daily due to space issues. EHR implementation occurred in outpatient clinics during this time frame, and a new automated prescription processing system was introduced. There was also staff turnover during the project period, including both pharmacists and providers.

Increased patient wait times have been a target for improvement at our pharmacy, and several factors possibly contributed to the decreased times measured during the project period. First, there was an increased number and training of pharmacy staff. The facility was transitioning to the EHR during the time frame of this project, often eliminating the need for pharmacists to wait for physical charts to arrive. The updated automated medication dispensing system and analysis of existing patient wait time data also played a role in workflow changes in the pharmacy.

Limitations of this project include a lack of external data validation, as well as the subjective reporting by team pharmacists of interventions accepted by providers. Strengths included the flexible project design, made possible largely because of the IHS model, relative continuity in team pharmacist assignments, and significantly decreased waiting times for patients counseled by the investigator in clinic. Finally, a significant number of unnecessary appointments were avoided, allowing increased access to care for patients. However, estimating the costs associated with eliminating full clinic visits was not the focus of the study. Thus, the numbers cited are likely conservative and do not take into account the full cost of a clinical visit from the health care system perspective.

Conclusion

The addition of pharmacists to the primary care teams has proved to be an "organic" experience – growing naturally to meet the needs of the team and of the patient. It is anticipated that this model will continue to evolve. This project has demonstrated that pharmacists are productive members of the TPC teams at NNMC and that four full-time team pharmacists are a meaningful use of NNMC pharmacy department staffing resources. Team pharmacists were instrumental in improving the clinical outcomes of patients through proactive pharmacy care. They were able to directly decrease the cost of health care and improve access to the health care system. Team pharmacist efforts may have also played a role in the decrease in overall waiting times at the pharmacy and increased adherence to GPRA measures. Finally, results of the pilot project suggest that having team pharmacists screen and counsel patients in clinic might further decrease patient waiting times. Additional research is needed to determine the feasibility and efficacy of a full-scale expansion of this pilot project.

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This is a page for sharing "what works" as seen in the published literature, as well as what is being done at sites that care for American Indian/Alaskan Native children. If you have any suggestions, comments, or questions, please contact Steve Holve, MD, Chief Clinical Consultant in Pediatrics at sholve@tcimc.ihs.gov.

IHS Child Health Notes

Quote of the month

"The future is already here. It's just not evenly distributed yet."

William Gibson

Articles of Interest

Pulse oximetry in pediatric practice. *Pediatrics*. 2011 Oct;128(4):740-52. Epub 2011 Sept 19 *http://pediatrics.aappublications.org/content/128/4/740*.abstract

The introduction of pulse oximetry in clinical practice has allowed for simple, noninvasive, and reasonably accurate estimation of arterial oxygen saturation. Pulse oximetry is routinely used in the emergency department, the pediatric ward, and in pediatric intensive and perioperative care. However, clinically relevant principles and inherent limitations of the method are not always well understood by health care professionals. Safe use of pulse oximetry requires knowledge of its limitations, which include motion artifacts, poor perfusion at the site of measurement, ambient light interference, skin pigmentation, nail polish, probe positioning, time lag in detecting hypoxic events, and presence of abnormal hemoglobin molecules.

This review describes the physiologic principles and limitations of pulse oximetry and also discusses normal values, and highlight its importance in common pediatric diseases in which the principle mechanism of hypoxemia is ventilation/perfusion mismatch (asthma exacerbation, acute bronchiolitis, pneumonia) as opposed to hypoventilation (laryngotracheitis, vocal cord dysfunction, foreign-body aspiration in the larynx or trachea).

Editorial Comment

Pulse oximetry is now ubiquitous. Results are so easy to obtain, and come as a "number," but clinicians sometimes forget that pulse oximetry is only a tool and needs correlation with the patient's clinical condition. Intelligent usage requires an understanding the strengths and the limitations of pulse oximetry. This article provides it. It should be mandatory reading for all clinicians who will care for pediatric patients this respiratory season.

***Locums Tenens* and Job Opportunities**

If you have a short or long term opportunity in an IHS, tribal or urban facility that you'd like for us to publicize (i.e., AAP website or complimentary ad on Ped Jobs, the official AAP on-line job board), please forward the information to *indianhealth@aap.org* or complete the on-line *locum tenens* form at *http://www.aap.org/nach/locumtenens.htm*.

Advancements in Diabetes Seminars

Join us monthly for a series of one-hour live WebEx seminars for health care professionals who work with patients who have diabetes or are at risk for diabetes.

- Seminars are generally held at 1:00 pm Mountain Time.
- Presented by experts in the field, these seminars will discuss what's new, update your knowledge and skills, and describe practical tools you can use to improve care for people with diabetes.
- No cost CME/CE credit is available for every seminar. Accredited Sponsors: IHS Clinical Support Center, the IHS Nutrition and Dietetics Training Program, and the IHS Division of Oral Health.
- Registration for each of the seminars starts approximately two weeks prior to the seminar and goes all the way up until the start of the seminar. Registration and seminar information, including handouts, is available via the following link: *http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=trainingSeminars*
- Upcoming seminars include:
  - January 25, 2012 @ 1:00 pm MST: Update on Diabetes and Nutrition, by Brenda Broussard, MPH, MBA, RD, CDE, BC-ADM.
  - February 22, 2012 @ 1:00 pm MST: Periodontitis and Diabetes, by G. Todd Smith, DDS, MDS.

Web-Based Diabetes Trainings

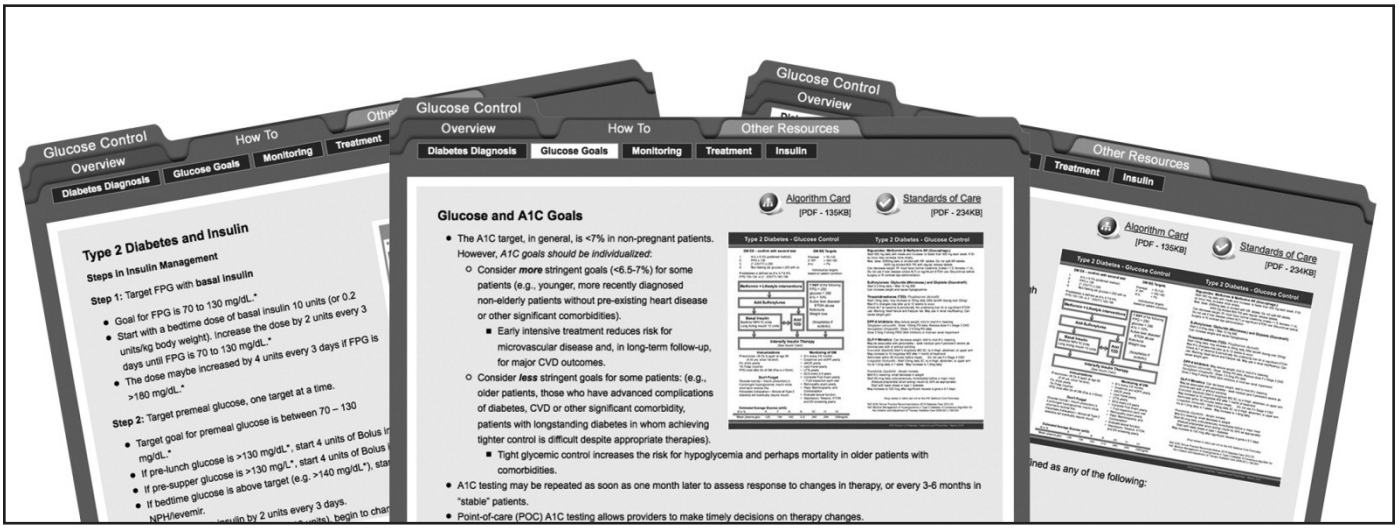
CME/CE trainings, available 24/7 at no cost. Some of these trainings, based on the live WebEx seminars, include:

- Preventing Amputations, by Greg Caputo, MD (new)
- Diabetes Standards of Care and Treatment Targets, by David Kendall, MD (new)
- Chronic Kidney Disease Screening, by Ann Bullock, MD
- Chronic Kidney Disease Management, by Andy Narva, MD
- Chronic Kidney Disease Nutrition, by Theresa Kuracina, MS, RD, CDE
- Physical Activity and Cardiovascular Risk Reduction, by Ralph LaForge, MSc, Exercise Physiologist
- Prenatal and Early Life Risk Factors, by Ann Bullock, MD
- Diabetes Foot Care, by Stephen Rith Najarian, MD
- Obstructive Sleep Apnea: New Links to Diabetes and Home Sleep Testing, by Kelly Acton, MD, MPH, FACP, and Teresa Green, MD

These trainings and others are located at: *http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=trainingWebBased*

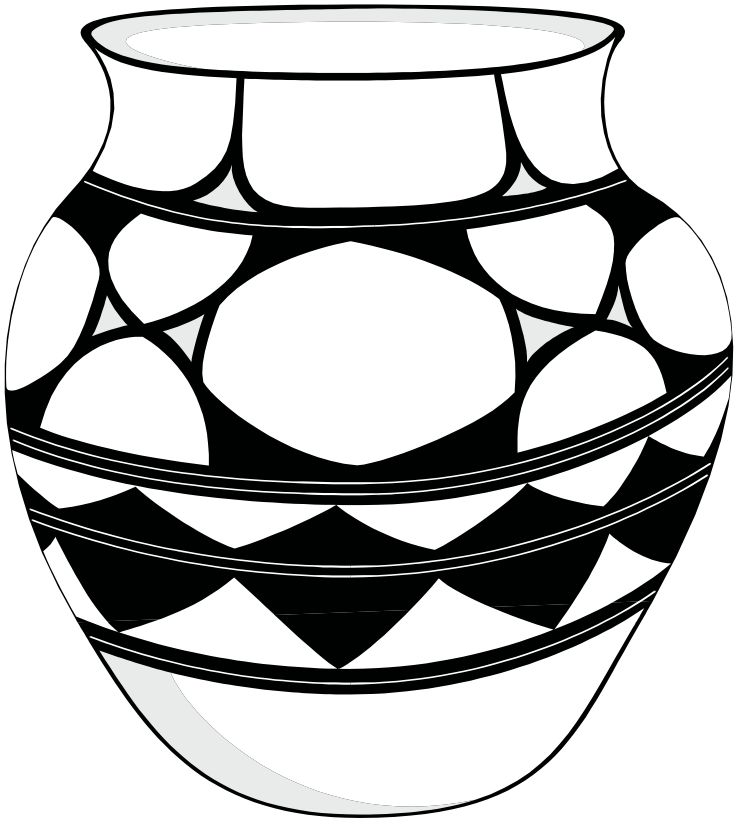
Quick Cards

Also, check out training related clinical tools; Quick Guide Cards are available at: *http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsQuickGuides&nav=99*



The 16th Annual Elders Issue

The May 2012 issue of The IHS Provider, to be published on the occasion of National Older Americans Month, will be the sixteenth annual issue dedicated to our elders. Indian Health Service, tribal, and Urban Program professionals are encouraged to submit articles for this issue on elders and their health and health care. We are also interested in articles written by Indian elders themselves giving their perspective on health and health care issues. Inquiries or submissions can be addressed to the attention of the editor at the address on the back page of this issue.



Support the 2012 GYT Campaign: Get Your Patients Talking and Tested!

Melissa Habel, MPH, CHES, Centers for Disease Control & Prevention, Division of STD Prevention, Atlanta, Georgia
Scott Tulloch, BS, Centers for Disease Control & Prevention, Division of STD Prevention, Albuquerque, New Mexico

Half of sexually active young people will get a sexually transmitted disease (STD) by the time they are 25, and because STDs are often asymptomatic, many who are infected will go undiagnosed. Untreated STDs can cause severe health consequences in women, including pelvic inflammatory disease, chronic pelvic pain, ectopic pregnancy, and infertility. Lack of information, misconceptions, fear, and social stigma related to STDs keep many people from getting tested.

To help address high rates of STDs in youth (ages 15 to 24 years), the Indian Health Service (IHS) National STD Program is collaborating with the Centers for Disease Control and Prevention (CDC), MTV Networks, the Kaiser Family Foundation, and Planned Parenthood Federation of America to promote the **GYT: Get Yourself Tested** campaign (*www.GYTNOW.org*). GYT began in 2009 as a youthful social movement to normalize and promote STD testing (and treatment, as needed). The campaign's presence online, on air (through MTV), and in the community aims to remove taboos around STD testing, encouraging conversations between young people and their partners, peers, and health care providers.

GYT 2012 will mark the third year that IHS is partnering with GYT to help young people across Indian Country make responsible decisions about their sexual health. Although race and ethnicity alone are not risk factors for getting an STD, American Indian and Alaskan Native youth have the second highest rate of chlamydia in the US (CDC & IHS, 2012). American Indian and Alaskan Native people are also disproportionately impacted by high rates of HIV and common STDs, including gonorrhea and syphilis. According to the 2009 Indian Health STD Surveillance Report, 2,717.5 per 100,000 males and females ages 15 - 19 years and 3,204.8 per 100,000 males and females ages 20 - 24 are impacted by STDs (CDC & IHS, 2012). Promoting open conversations about sexual health, sexual responsibility, and regular STD testing among youth are critical for their personal health, and for addressing the wider STD epidemic.

Last year, IHS and GYT worked together to reach Native youth through a 30-day, paid digital advertising campaign on Facebook. The campaign sought to increase campaign awareness and grow GYT's Facebook fan base. The ads were targeted to reach 15- to 25-year olds, including those identifying with Native American entertainment, health, and socializing interests. During the campaign promotion period, GYT saw a 181% increase in fans (8,603 new fans). GYT and celebrity ads were most popular with youth associating with Native culture, interests, and tradition. Results suggest that Facebook advertising may be a good channel for reaching Native Americans, if the message is relevant to youth.

Additional promotional efforts included online and on-the-ground strategies, such as banner ads on frequently visited Native-specific websites (e.g., Native Times, Indian Country Today, and *Indianz.com*); a Native-specific clinic locator widget (available as a free download at *http://www.cdcnpin.org/stdawareness*); promotional materials in local clinics; and campus activities.

Visibility and engagement in the campaign continues to grow. For example, Salish Kootenai College Center for Prevention & Wellness participated in GYT by offering free testing, trainings, and STD/HIV education on campus and in the community of Pablo, Montana. Likewise, the Native-specific widget had six times the page views in 2011 (62,732) compared to 2010 (10,527).

IHS and GYT hope to expand the 2012 campaign by reaching out early to potential partners and Native media sources, adopting social networking strategies (through Facebook and Twitter), and increasing visibility on the campuses of tribal colleges and universities (TCUs). Helping to further this effort, Native American rap artist and actor Litefoot recently signed on as a member of team GYT and recorded a series of PSAs that will be made available on the GYT website. He is excited about the opportunity to help reduce stigma and normalize the conversation around STD testing with Native youth and other minorities.

The 2012 GYT campaign will again kick off in April in conjunction with National STD Awareness Month and continue throughout the year. You can visit *www.GYTNOW.org* to prepare for STD Awareness Month and access a wide selection of free materials to promote STD testing in your community. We encourage you to visit the GYT provider website (*http://provider.gytnow.org*), which includes a wide range of resources, including training opportunities, STD facts, and testing and treatment guidance. Also, by becoming a fan of the GYT Facebook page (*http://www.facebook.com/GYTnow)*, you can get updates about the campaign throughout the year. Additional STD resources to support your efforts can be found on CDC's STD Awareness Resource Site (*www.cdcnpin.org/stdawareness*).

The IHS and GYT hope to again team up with a growing number of IHS/Tribal/Urban Indian health centers, tribal colleges and universities, and state and local partners to help continue our national efforts to promote and extend the reach of this year's GYT campaign across Indian Country.

It's time. *GYTNOW.org*.

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Trauma Care and Injury Prevention Program (TCIPP)

David R. Boyd, MD, CM, FACS, IHS Trauma Coordinator, Emergency Services, IHS Office of Clinical and Preventive Services (OCPS), Rockville, Maryland; Charlene Avery, MD, Director, Office of Clinical and Preventive Services (OCPS), Rockville; and Susan Karol, MD, FACS, Chief Medical Officer, Indian Health Service, Rockville

Background

Trauma is physical injury from any cause. The terms trauma and injury are interchangeable.[1] In the US vernacular, trauma has been used for major injuries and patient care and response systems, while injury is more often related to prevention and epidemiologic activities. Trauma is the leading cause of death for people under the age of 45 among American Indians and Alaska Natives (AI/AN) and is the prime killer of the young. The rate of death from accidents for AI/AN (94.5/100,000) is three times the rate for US All Races (30.3/100,000).[2]

Trauma care is expensive; costs to the Indian Health Service (IHS) exceed $350 million annually, the largest single category for CHS Funds.[3] In Indian Country, the clinical severity and overall costs for trauma are exacerbated by the rural environment, with its limited advanced care capacity and long distances to sophisticated, definitive treatment available at regional trauma centers (RTC). Many injuries can be attributed to modifiable behavioral risk factors such as alcohol and other substance abuse. Trauma is responsible for over 60.3% of years of potential life lost (YPLL) for AI/ANs.[4]

Trauma in AI/ANs is an extensive problem and, when not controlled, negatively impacts other clinical conditions and hospital services. The reasons for the existing deficiencies in trauma care include rural AI/AN communities in remote geographic regions, delayed accident reporting, long distances from injury to initial care, and delayed access to advanced, definitive care and rehabilitation. These complicating factors are real, but they are not immutable. A progressive national effort starting in the 1970s has shown that utilizing a "systems approach" within a regionalized trauma concept is the best method for decreasing death and disability for all categories of trauma patients and in all socio-geographic conditions.[5,6] Recognition of the trauma problem and intelligent application of proven clinical and systems interventions are both feasible and successful in the resource-limited AI/AN environment. IHS and tribal providers must logically assess their local situation, establish practical plans, and implement the essential operational components of regional trauma and emergency medical services (EMS) systems.

Trauma in Indian Country is devastating, intractable, and expensive. Trauma events tend to occur with multiple people suffering multiple injuries. Hospitals have differing levels of clinical expertise, trauma resuscitation, and evaluation capacity. Most hospitals have limitations in providing definitive care for the seriously injured, because complicated trauma patients can overwhelm hospitals with limited medical staff with stressed available resources. Many patients are urgently referred out to distant hospitals; therefore these patient transfers tend to be sub-optimal, disorganized, and, many times, unnecessary. The results are often unscripted, random practices, with scant potential for medical staff education or consistent regionalization. These negative effects can be controlled by intelligent systems and effective protocols on a regional basis.[7,8]

The national US experience has shown that trauma care is improved by regionalization, first in Illinois, then in Maryland, and later, in other locations by utilizing a "systems approach" and establishing rational, predictable, and accountable response and care programs.[9] Regional trauma and EMS systems are locally determined but replicated from recognized and studied socio-geographic models (i.e., urban-suburban, rural-metropolitan and ultra-rural metropolitan regions).[10-12]

Proven methods of regionalized trauma care from similar rural socio-geographic areas can be effectively replicated in Indian Country. This assumption and experience is the basis of the IHS Trauma Care and Injury Prevention Program (TCIPP). Principles and practices proven elsewhere can be practically applied to address the many unique but not insurmountable AI/AN trauma problems. Because IHS is a "total health care delivery system," it has advantages not readily available in other rural communities. TCIPP can be built upon this premise but it must also be integrated with the advanced trauma care and educational resources of the RTC.

Urban and metropolitan regional trauma systems are capable of treating up to 95–100% of trauma patients. In remote, rural systems, the IHS and tribal hospitals are not capable of handling the critical and advanced surgical cases, and therefore must be functionally integrated with a pre-selected neighboring RTC. The Alaska Native Medical Center (ANMC) is the sole RTC (ACS Level II) in the Indian health system. The crucial first step in IHS regional trauma systems development is to identify and develop partnerships with the

most geographically appropriate RTC. This paper will described the TCIPP involvement and leadership in identifying key elements of a comprehensive trauma program. This includes all phases of a system, including prevention, initial response, stabilization, first hospital care, selective re-transport to definitive care, and rehabilitation. Also discussed are the associated trauma/EMSS components that are facilitated by the TCIPP.

In January 2009 the IHS embarked on an agency-wide trauma care initiative, as announced at the National Chief Clinical Consultants' meeting in San Diego.[13,14] This program has been expanded in concept to include injury control and prevention activities. Later, Dr. Susan Karol announced the TCIPP, stating, "as the Chief Medical Officer (CMO) of the IHS and former Chief of Surgery and Anesthesia at the Shiprock Indian Hospital, I understand the many issues we confront in providing optimal trauma care for our patients. From my considerable clinical experience in providing care for the critically injured both in the IHS and several trauma centers in Massachusetts, I know an organized, systems approach to trauma does save lives and helps diminish the many deficits that we experience daily in our hospital and communities."[15]

The TCIPP represents a continuum of activities within the scope of the IHS mission and ongoing responsibilities. In IHS, TCIPP provides leadership, coordination, and technical assistance and is the vehicle for comprehensive inclusion of the essential clinical services, operational EMS components, injury control, and public health and political support functions. IHS has all of the essential elements for a comprehensive TCIPP within the Emergency Services (ES) program in the Office of Clinical and Preventive Services (OCPS). John Mahon is responsible for coordinating IHS emergency management activities. CDR Betty Hastings, MSW is the coordinator of the Emergency Medical Services for Children and the EMS ambulance program. CAPT Nancy M. Bill, Office of Environmental Health and Engineering (OEHE) leads the injury prevention program. Dr. David R. Boyd is the coordinator of the TCIPP and also a trauma surgeon; he is the former Department of Health and Human Services (DHHS) National Director of Emergency Medical Services System and a general surgeon at the Blackfeet Community Hospital.

Trauma and emergency medical services systems, viewed in their broadest terms, are inclusive of all relevant clinical entities, supportive components, operating components, professional interests, and perspectives that provide for a robust and varied program. In TCIPP all of these elements work toward the common goals of prevention, incident response, initial care and transportation, hospital and trauma center definitive care, rehabilitation, and evaluation and research. Professional and public education are other important functions; the TCIPP operating principles are as follows:

1. IHS and community-wide recognition of the trauma problem.
2. Regionalization of AI/AN trauma care within existing regional trauma systems.
3. Establishment of essential "first option" relationships with a specified RTC.
4. Development of a seamless trauma/EMSS operation with that first option RTC.
5. Build and sustain capacity in all trauma/EMSS components, i.e., personnel, recruitment, training, technology, trauma registry, transportation, public information, etc.
6. Acquire necessary resources for trauma care services.
7. Implement technologic advancements in hospitals, clinics and systems.
8. Maintain cost control, and efficiency of trauma/EMSS.
9. Be the voice for trauma\EMSS in the federal government and the national community.
10. Promote injury control and alcohol screening and brief interventions (ASBI).
11. Educate and establish professional, public, and political support.
12. Evaluate the impact of trauma/EMSS interventions.

The TCIPP professional team includes a broad range of medical, surgical, and nursing specialties such as paraprofessionals, administrative, public health, and safety workers. The various private, public, and governmental interests are also involved. Recognizing and coordinating all of these elements reflect the many challenges of a successful trauma program.

TCIPP evaluates and guides the regionalization of trauma/emergency medicine practices across Indian Country. A special emphasis is placed to improve access to the trauma care system and acquire essential equipment and necessary resources. This effort includes governmental and professional organizational coordination. TCIPP staff is responsible for continuing guidance and improvement of IHS and tribal EMS programs. This includes promoting training, and certification assistance to emergency medical technicians (EMTs), providing care during air/ground transport, and similar support for physicians and nurses who provide post-arrival hospital emergency/trauma care. TCIPP represents IHS and tribal trauma/EMSS interests in a variety of local, regional, state, and national forums.

Trauma Concepts and Definitions

Trauma means "wound" and, when used broadly, refers to injury of all kinds. A trauma program is the umbrella term for a broad and heterogeneous set of interrelated activities of prevention, incident control and EMS field response, clinical systems of care, effective, definitive treatment, rehabilitation and research. *Clinical trauma* includes every conceivable injury known to humankind. In Indian Country there are more trauma cases than in similar rural communities. IHS definitive treatment capacity is limited, and to provide a continuum of

care, collaboration with community- and university-based advanced regional trauma centers is critical. *Trauma program* refers to the interrelated activities of injury control, EMS response, emergency medicine and nursing, surgery, rehabilitation, and disaster planning (emergency management). It includes the response and regionalization of all acute medical care (i.e., stroke, cardiovascular, pediatrics, etc.), and for rational hospital emergency planning and sophisticated equipment resource distribution. The *National Trauma Council* is being established to ensure that IHS and tribal interests are informed and participate in TCIPP activities. This council will work to prevent mortality and reduce morbidity from trauma; improve the quality, accessibility, and continuity of the delivery of trauma care services; and facilitate the planning, implementation, and evaluation of comprehensive trauma systems to achieve optimal care for patients.

Trauma and emergency medical services system (EMSS) represents rational planning, implementation, operation, and evaluation of trauma care by effectively and efficiently utilizing the recognized and appropriate clinical practices, operational components, and accountability measures to provide optimal care for the trauma patient. The trauma/EMSS is the basic regional model that other clinical systems can be built upon. The federal legislative definition of regionalized EMSS is "Arrangements within a socio-geographic domain of the existing, upgradeable, and non-duplicative hospital facilities and transportation services to most effectively and efficiently respond, and provide access to initial, definitive, and rehabilitation care to patients using time sensitive approaches as described by science and clinical experience."[16,17] Regionalization of trauma care is the best possible resolution of two immutable facts that make trauma care unique and challenging: trauma or injury is a time dependent disease, and trauma care is geographically determined."[9]

Regionalization involves developing plans and implementing programs that take into account and mitigate the unforgettable tension while maximizing the upgradeable local resources internally within a designated geographic region.[18] Trauma/EMSS are built today for tomorrow's injuries. Regional trauma and EMS systems are the proven method for providing expert response, field care, and transport to hospitals and allowing for secondary transfer to pre-designated advanced RTCs. Random behavior and guess work are dangerous, ineffective, inefficient, and disappointing. A recent Institute of Medicine (IOM) study on the "Future of Emergency Care in the US Health System" outlined the many current and obvious problems in our nation's emergency medical systems. The IOM recommended "regionalization" for the nation's crisis in emergency medical care.[19]

IHS providers experience most of these "lack of consistent regionalization" problems on a daily basis. These seemingly intractable issues in Indian Country reflect national findings, but local circumstances are typically worse. Many of the AI/AN trauma problems are obvious and well known, but not well understood. Trauma care disparity issues exist and are documented. Unfortunately prior to TCIPP they were not correctly or strategically analyzed with a goal of tactical resolution. Without a new paradigm, these problems will continue, at high costs and with excessive drain on limited resources and capabilities. AI/AN community expectations of appropriate EMS response and sophisticated definitive care are justifiably, in line with those of the general and rural population. This old problem demands new thinking.

Trauma care has improved over the past 40 years in all regions, communities, and environments. IHS has the talent and expertise to further improve trauma capabilities throughout the entire system. Trauma systems enhancements will also improve surgery, medicine, and primary care. Hospitals must improve their trauma capacity and actively participate in their regional trauma/ EMS system. The medical staff needs to identify a first option regional trauma center (FORTC) and establish dependable inter-hospital transfer agreements (TA). From there, the goal is to perfect a 24/7, dependable seamless operation for the many essential operating components that need improvement and support. The FORTCs have committed their talent, technical assistance, and resources to respond to common problems. FORTCs include regional team and co-managed patient care, transfer acceptance, transport and communications guidance, professional education and training, and administrative support for improved trauma care and systems operations in their regions. In several areas these relationships are further enhanced with tele-radiology and smart phone technology.

Major trauma is not a single disease but a spectrum of injury producing effects causing death and disability. Leading clinical patterns are central nervous system injuries to the brain and spinal cord, thoraco-abdominal visceral injuries, and crippling orthopedic injuries. These present in a variety of complex, multi-injury patterns and occur in all ages, but are most damaging to the young. Increasing numbers of critical trauma patients with greater magnitudes of injury can have a negative impact and destabilizing effect on our hospitals and medical staffs. In addition, inadequate regional support, limited ongoing training, and the lack of currently available diagnostic technologies (e.g., CT scanners) have negative consequences on patient care and on medical and nursing staff retention and recruitment.

Despite the challenges of the rural setting, poverty, and delayed access to regionalized trauma care, there are scientific studies that show regionalized trauma care saves lives and decreases morbidity for all clinical injury patterns. Integrated regional trauma systems can also control ill advised, expensive, and risky behavior like unnecessary secondary helicopter transports. The geographic basis for successful regional trauma care utilized in the national trauma/EMSS program (1974–83) is detailed below. These patterns and arrangement have remained operational to current times.

Socio-Geographic Regional Models[10-12]

EMSS regions are described by size, shape, geography, population density, and definitive care capacity. Regionalization of trauma/EMSS in its simplest form is a process of identifying clinically specific medical emergencies, responding appropriately with operations and treatment protocols, and selective transportation of the most seriously ill or injured patients to a designated facility that can provide definitive care within a defined geographic area. Each EMSS region is uniquely described due to the availability and arrangement of the fixed hospital resources within its operational domain. It is, however, the non-medical factors, primarily population density and geographic conditions, that predict the availability of the fixed hospital resources and overall definitive care capacity.

Trauma is a prominent, ubiquitous disease that makes it the logical candidate for initial and basic regional planning. Many states have been officially regionalized for a cluster of governmental health, safety, and administrative responsibilities, some through a Council of Governments (COG) system. Learning from the Illinois experience, the DHEW/DHHS federal trauma/EMSS program reinforced this by establishing grant funding and program development based on the regional plans and catalyzed this process, resulting in 304 contiguous wall-to-wall regions.[16-18] Soon, every person was within a federal/state recognized trauma/EMSS region. Program experience influenced the conceptual evolution of three prominent socio-geographic regionalization models (i.e., urban-suburban, rural metropolitan and rural-wilderness) and was useful in developing the national program. There were 20 urban (6 %), 206 rural (68%), and 78 ultra rural (26%) regions designated. Recognition and study of the varied but comparable circumstances had profound impact on strategic planning, grants allocation, and technical assistance. By design, allocation of grant funds for rural systems was four times higher than for urban systems.[12] A short analysis and its relevance to TCIPP follows.

Urban-Suburban Regions; Model X, (i.e., Medical Affluence, Designated Centers, Competing Power Groups, Jurisdictional Issues, Pre-Hospital ALS, and By-Pass Policies)

Typical examples are Chicago and the surrounding sub-regional suburban counties, New York City with five boroughs, and Los Angeles County and its municipalities. EMSS program development in these communities was difficult and some problems remain today. Medical sophistication and operational component affluence is not enough to establish an effective operating system. Cooperation, oversight, and some discipline are essential and elusive. AI/AN urban dwellers access these systems for trauma care. TCIPP has a very limited impact on these circumstances.

Rural-Metropolitan Regions; Model Y (i.e., Medical Competence, Interdependent Network Organizations, Hybrid [BLS-ALS] Pre-Hospital EMS)

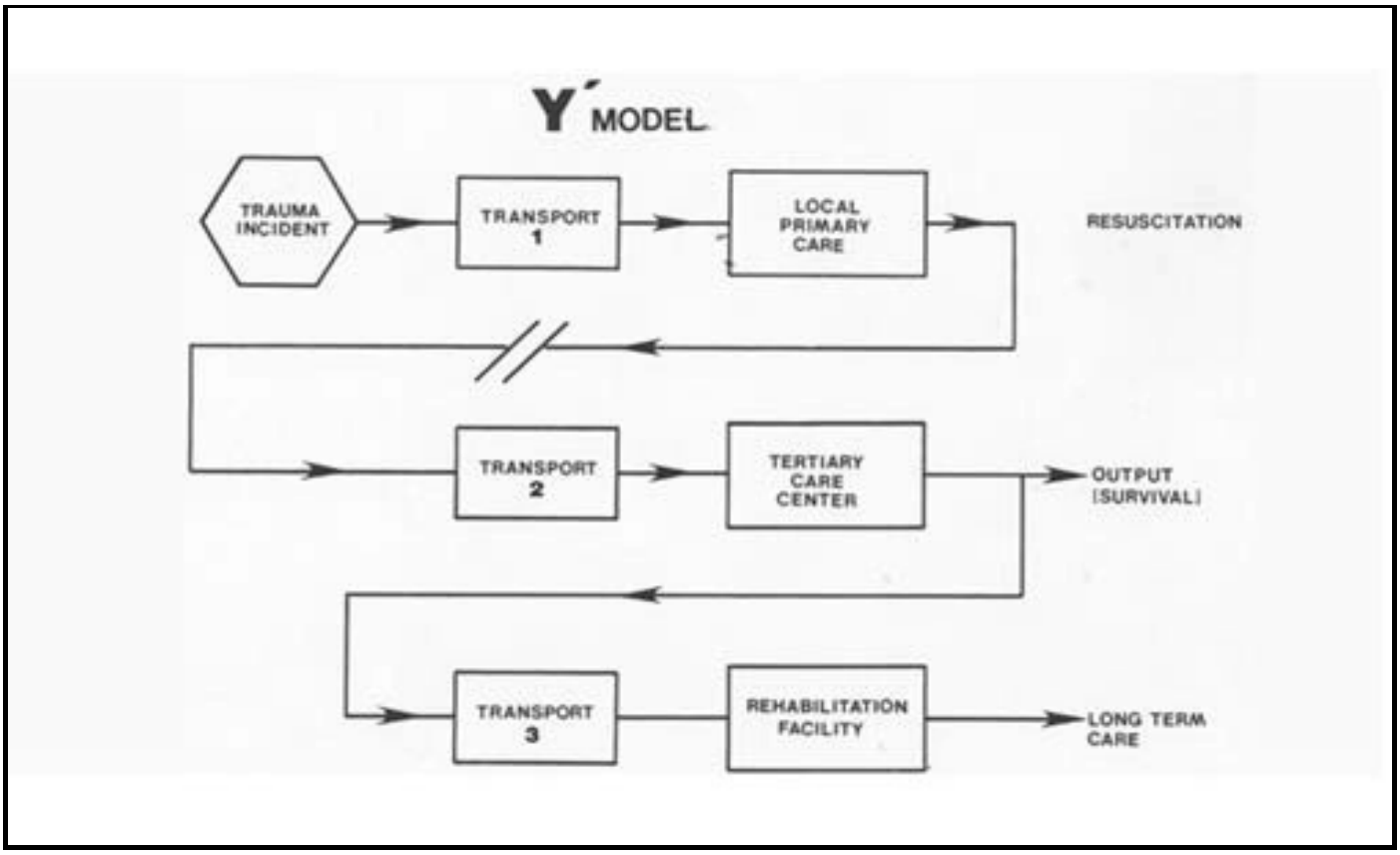
These classic heartland mid-America medical and general marketing areas, (e.g., Peoria, IL, Ashville, NC, and Syracuse, NY, and their several aligned counties) are the quintessential model that exists from both coasts to just beyond the Mississippi River from the east and to the Rocky Mountains from the west. The regionalization logic was readily accepted in these areas, as there is ample trauma care capacity in the central metropolitan communities. The trauma regionalization logic, clinical rationale, and cost control through consolidation of critical care resources had intellectual appeal. The critical obstacle was consolidating into a single publicly designated and dependable 24/7 optimal care resource center. Making the selective choices between the large community invested hospitals was the major challenge. Special designations for other clinical modules based on national optimal care guidelines became an accepted process. IHS/tribal hospital facilities and EMS services in these areas generally benefit from these regional systems

Wilderness-Metropolitan; Model Y′ (i.e., Specialty Care and Organizationally Deficient, Volunteer First Responders, BLS Prehospital Care)

Initially described for southern Illinois, the western High Plains, Intermountain Desert and Alaska regions, this is the stark extension of the rural trauma model to ultra-rural areas (defined as one or less person per square mile). The geography, distance, weather, and limited care resources present unique problems that are difficult and costly to fix and maintain. The perpetual problems of patient identification, long transport distance to specialized care, low utilization of EMS components, and professional isolation are intertwined.

Maintaining sparse local resources with infrequent demand creates opportunity costs, as does mobilizing these for expensive transports. The lack of consistent professional communications also contributes to EMS systems dysfunctions. Maintaining professional linkages between small outlying local hospitals and EMSS programs with their respective but distant FORTC, and developing a multifaceted, multi-provider seamless operation is the essential task. This socio-geographic region model is prominent in Indian County. The IHS has practical experience with this model. Utilizing the TCIPP approach will be effective and will provide learning examples for other remote communities. Some IHS/tribal communities have more resources and capacity and are within an established health care delivery system.[42] Maintaining these systems takes extra effort, considerable time and travel, and personal professional maintenance. Telemedicine and other technologic outreach concepts can be effective after professional connections are established. These ultra-rural macro-regional arrangements remain perpetually fragile,

Figure 1. Transportation phase rural-wilderness region (Model Y′) reflecting the special difficulties and uncertainty of inter-hospital patient transfers



require continued maintenance, and need the support of their regional centers. The trauma regionalization models are readily extended to other clinical modalities that will utilize common EMSS resources. Figure 1 shows the transportation phase of these ultra- rural regions and reflects the special difficulties and uncertainty of the inter-hospital patient transfers. These difficulties are geographic, jurisdictional, and institutional.

While every region is unique and can be described by the number, capacity, and arrangement of resources, there is considerable comparability among similar socio-geographic regions. The capacity differences are slight when comparing EMSS regions within their respective subgroups (i.e., X, Y, and Y') such as clinical and research professionals, lead agencies, tribal leaders, health systems planners, and governmental agents. Likewise prehospital EMS, operations, management, and medical control programs are comparable in similar socio-geographic settings.[8] These facts can be exploited for major disaster planning and operations and a variety of planning, evaluation, and research options.

Capacity Building

IHS and tribal hospitals, clinics and pre-hospital services continually strive to improve and upgrade their capabilities for improved patient care and to meet national standards. Most hospitals are short-staffed, and training is deficient; in many the equipment is out of date, in a few only better coordination is needed. Overall, we need to have more effective and reliable transfer agreements to define the relationship with the FORTC and other advanced treatment facilities. An important theme has been to acquire sophisticated diagnostic equipment such as CT scanners with software connectivity to a specific FORTC clinical or radiology department for online case consultation, immediate co-management advice and simultaneous on-line and follow on training. These technologic and tele-trauma enhancements provide immediate improvements in local patient care and regional systems development. Our trauma care providers become more competent, confident, and self-sufficient. It is generally more cost effective to provide needed care at the local service unit. Currently much trauma care that could be handled effectively in IHS/tribal hospitals is being sent out, for a variety of reasons, but at higher costs. More trauma cases can be managed in local hospitals by CT-connectivity with the designated FORTC. The several new technology approaches, now being implemented for regional

tele-trauma consultation, will soon enhance local primary care and general medical capabilities. An additional benefit is the enhanced local pride and support of tribal communities as they experience new levels of sophistication, coordination, and improvement in trauma care within their respective community.

A regionalized trauma program positively impacts other clinical entities and disease processes common in Indian Country. Similar benefits for the regionalization of burns care, CNS care and treatment of spinal cord injuries (SCI), orthopedics, obstetrics, perinatology, and pediatrics are obvious. Other serious medical diseases including cardiovascular disease, stroke, metabolic, and gastrointestinal conditions that require urgent and sophisticated co-managed care locally and during regional transport will be improved by established TCIPP methods.

The TCIPP focus on capacity building has brought significant resources in the form on American Recovery and Reinvestment Act (ARRA) funds for computer tomography and equipment ($15 million) and ambulances ($5.0 million). It also increased contract care funds for FY 2010 by $144 million.[20]

Computerized Tomography (CT) and Teleradiology

Trauma system development can be categorized chronologically, with an inflection point around 1980, as pre-CT and post-CT. The advent of CT in trauma centers has markedly improved the diagnostic accuracy and efficiency of hospitals and trauma systems operations. While the basic socio-geographic features of the regional trauma/EMSS remained, the impact on the quality of care was enormous. CT technology set new standards of care and became an essential requirement for trauma center recognition. A prime goal of TCIPP is to equip all trauma receiving hospitals with up to date CT capacity. A TCIPP CT needs survey of hospitals received interest immediately from 41 hospitals. Priorities were established and IHS placed nine new state-of-the-art" 16:32 or 64/slice CTs in hospitals with $6.5 million of these ARRA Funds. Recipients were Alaska Native Medical Center, Belcourt, Blackfeet, Claremore, Gallup, Hopi, Mississippi Band of Choctaw, Sells, and Zuni Hospitals.

The role of up-to-date diagnostic equipment such as CT scanners cannot be overrstated. The CT is now the diagnostic standard of care for major trauma. New physician recruits know how to use these, and they depend on them. The unavailability of CT impacts us negatively in diagnosis, care capability, cost control, physician recruitment, and community image. IHS spends enormously to get these routine high-tech services at distant centers and sometimes at sub-par neighboring hospital and imaging clinics. TCIPP now considers a 32 slice as the base for hospital CT acquisition. Upgrading from a 32 is a simple software exchange and does not require a CT core replacement. TCIPP anticipates that most hospitals will want to upgrade as they gain more experience and knowledge in CT utilization.

IHS/tribal hospitals with CT are encouraged to become CT-connected with their respective FORTC. This maneuver will advance the development of a seamless operation with the designated RTC. The potentiality of this arrangement is boundless, and it is a constructive start to effective and dependable regionalization in real time and with inter-facility accountability. Better day-to-day operations through direct communication with designated regional centers enhances our clinical programs and especially physician, nursing, and paraprofessional training. These repetitive, consistent interactions build competence, confidence, and capacity. Other improvements in hospital administration and technical adjuncts of staffing, organization, and billing through integrated regional programs are possible, and examples exist. Respected regional experts can provide advice for proper selection and technical integration of equipment, CT, telemedicine, and many other co-functions. In successful regions, key participants learn to talk to each other low-tech prior to the purchase and launch of high-tech interventions.

In 2009 the TCIPP contracted with the University of New Mexico Department of Neurosurgery to develop a regionalized teleradiology program for the co-management of traumatic brain injury (TBI). Complicated mild TBI is a ubiquitous encounter in the emergency room. A plethora of treatment guidelines exist as to when to obtain a head CT and when and how long to observe them. Once a CT of the head is done and intracranial pathology established, a neurosurgical consultation and admission is often requested by the local treating physician, without evidence-based support. In the rural setting this often puts a severe strain on neurosurgery coverage in isolated regional trauma centers. Both regional and local recourses are used unnecessarily to transport, evaluate, and treat these patients. The introduction of CT-connected teleradiology with enhanced phone consultation for complicated mild TBI in New Mexico has markedly improved access to neurosurgical consultation. Now, IHS physicians in rural hospitals can co-manage and treat mild TBI patients locally. Under the aforementioned IHS-UNM contract, patient safety and cost effectiveness of teleradiology enhanced phone consultation in these mild TBI has now been evaluated.[21, 22]

The TBI project evaluation included all patients presenting to Gallup Indian Medical Center (GIMC) who were prospectively identified with complicated mild TBI (January and August 2011) and referred to the on call neurosurgeon at the University of New Mexico Health Sciences Center and Regional Trauma Center (RTC) using teleradiology and phone consultation. Patient charts were analyzed for admission diagnosis, head CT findings, and disposition status for those patients transferred to the UNM Neuro Trauma Unit or treated locally at GIMC. Thirty teleradiology consults were initiated by GIMC physicians. Twenty-six patients were treated locally and co-managed by the GIMC and UNM RTC medical and neurosurgery staff. Four patients were transferred to UNM

RTC. There were no untoward outcomes for the group treated locally.

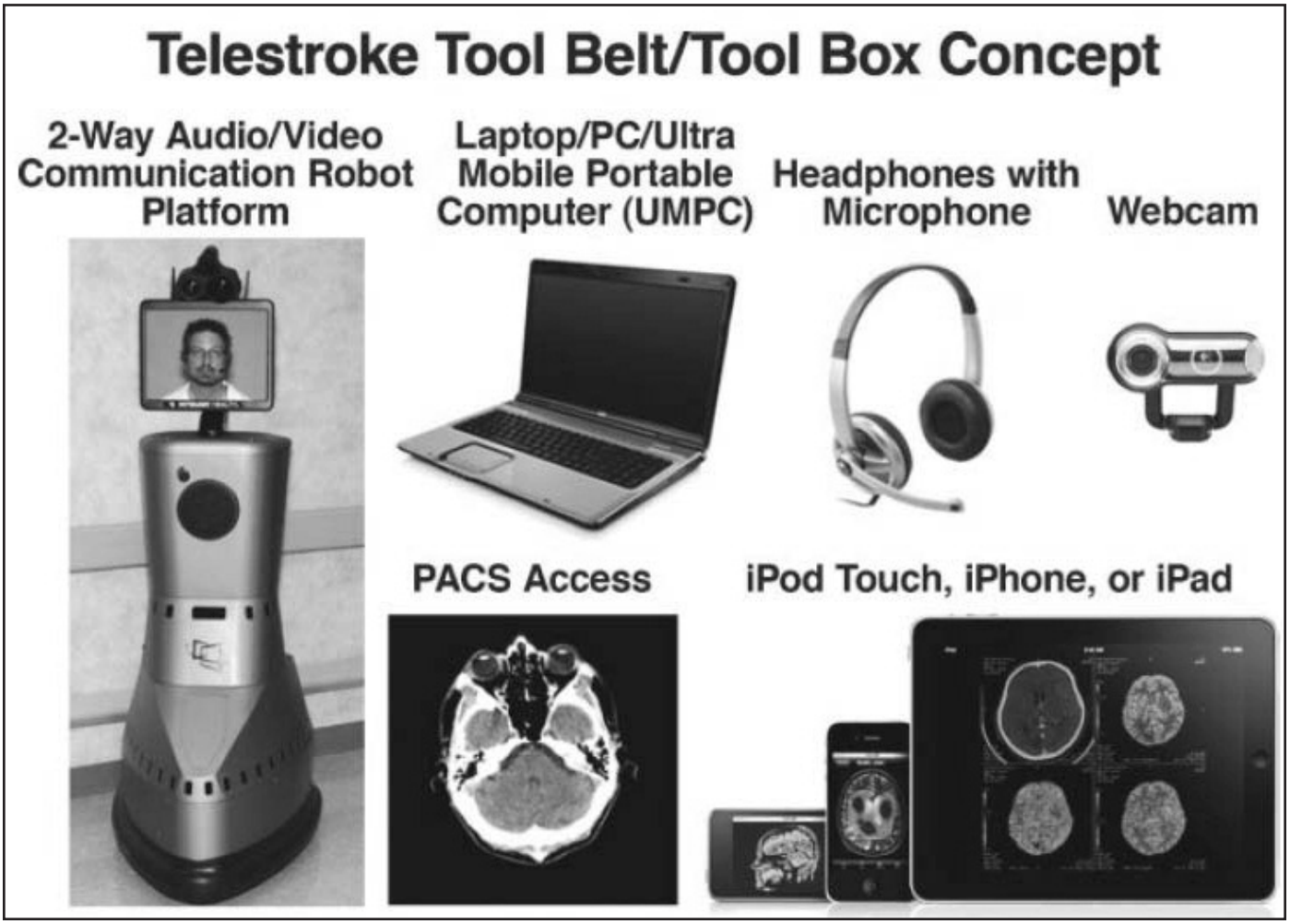
Transportation costs in this region range from $12,000 (by ground) to $25,000 (by air) per patient transported.[22] Standard treatment of complicated mild TBI patients is 1–2 days in the neuro-intensive care unit. Intensive care unit expenses are $66,607 for day one and $3,496 for day two without mechanical ventilation.[23] Estimated transport costs saved were from $360,000 (ground) to $650,000 (air). The deferred routine medical care expenses are estimated at $912,678.

Teleradiology enhanced phone consultation can potentially result in major cost saving for a rural IHS hospital, conservatively estimated at $1,250,000. These are real cost savings of precious contract care funds that can be re-directed and better utilized at each participating service unit. A formal analysis of cost savings with the implementation of teleradiology including all IHS hospitals in New Mexico is warranted and has been included in the 2011 IHS-UNM teleradiology extension. Neurosurgery Department Chairman and co-principle investigator Dr. Howard Yonas reports an important finding, saying "At the other end of the TBI spectrum are some patients with unsurvivable injuries, documented by extremely low Glasgow Coma Scales (GCS) 1–5, and by brain destruction evidenced on CT sent by the teleradiology system. Direct communication to the local MD and the patient's decision-making relatives as to the accurate diagnosis and correct assessment has resulted in an estimated 12 patients per year, per hospital) of non-transported TBI patients.

These data and CT-connectivity experiences are now extended to the other seven hospitals in the area. *Teleradiology and On-Line Consultation: A Solution of Care for Traumatic Brain Injury* was the subject of the IHS Chief Medical Officers Rounds, September, 2011.[24]

Tele-Stroke

The regionalization infrastructure established for TBI is now being used for a stroke intervention program. Stroke is the leading cause of disability in the US and intravenous administration of recombinant tissue plasminogen activator (tPA) remains the most beneficial proven intervention for emergency treatment of stroke. Treatment with tPA reduces the



incidence of disability following stroke, but tPA only has a 4.5 hour window, per the American Stroke Association guidelines.[25] Stroke centers are capable of providing acute stroke patients with timely assessments and emergency treatments, resulting in improved morbidity and mortality. Many emergency physicians are hesitant to accept the sole responsibility of administering intravenous thrombolysis for acute ischemic stroke.

Remote supervision of tPA administration via telephone or using telemedicine before transfer to a stroke center is both feasible and safe.[26] Telemedicine's overall accuracy was higher, 98% (95% CI, 96–100), than that of telephone, 82% (95% CI, 75–89). Telemedicine has been shown to improve stroke treatment with a complication rate similar to the originating stroke center both with telephonic consultation and video telemedicine. As demonstrated in TBI, the rural emergency departments would be receptive to participating when supported by the UNM RTC tele-stroke network and treating acute stroke patients with thrombolysis. Dr Mark Malcoff is the Chairman of the UNM Department of Neurology and Director of the Tele-Stroke project and will provide telemedicine consultation for participating IHS/tribal hospitals.

The standard technology for tele-stroke includes audio-video tools, hand-held devices and stand-alone platforms with which the distant consultant can remotely operate to zoom or tilt the camera. The primary site (i.e., IHS/tribal hospitals) needs a CT and a stat lab. Since the majority of errors in tPA administration occur in CT interpretation, the tele-stroke system has the ability to improve treatment of acute stroke by including the CT in the consultant's review. The emergency physician will perform an assessment per standard protocols and determine that an acute stroke is part of the differential diagnosis. That physician will then activate the tele-stroke system and request consultation. Vascular neurologists, aided by a remote bedside nurse, can quickly and reliably obtain valid NIH Stroke Scale scores by a high speed AV telemedicine link.

Regarding administrative restrictions and privileging concerns, emergency stroke telephone hotlines at academic institutions have existed for over a decade without any unique restrictions regarding state licenses, credentialing, and privileges. As with tele-trauma, the bedside consultation is a matter of professional courtesy in the interest of improving patient care and outcomes. Privacy and security of the telemedicine systems can be maintained to ensure Health Information Portability and Accountability Act (HIPAA) compliance for virtual tele-stroke consultations. Algorithms at each hospital site would be most beneficial regarding the diagnosis, set-up of tele-stroke equipment, regional hospital network options as backups, and tPA administration algorithm.

Tele-Trauma

Tele-trauma utilizing standard tele-medicine video-audio equipment in rural IHS/tribal hospitals has not been a successful experience overall. A search for a new and more practical approach was necessary. Conversations with Dr. Peter Rhee, Professor of Surgery and Director of the Trauma Program at the University of Arizona in Tucson brought forth a proposal: "Telemedicine for Trauma Made Easy and Cheap using off the shelf cellular technology."[27] The TCIPP contracted a "Pilot Study Program" with Dr. Rhee and colleagues to test this hypothesis and provide the IHS with technical assistance and program direction for using smart phone technology with audiovisual teleconferencing capability for clinical consultation for trauma and critically ill patients. This pilot project would demonstrate how to plan, implement, coordinate, and evaluate the systems and technologic components essential for developing a practical and reproducible system using "off the shelf" and generally available cellular phone technology. The goal of this pilot will be to establish guidelines for developing a practical and reproducible trauma telemedicine system. This tele-trauma approach should provide effective and efficient patient evaluation, resuscitation, initial care, and stabilization of patients selected for transport to definitive care.

The Pilot Project is being implemented in IHS hospitals (e.g., Sells, Whiteriver, and San Carlos) within the U of A regional trauma care and referral area. The project is progressing and shows encouraging results which will be presented at a later date. It was the subject of the IHS Chief Medical Officers Rounds, "Smart Phone and Handheld Device Use in Trauma Telemedicine: Applications and HIPAA Considerations" on 8 September, 2011.[28]

Trauma Standards

There are many new standards for trauma care, emergency management, emergency preparedness, and EMS impacting our hospitals in need of technical assistance. Nuances in hospital trauma service, ED administration, national trauma standards, and compounding regulations make this a complicated, dynamic field (e.g., American College of Surgeons, Committee on Trauma: Optimal Care Standards; Emergency Medical Treatment and Active Labor Act (EMTALA); and Portability and Accountability Act (HIPAA). Some of the best and most effective resources for these trauma and emergency care standards are readily available at the respective FORTC.

TCIPP assists hospitals upgrading to national trauma center standards (Level III and IV) according to the American College of Surgeons, Committee on Trauma (ACS-COT) criteria. This includes 1) establishing trauma registries for collecting trauma Data and inter-acting with the RTC, state EMS office, and the American College of Surgeons (ACS) National Trauma Data Bank (NTDB); and 2) collecting trauma patient information from IHS and RTC discharge reports in the EHR-RPMS-CRS data system and establishing a trauma nurse coordinator position at all trauma care hospitals. TCIPP encourages hospitals to get involved with tribal community

injury prevention activities and the 12 IHS Epidemiology Research Centers.

Emergency Medicine

Emergency medicine is a key part of trauma care at all service units. Emergency physicians need to be recruited for improved patient care, ED organization, EMS Program medical supervision, and emergency preparedness. Dr James Flaherty, an ED Physician at Tuba City Regional Health Care Corporation (TCRHCC) was appointed as the first Chief Clinical Consultant for EM. Emergency physicians have many important roles in the trauma/EMS System. Emergency nursing is an essential and underappreciated element in every trauma and emergency care plan and program. IHS ED RNs at various times and during "crunch" periods are called upon to function independently and with major responsibilities for care. ED RNs are very capable and must be kept up to date in EM practices. TCIPP is implementing on-site training for general and pediatric trauma, CNS-TBI and advanced EM training. TCIPP and GIMC have established a mini-residencies program for experienced RNs at the UNM RTC to educate and build confidence in the leadership RN, to be more comfortable and capable with trauma patients in their hospitals.

Emergency Services

The program of Emergency Services (ES) at IHS Headquarters includes the EMS-ambulance and EMS children's programs and supports 93 IHS affiliated tribal EMS programs in 26 states including Alaska through coordination of pre-hospital training and ambulance procurement. Continuing support at national and local levels for adequate EMS medical direction and resources for training and ambulance procurement for EMS programs are a priority. Dr. Boyd represents the IHS Director, Dr. Yvette Roubideaux, on the Federal Inter-Agency Committee on EMS (FICEMS), Council on Emergency Medical Care (CEMC) in the Office of the Assistant Secretary for Preparedness and Response (ASPR) and the HRSA Traumatic Brain Injury (TBI) program. The IHS, through the recent 2009 American Recovery Reinvestment Act (ARRA) stimulus funding, provided $5 million to purchase 38 equipped ambulances.

EMS Medical Control and Accountability

Medical supervision is an essential component and critical link in every EMS program. Proper medical supervision, control, and accountability of the pre-hospital ALS and BLS providers are an IHS tradition and legal responsibility. The IHS/tribal hospital EMS medical director (MD) position is inadequately recognized. It can be transitory, with variable performance and limited success. Drs. Jim Upchurch and Jim Flaherty developed a website to enhance essential training (*www.EMS medical direction*). The EMS MD monitors the pre-hospital treatment phase during transports when trauma patients are unstable and at great risk. IHS needs to insure adequate supervision and competent medical direction from our emergency physicians.

Emergency (Management) Preparedness

The existing trauma plan used during routine trauma and mass casualty events is the basis for response in major disasters. The initial medical focal point is the local community hospital that is the entry and coordinating point for evaluation of the mass casualty patients with multiple injuries. Established regional plans include definitive medical care options with the FORTC. Rational local and integrated area planning, adequate medical direction, education, and regionalization concepts and practices need to be established and maintained for each hospital. TCIPP encourages training and education and drills on disaster management for natural events or acts of terrorism. Current clinical managements, (e.g., blast and burn injuries), facility organization, and planning for surge capacity at the local community and regional hospitals is essential.

EMS is an integral part of emergency preparedness and response, but EMS also has an ongoing, day-to-day medical operation. The TCIPP goal is to help tribes and IHS/tribal hospitals build, sustain, and improve day-to-day capacity to meet the EMS needs of AI/AN communities and to integrate their efforts with those of the President, the DHHS Secretary, and the IHS Director and their respective objectives in strengthening emergency preparedness in the US.

Emergency Medical Services for Children (EMS-C)

Mortality and morbidity is greater per injury with the young and very young pediatric patient. Special equipment, training, treatment, and transport protocols are critical components of appropriate emergency medical care for children. The Health Resources and Services Administration's (HRSA) EMS-C program recognized the importance of reaching out to tribal communities on EMS for Children issues and through an IHS/HRSA annual interagency agreement, funds one FTE to administer the EMSC program at IHS. HRSA recently announced a pilot grant opportunity to encourage regionalization of pediatric emergency medical care (*http://bolivia.hrsa.gov/emsc/* ; *http://www.childrensnational.org/EMSC/*)

Emergency Suicide Response

CDR Betty Hastings, IHS EMS/EMSC Coordinator, introduced a new concept for counteracting and stabilizing AI/AN communities experiencing "suicide clusters" utilizing emergency management techniques as an effective emergency response measure. Hastings has presented this concept to hospitals, the lay community, and interested trauma surgeons at national forums.[30]

IHS Health Promotion/Disease Prevention (HP/DP)

TCIPP supports injury control oriented activates like

alcohol countermeasures, car seat safety belts, and child restraints. Tribes will be encouraged to establish local chapters of injury control activist organizations such as Mothers Against Drunk Driving (MADD). HP/DP has partnered with MADD to address underage drinking and alcohol misuse among AI/AN communities and schools. HP/DP assists tribal college students to control binge drinking and other strategies to address alcohol problems in the community and campus (*http://www.ihs.gov/HPDP/*).

Injury Prevention and Injury Control

The IHS Injury Prevention Program provides a comprehensive program based on proven public health strategies. The IHS Injury Prevention Program is based on proven or best practice community-based prevention strategies and reliable injury surveillance data to build tribal capacity and foster collaborative partnerships. Effective strategies include increasing the use of safety belts, child safety seats, smoke alarms, and personal flotation devices. These interventions also involve tribal policy development and regulations in mandatory motor vehicle occupant restraint use, and blood alcohol limits.

TCIPP promotes Driving Under the Influence (DUI) programs, including model legislation, ordinances, implementation, and enforcement practices. Special programs directed towards teens and young people including "dry proms," adult supervised and social-recreational activities, as well as control of illicit alcohol and drug sales. Bootlegger surveillance and road-checks should also be part of a package.

One of the IHS Injury Prevention Programs' initiatives is to promote tribal capacity in injury prevention. TCIPP supports tribal leaders in their role and responsibility of promoting active and passive injury countermeasures and changing community attitudes about alcohol and drugs as controllable causes of death and disability. Local political support can be gained through exposure and understanding of the composite IHS/tribal hospital trauma/EMS care and injury preventive activities. Our goal is to affect local political sponsorship and diminish the impact of trauma care on hospital functions, care programs, resources, and budget and contract care dollars. The IHS Injury Prevention Cooperative Agreement was started in 1997. Presently there are 40 IHS Injury Prevention Cooperative Agreement Programs serving tribal organizations and urban health boards in nine IHS Areas.

Training is an important component of the IHS Injury Prevention Program. The program has developed a series of training courses to develop community-based injury prevention competencies. These IHS courses are stratified at the Injury Prevention I, II, and III Levels and serve as prerequisites to the Injury Prevention Fellowship training. The IHS Injury Prevention Specialist Fellowship Program, begun in 1987, is a unique and important component of the IHS efforts to reduce the burden of injuries and build tribal capacity for injury prevention.[31] The year-long fellowship emphasizes primary prevention, evidence-based strategies, and practical skills.[32] An annual field course has each fellow complete a 12-month project focused on an injury problem identified by a host community. These field courses have led to local initiatives to reduce injuries among persons with diabetes, passage of a primary seat belt law, and distribution of evaluation procedures for smoke alarms. Many of these projects have had long-range impacts, such as obtaining funds for road improvement, facilitating passage of tribal codes and policies to reduce domestic violence, and instituting gatekeeper training for suicide prevention in Alaskan villages. Many fellowship graduates have assumed prominent roles in injury prevention as trainers, decision-makers, and policy makers, and have published in *The IHS Provider* and other journals. Employees of IHS and tribes can participate in the fellowship program. Further information is available at *http://www.ihs.gov/MedicalPrograms/InjuryPrevention/index.cfm*.

Alcohol Screening and Brief Intervention (ASBI)

Traumatic injury caused by alcohol misuse remains an unresolved major clinical problem for AI/AN, causing immense personal, family, and community suffering. The sheer number and magnitude of traumatic injuries causes stress on our emergency personnel and can overwhelm our facilities, with inordinate costs and impacts on operating budgets and contract care funds. Alcohol-related injury is typically not a one-time event but rather an escalating series of recurring events. Patients seen in a trauma center with an alcohol-related injury are twice as likely to die from a subsequent injury.

In 2006 Boyd developed a unique IHS-oriented Alcohol Screening and Brief Intervention (ASBI) Program from his extensive clinical trauma and emergency medical services experience, reviewing the available literature, and meeting with national alcohol control experts from a variety of medical disciplines. The IHS ASBI was specifically devised as an injury recidivism prevention program and vetted with IHS leaders from many areas and clinical disciplines.[33] The ASBI approach can be implemented and sustained in a capacity-constrained health care delivery system. The program is recognized throughout Indian Country though it is still in the early stages of institutionalization. Several rural state and local health care systems are replicating the IHS ASBI as a practical solution to a common problem.

ASBI is a generalizable, interactive and opportunistic methodology for controlling alcohol abuse and preventing abusive drinking patterns. The Alcohol Screening (AS) phase identifies the level of alcohol abuse, and dependent and complicated drinkers are referred for more in-depth evaluation, medical care, and counseling. Brief Interventions (BI) follow a readily learned communicative skill set as described in the Yale Brief Negotiated Interview (BNI).[34,35] An Implementation and Operations Manual was developed[36] and a major national ASBI train-the-trainer program was carried out in 2008–09. All levels of providers can perform the ASBI. Results are reported

in the EHR and RPMS and measured in CRS. CPT codes are available for reimbursement. Brief Interventional approaches have been shown to be effective in post-traumatic situations in these non-dependent, susceptible young patients, with injury recidivism reduction rates of up to 46% for at least one year.[37] BI techniques can reduce alcohol consumption and collateral drug abuse and have been shown to be effective in a wide variety of applications. The US PHS Preventive Task Force has rated ASBI methodologies Category 1 and ready for general use. All relevant trauma, emergency medical, and behavioral health professional organizations have endorsed ASBI methodologies.

ASBI is an alcohol abuse and consequences control methodology specially adapted for the experience, needs, and resources of AI/AN medical practice. ASBI is effective when used opportunistically in the early acute care phase, during the window of opportunity and within the teachable moment after a recognized alcohol related accident or injury. ASBI can be performed in any IHS/tribal acute care setting including trauma, emergency, urgent care, primary care, and behavioral health clinics.[38] The TCIPP has recently developed an ASBI-Extended approach as a model for broader integration into other settings including emergency medicine, primary care, and behavioral health.[41] The extended ASBI approach envisions an EM, PC, and BH team with an acute care behavioral health specialist responsible for coordinating, providing, and monitoring screening, and brief interventions and treatment for conditions with significant behavioral health contributions. A majority of basic addiction treatment would be initiated and coordinated from this EM/PC/BH team care focus.

Public Information and Education

A concept and practice from the Illinois Trauma Program[7] is the community-wide "Trauma Day" held annually at every trauma center to include hospital staff, EMS personnel, law enforcement, community leaders, and politicians. In this setting, professionals and politicians can see the obvious connections, commonality of purpose, and necessity and advantages for cooperation. EMS professions are recognized, some with awards and certificates. Local politicians can be encouraged to publically pledge support. They get special recognition and become "trauma heroes." Political and financial endorsements are, many times, leveraged from these events. IHS and tribal hospitals held some 13 local trauma (TCIPP) day celebrations in May 2009–10. These are co-hosted with the American Trauma Society (ATS) as part of celebrating National Trauma Awareness during the month of May[40] (*www.amtrauma.org*, e-mail: *info@amtrauma.org*).

TCIPP participates in the American College of Emergency Physicians (ACEP) National Emergency Medical Services Week to bring together local communities and medical personnel to publicize safety and honor the dedication of those who provide the day-to-day lifesaving services of medicine's front line. This information can be used throughout the year for public education and safety programs. For additional information, contact *emsweek@acep.org*.

Lead Agency for Trauma/EMSS

The "Lead Agency" for trauma and EMS systems is another outgrowth of the Illinois experience that was replicated in the national EMSS Program directed through DHEW/DHHS.[5,7,11] The complexity of orchestrating the many distinct operational services, a variety of patient care facilities, and the array of private, public, and governmental agencies created the need for a leadership entity. TCIPP by necessity and design is the lead agency within the federal establishment and within the 12 IHS Areas. IHS is a health care delivery system with great capacity that can conceptualize, mobilize and implement a complex program faster and better than most. There are built-in data systems and some 12 allied epidemiologic centers interested in the injury-trauma problem. Associated related functions of partner agencies including HRSA, NHTSA, NIH, CDC, NIAAA, and SAMHSA can be channeled through TCIPP for maximal impact in the field.

The TCIPP is the responsible coordinating unit and distribution office within Indian Country and for trauma and emergency medical care in 44 IHS and tribal hospitals and 164 clinics. In addition, IHS maintains three and provides guidance to 84 tribal EMS ambulance services. The EMS-C program within IHS has one FTE to provide technical assistance to 84 IHS affiliated, tribal EMS programs nationwide. IHS Emergency Services (ES) provides Emergency Management guidance to 564 tribal entities.

IHS has functioned continuously as the lead agency since 1975. Trauma program development was facilitated by DHEW/DHHS grants for regional systems provided by the Emergency Medical Services Systems (EMSS) Acts.[16] The IHS maintains a systems approach to the planning, component implementation, operations, care delivery, and evaluation of trauma and emergency medical care.[5] In 2008 TCIPP was established to improve access, response, field and hospital care, and distant transport to advanced specialized care using the regionalization concept, working in coordination with other local and state EMSS activities and federal agencies.

Affiliate National Trauma/EM/EMS Organizations:

There are many national trauma, emergency medicine and EMS programs and organizations that are interested and want to be helpful. IHS has a great national reputation, based in large part on a record of demonstrated professionalism working in areas of recognized need. TCIPP has worked to coordinate and, where feasible, integrate the essentials of patient care and follow-up, training and education, data consistency and collection, and reimbursement and funding. A main thrust of the trauma/EM/EMS regionalization has been oriented toward the FORTC.

TCIPP is working with the national, state, and individual members of the American College of Surgeons Committee on

Trauma (ACS-COT) to achieve the goals outlined in this paper and is currently involved with the ACS-COT Sub-Committees on Prevention, Rural Trauma and Disaster Planning. ASC member surgeons are actively treating many of our patients at their respective trauma centers. Dr. Frank Sacco at the Alaska Native Medical Center (ANMC) is the IHS ACS-COT liaison. TCIPP works with many other emergency medicine, pediatric, family medicine and behavioral health associations and organizations.

Summary

Trauma has been a continuing problem through the ages and remains a major health issue in the civilized world. Injury and its sequelae and resultant costs are especially severe in Indian Country. Statistics are staggering and consistent. Death and disability in rural Indian communities are three times higher than in the general rural population. It is the largest killer under the age of 55 and is particularly lethal to the young and active and pre-productive element of society. Alcohol and other agents are intertwined and provide a complex and difficult problem of behavioral and environmental interaction with high mobility and acts of violence. The grim national statistics of the 1960s when trauma was "the neglected disease of modern society" have been dramatically improved in most areas. The essential intervening factors of public, professional and political awareness and actions have brought forth many changes and improvements. The establishment of regionalized trauma and EMS systems is the accepted and proven method for affecting these goals. The challenge to Indian Country and the IHS is to replicate these experiences and integrate the local trauma and EMS activities into the established regional trauma/EMS system.

The TCIPP can provide the leadership and essential technical assistance for successful implementation of as AI/AN trauma/EMS system of excellence in rural communities. These changes will require problem recognition, careful planning, resource allocation, personnel management training, and practice. Much has already been started. Basic regional assessments and many interactions have been established. From this base, sophisticated and advanced technologic adaptations are being deployed. The TCIPP goal is to provide rural regional trauma and EMS to meet all national standards and expectations.

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MEETINGS OF INTEREST

Advancements in Diabetes Seminars
Monthly; WebEx

Join us monthly for a series of one-hour WebEx seminars for health care program professionals who work with patients who have diabetes or are at risk for diabetes. Presented by experts in the field, these seminars will discuss what's new, update your knowledge and skills, and describe practical tools you can use to improve the care for people with diabetes. No registration is necessary. The accredited sponsors are the IHS Clinical Support Center and IHS Nutrition and Dietetics Training Program.

For information on upcoming seminars and/or previous seminars, including the recordings and handouts, click on this link and see Diabetes Seminar Resources: *http://www.diabetes.ihs.gov/index.cfm?module=trainingSeminars*

Available EHR Courses

EHR is the Indian Health Service's Electronic Health Record software that is based on the Resource and Patient Management System (RPMS) clinical information system. For more information about any of these courses described below, please visit the EHR website at *http://www.ihs.gov/CIO/EHR/index.cfm?module=rpms_ehr_training*. To see registration information for any of these courses, go to *http://www.ihs.gov/Cio/RPMS/index.cfm?module=Training&option=index*.

15th International Congress on Circumpolar Health
August 5–10; Fairbanks, Alaska

The International Congress on Circumpolar Health (ICCH) is a primary source of information exchange and scholarly communication relating to circumpolar health. Through the ICCH, the International Union for Circumpolar Health (IUCH) creates a forum for circumpolar health professionals (medical scientists, policy and decision makers, Native peoples, and community leaders) to share the research findings and program successes that are unique to northern regions.

From August 5–10, 2012, the IUCH will reassemble for the 15th time in Fairbanks, Alaska, United States. Registration is now open for the Congress; you need not be an IUCH member to attend. Early registration ends on April 1, 2012. To register and learn more about the Congress and IUCH, please visit *http://icch15.com/*.

POSITION VACANCIES

Editor's note: As a service to our readers, The IHS Provider will publish notices of clinical positions available. Indian health program employers should send brief announcements as attachments by e-mail to john.saari@ihs.gov. *Please include an e-mail address in the item so that there is a contact for the announcement. If there is more than one position, please combine them into one announcement per location. Submissions will be run for four months and then will be dropped, without notification,, but may be renewed as many times as necessary. Tribal organizations that have taken their tribal "shares" of the CSC budget will need to reimburse CSC for the expense of this service ($100 for four months). The Indian Health Service assumes no responsibility for the accuracy of the information in such announcements.*

Family Practice Physician
Physician Assistant or Family Nurse Practitioner
United Indian Health Services, Inc. (UIHS),
Howonquet Clinic; Smith River, California

The UIHS Howonquet Clinic is a premier health care facility located in beautiful northern California along the Pacific coast near the majestic redwoods. The organization is a unique non-profit made up of a consortium of nine tribes, with a mission "To work together with our clients and community to achieve wellness through health services that reflect the traditional values of our American Indian Community." UIHS provides wrap-around services that include medical, dental, behavioral health, and community services. Our focus is to empower our clients to become active participants in their care. If you value outdoor adventures, such as backpacking, kayaking, biking, fishing, and surfing, and you envision yourself providing services to an under-served but deserving community in a caring and holistic manner, come join our team. Please visit our website at *www.uihs.org* or contact Trudy Adams for more information at (707) 825-4036 or e-mail *Trudy.adams@crihb.net*. (2/12)

Wellness Center Director
Nurse Practitioner
Chehalis Tribal Wellness Center;
Oakville, Washington

The Chehalis Tribal Wellness Center provides health services to tribal and community members living on or near the reservation. The Chehalis Tribal Wellness Center is located on the 4,849 acre Chehalis Reservation in southwest Washington State. The Chehalis Reservation is situated approximately 26 miles southwest of Olympia and six miles northwest of Centralia. Services include ambulatory medical services, dental services, women's health, diabetes prevention and treatment, and contract health services. The facility has 12 exam rooms, a triage and trauma area, digital radiology, laboratory services, and a large dental clinic. The Chehalis Tribal Wellness Center is a full-service family practice clinic that has been serving Chehalis tribal members since 1979. If you would like further information about current clinical job opportunities with us, please contact Sylvia Cayenne at (360) 273-5911 or visit our website at *chehalistribe.org*. (2/12)

Physician
Nimkee Memorial Clinic;
Mount Pleasant, Michigan

The Saginaw Chippewa Indian Tribe is seeking a full time physician. The Saginaw Chippewa Indian Tribe (SCIT) is a band of Chippewa Indians located in central Michigan. The tribal government offices are located on the Isabella Indian Reservation, near the city of Mount Pleasant. The tribe owns and operates Soaring Eagle Casino in Mount Pleasant. SCIT also holds land on the Saganing reservation near Standish, with a community center in addition to the recently completed Eagle's Landing Casino on the Saganing reservation.

Besides its gaming enterprises, the tribe owns other businesses and community operations, including the Sagamok Shell Station, the Ziibiwing Cultural Society (a tribal museum), a substance abuse facility, a community clinic, and health facilities. Educational programs include the Saginaw Chippewa Academy (an elementary school), as well as a presence in the local public schools through Native American advocates and tutors. Saginaw Chippewa Tribal College is an accredited two-year college that operates with funding from the tribe.

Nimkee Memorial Clinic is open Monday through Friday from 8 am to 5 pm and is located on the Isabella Reservation. Local hospital services are provided through McLaren Central Hospital. The Nimkee Medical Clinic employs five providers, including two family practice physicians, one internist, a family nurse practitioner and a physician assistant. Nimkee Clinic also includes an on-site pharmacy.

The clients served are members and direct descendants of the SCIT and members of other US federally recognized Indian tribes residing in a five county service area including Isabella, Clare, Midland, Missaukee and Arenac counties. The tribal physician plays an essential part in the comprehensive, quality health care delivered in a holistic approach, to prevent disease and to promote wellness in the Native American community served. Ambulatory care services are provided to people of all ages and include general clinic visits of various levels of care,

health promotion and disease prevention, immunization clinics, men's health clinics, women's health clinics, diabetes management, and pharmacy.

Interested applicants may apply for the position and upload a resume and credentials using the website at *www.sagchip.org*. The full job description will be available to view on the website as well. Any questions in regards to this position, please contact Kassy Heard at (989) 775-5605 or *kheard@sagchip.org*. (2/12)

Urgent Care Family Medicine Physician
Northern Navajo Medical Center;
Shiprock, New Mexico

The Urgent Care Clinic at Northern Navajo Medical Center in Shiprock, New Mexico has an opening for a BE/BC family medicine physician. Shiprock is located just south of Colorado with close proximity to the Four Corners area and the Rocky Mountains. This is a fast-paced urgent care clinic with over 35,000 patient visits per year. Work with a team of six physicians and nine physicians assistants caring for the Navajo people. The schedule is flexible, there is no call, and the salary is competitive with the addition of IHS Physician Market Pay. Loan repayment is available through IHS and NHSC. If you are interested in learning more about this excellent opportunity please e-mail *nancy.kitson@ihs.gov* and attach your CV. (2/12)

Primary Care Physician
Zuni Comprehensive Community Health Center;
Zuni, New Mexico

The Zuni Comprehensive Community Health Center (Zuni-Ramah Service Unit) has openings for full-time primary care physicians starting in fall 2012. This is a family medicine model hospital and clinic providing the full range of primary care, including outpatient continuity clinics, urgent care, emergency care, inpatient (pediatrics and adults) and obstetrics, with community outreach, in a highly collaborative atmosphere. For a small community hospital, we care for a surprisingly broad range of medical issues. Our professional staff includes 17 physicians, two NPs, one CNM, a podiatrist, dentists, a psychiatrist, a psychologist, optometrists, physical therapists, and pharmacists. Our patient population consists of Zunis, Navajos, and others living in the surrounding area.

Zuni Pueblo is one of the oldest continuously inhabited American Indian villages in the US, estimated to be at least 800–900 years old. It is located in the northwestern region of New Mexico, along the Arizona border. It is high desert, ranging from 6000–7000 feet in elevation, and is surrounded by beautiful sandstone mesas and canyons with scattered sage, juniper, and pinon pine trees. Many of our medical staff have been with us for several years, reflecting the high job and lifestyle satisfaction we enjoy in this community.

For more information, contact John Bettler, MD at (505) 782-7453 (voice mail), (505) 782-4431 (to page) or by e-mail at *john.bettler@ihs.gov*. CVs can be faxed to (505) 782-7405, attn. John Bettler. (1/12)

Family Practice Physician (3)
Family Nurse Practitioner (2)
Emergency Medicine Physician (4)
San Carlos Service Unit;
San Carlos, Arizona

San Carlos Service Unit is recruiting for board certified/eligible emergency room and family practice physicians to join our experienced medical staff team. Additionally, we are recruiting for family nurse practitioners. We are located approximately 90 miles east of Phoenix.

The San Carlos Service Unit is the primary source of health care for approximately 13,000 people of the San Carlos Apache Nation. The service unit is a Joint Commission fully accredited eight-bed hospital and outpatient services facility with a satellite clinic. Clinical services include family medicine, pediatrics, internal medicine, prenatal and women's health, dental, optometry, physical therapy, nutrition and dietetics, social work services, and diabetes management education.

Currently there is a new hospital under construction that is scheduled for completion in the later part of 2013 or early 2014. We offer competitive salary, relocation/recruitment/retention allowance, federal employment benefits package, and loan repayment. For more information, please contact Richard Palmer, MD, SCSU Clinical Director at (928) 475-7201 or by e-mail at *richard.palmer@ihs.gov*. (1/12)

Family Practice Physician
Family Nurse Practitioner
Physician Assistant
Registered Dietician (Renal)
Toiyabe Indian Health Project, Inc.;
Bishop, California

Toiyabe Indian Health Project is seeking qualified applicants to fill provider vacancies within the organization. We are looking for highly motivated candidates who are California licensed/Board certified and ready to join our team of providers. We offer competitive pay, an excellent benefits package including health insurance, life insurance, long-term disability insurance, 401k, CME, vacation and sick leave, paid holidays, and relocation assistance. Toiyabe is located in the Eastern Sierra Region of California, with abundant outdoor recreational activities such as hiking, biking, skiing, rock climbing, fishing, camping, etc. There are small communities, safe neighborhoods, and great schools/day care facilities. If interested in applying, please contact Sara M. Vance, Personnel Officer, at (760) 873-8464, ext. 224; e-mail *sara.vance@toiyabe.us*; or visit our website at *www.toiyabe.us* for complete job descriptions and applications. (12/11)

Physician
Family Nurse Practitioner
Northern Valley Indian Health, Inc.;
Chico And Willows, California

Northern Valley Indian Health, a well-established provider for the Glenn and Butte County service area, has immediate openings for a physician and a family nurse practitioner. The vacancies are in our Chico and Willows clinics and present a great opportunity for professional growth. The successful applicants will demonstrate a commitment for excellence and possess well-developed interpersonal skills. You must be a graduate of an accredited United States medical school, and possess current California physician or FNP licensure and DEA controlled substance registration. Great benefits package; salary is commensurate with experience. Student loan repayment programs available. Apply at *nvih.org*; e-mail *jobs@nvih.org*; or fax to (530) 896-9406. (11/11)

Licensed Clinical Social Worker
Medical Clinic Manager
Consolidated Tribal Health Project, Inc.;
Calpella, California

Consolidated Tribal Health Project, Inc. is a 501(c)(3) non-profit, ambulatory health clinic that has served rural Mendocino County since 1984. CTHP is governed by a board comprised of delegates from a consortium of nine area tribes, eight of which are federally recognized, and one that is not. Eight of the tribes are Pomo and one is Cahto. The campus is situated on a five-acre parcel owned by the corporation; it is not on tribal land.

CTHP has a Title V Compact, which gives the clinic self governance over our Indian Health Service funding allocation. An application for either of these positions is located at *www.cthp.org*. Send resume and application to Karla Tuttle, HR Generalist, PO Box 387, Calpella, California 95418; fax (707) 485-7837; telephone (707) 485-5115 (ext. 5613). (10/11)

Dept. of Health and Human Services
Indian Health Service
Clinical Support Center
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Phoenix, Arizona 85004

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THE IHS PRIMARY CARE PROVIDER
A journal for health professionals working with American Indians and Alaska Natives

THE IHS PROVIDER is published monthly by the Indian Health Service Clinical Support Center (CSC). Telephone: (602) 364-7777; fax: (602) 364-7788; e-mail: *the.provider@ihs.gov.* Previous issues of THE PROVIDER (beginning with the December 1994 issue) can be found on the CSC Internet home page *(http://www.ihs.gov/Provider).*

Opinions expressed in articles are those of the authors and do not necessarily reflect those of the Indian Health Service or the Editors.

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