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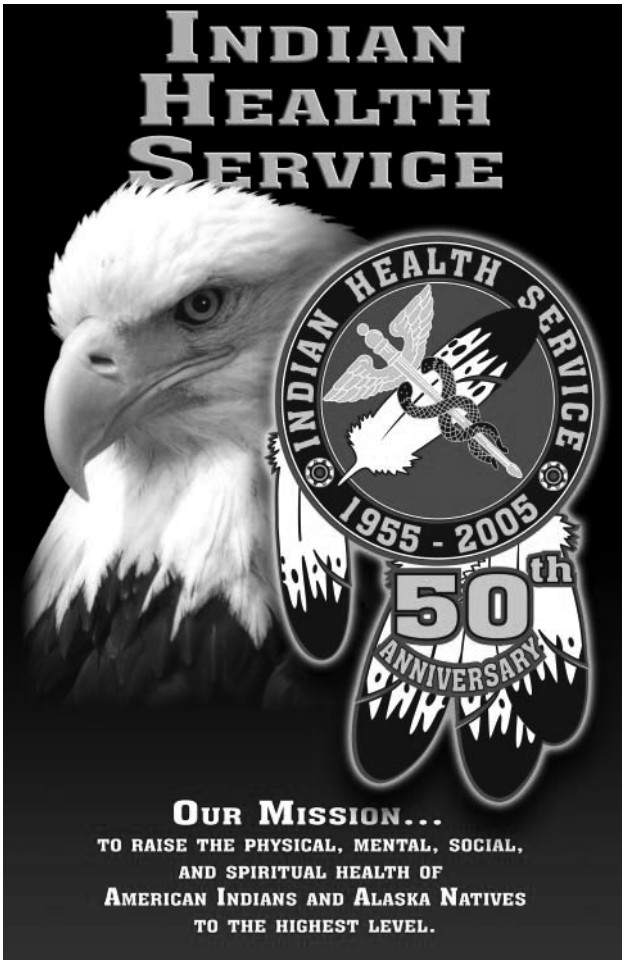
The Fiftieth Anniversary of the Indian Health Service

July 2005 marked the 50th anniversary of the Transfer Act, P.L. 83-568, which officially transferred the Indian health programs from the Bureau of Indian Affairs to the U.S. Public Health Service, effectively establishing the Indian Health Service (IHS). The Transfer Act provided that "all functions, responsibilities, authorities, and duties . . . relating to the maintenance and operations of hospital and health facilities for Indians, and the conservation of Indian health . . . shall be administered by the Surgeon General of the United States Public Health Service."

The enactment of the Transfer Act heralded the beginning of the healing of many years of physical and spiritual wounds, the building of a health infrastructure to address the health disparities facing American Indian and Alaska Native people, and the launching of a new era in Indian health care. This was accomplished through a unique partnership between the Indian Health Service and American Indian and Alaska Native people. By listening to the voices of those most aware of the needs of their communities, we have built an Indian health care system that is responsive to those needs and that is culturally acceptable in the provision of health care services.



In FY 2005 we have embarked on a special year of celebrations and special events. A 50th Anniversary reference library of historical documents and photographs is being compiled, and will be available on the IHS Website. Also, we are publishing a new edition of the "Gold Book," which was first written in 1957 as a comprehensive report to Congress on the status of the health of American Indians and Alaska Natives around the time of the transfer. The new version will show the progress made in the last 50 years, and our plans for facing the challenges of the next 50 years.

We have made great strides in Indian health care in the last 50 years, due largely to the incredible dedication, competence, and hard work of all the IHS, Tribal, and Urban Indian health program staff members. With your continued support, we will succeed in our goal of eliminating health disparities and raising the health status of American Indian and Alaska Native people to the highest level possible. I thank all of you for your invaluable contributions as we recognize this important milestone in the history of the Indian Health Service.

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The Tympanic Membrane: See It, Describe It, Treat It

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Introduction

Acute otitis media (AOM) and otitis media with effusion (OME) are two of the most common childhood illnesses for which antibiotics are prescribed. Clinical practice guidelines titled "Diagnosis and Management of Acute Otitis Media" and "Otitis Media With Effusion" were published in the May 2004 issue of the journal *Pediatrics*. References to these guidelines in this article are frequent due to their current information on both acute otitis media (AOM) and otitis media with effusion (OME). Tympanostomy tube otorrhea (TTO) and external otitis (EO) will also be discussed.

The medical literature suggests AOM is frequently overdiagnosed,[1] raising concerns about the inappropriate use of antibiotics and subsequent antibiotic resistance. Because of overdiagnosing, the prevalence of AOM in the literature is significantly overstated, and therefore, the emphasis on antibiotics is often misguided. The judicious use of antibiotics for AOM begins with an accurate diagnosis. Prescribing antibiotics for misdiagnosed AOM contributes to the increased cost of health care, antibiotic resistance, and the child's true "illness" remaining undiagnosed. This practice reinforces parental beliefs that a bacterial infection exists and that an antibiotic is necessary. It also raises parents' expectations that when their child becomes sick again, with similar signs and symptoms, an antibiotic must be used.

The diagnosis of AOM in infants and young children is frequently made with uncertainty.[2] Because many children move about and their ear canals are narrow, hairy, and waxy, visualizing and assessing the tympanic membrane (TM) is difficult. Many providers do not have the necessary training and skills to accurately diagnose AOM and OME. According to program directors of pediatric residency programs, 59% include some form of formal education related to the diagnosing or treatment of otitis media. The majority of formal training (56%) included educational lectures by general pediatricians, with less than three lectures per year.[3] Pediatricians often have difficulty differentiating between AOM and OME, as cited in a recent study when the rate of misdiagnosis approached 50%.[4] Most physicians have not received adequate training in otoscopy[5] and most physicians find pneumatic otoscopy inconvenient or remain unconvinced of its value.[1] In a survey, 42% of pediatricians do not routinely perform pneumatic otoscopy and only 21% always do.[6]

An accurate diagnosis requires differentiating between normal ears, OME, and AOM. To do this, a three-step method (see, describe, treat) was devised to encourage providers to perform a thorough ear exam using pneumatic otoscopy.[7] Seeing and describing the TM is necessary to establish an accurate diagnosis. Once an accurate diagnosis is made, treatment can begin. The four tympanic membrane (TM) characteristics that must be described in every ear exam are mobility, position, translucency, and color. Pneumatic otoscopy evaluates TM mobility. Mobility and position of the TM are the two most important characteristics to evaluate. Decreased mobility provides valuable evidence to the provider that fluid is present in the middle ear space, but cannot distinguish between AOM and OME. The position of the TM is the key in distinguishing between AOM and OME. Color of the TM[8] and the clinical history are poor indicators for AOM.[2] This article will provide valuable information to assist the provider in achieving more accurate diagnosis and treatment for AOM and OME.

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Definitions

The use of accepted terminology is important when discussing and documenting information about the TM. Subjective terms such as frequent, chronic, and persistent should be avoided because their meanings vary among individual providers. Definitions for otitis media (OM), acute otitis media (AOM), otitis media with effusion (OME), and recurrent acute otitis media are described in Table 1.

Another concern is a bulging TM. Bulging is a part of describing TM position (loss of malleus short process landmark) and is a sign of inflammation, not effusion. Air fluid level behind TM is another concern. Serous or mucoid fluid can accumulate behind the TM, but is not diagnostic of AOM; rather it is a part of OME. Another concern is otorrhea. Otorrhea is not diagnostic for AOM, but can occur with AOM with an acute or chronic perforation, or with tympanostomy tube drainage, all of which represent complicated AOM and are not covered by the guideline. Also, otorrhea can occur with external otitis.

Table 1. Otitis media definitions

Otitis media (OM)	An inflammation and accumulation of fluid in the middle ear, without reference to a specific etiology or pathogenesis. It is a broad term and does not distinguish between AOM and OME.[14]
Acute otitis media (AOM)	Elements of AOM are **all** of the following (rapid onset, presence of middle ear fluid, and middle ear inflammation): 1. Recent, usually abrupt, onset of signs of middle ear effusion (MEE) and inflammation. 2. Presence of MEE that is indicated by **any** of the following: a. Bulging of the TM b. Limited or absent TM mobility c. Air fluid level behind TM d. Otorrhea 3. Signs or symptoms of middle ear inflammation as indicated by **either**: a. Distinct erythema of the TM b. Distinct otalgia (discomfort clearly referable to the ear that results in interference with or precludes normal activity or sleep)[2]
My proposed definition for AOM	Should be a rapid, recent onset, with presence of middle ear effusion (MEE) and middle ear inflammation. Presence of MEE (pus) as evidenced by TM with limited or poor movement (mobility) and presence of middle ear inflammation as evidenced by TM with fullness or bulginess (position). The TM usually has distinctly reduced mobility when negative and positive pressure is applied, is bulging, opaque, and may be red.
Otitis media with effusion (OME)	Presence of fluid in the middle ear without signs or symptoms of acute ear infection.[8] The TM usually has decreased mobility, is in a neutral or retracted position, has increased vascularity, and is a dull gray.
Recurrent acute otitis media	Three or more distinct episodes of AOM during a six month period or four or more distinct episodes of AOM over 12 months.[15] Recurrent refers to the past history of AOM and does not indicate an ear infection is present when examined. Between the separate episodes of AOM, the middle ear is effusion free and the TM is normal.

When examining the clinical practice guidelines' criteria for AOM (Table 1), the definition requires three elements, as follows: 1) rapid onset, 2) presence of middle ear effusion (MEE), and 3) signs and symptoms of middle ear inflammation. The presence of MEE is indicated by *any* of four components: 1) bulging TM, 2) limited or absent TM mobility, 3) air fluid level behind the TM, or 4) otorrhea. The presence of middle ear inflammation is indicated by distinct erythema *or* otalgia.

Analysis of the AOM definition reveals a number of concerns. One concern is that since AOM occurs often in children under two years of age, most of the time providers cannot determine when the onset occurred with any degree of certainty, and yet recent onset is a required element for AOM.

The required third element in the AOM definition is inflammation as evidenced by either distinct erythema of the TM or otalgia. However, the OME guidelines state distinct TM redness has a poor predictive value for AOM, and yet it is a crucial part of the definition of AOM. Identifying otalgia in a child less than two years of age is very difficult. The AOM definition stipulates discomfort clearly referable to the ear that results in interference with or precludes normal activity or sleep. Many childhood illnesses, other than AOM, result in interference with a child's normal activity or sleep.

The definition for AOM in the treatment guideline has significant problems with accuracy. I suggest a simpler, but

more precise definition for AOM. AOM should be a rapid, recent onset with the presence of MEE (pus) as evidenced by TM with limited or poor movement (*mobility*) and the presence of middle ear inflammation as evidenced by TM with fullness or bulginess (*position*). This definition *does not* include the required element of a rapid onset, and does not include erythema of the TM and otalgia. Rather, it focuses on MEE (TM mobility) and middle ear inflammation (TM position).

Guidelines

It is critical that providers familiarize themselves with the guidelines for AOM and OME in the May 2004 issue of *Pediatrics*. The guidelines are evidence-based, apply to children age two months through twelve years, and provide recommendations for providers for the assessment and management of AOM and OME. Both guidelines were written by experts in their field after conducting a thorough review of the literature. The guidelines focus on twenty evidence-based statements that have varying degrees of support. Each statement was categorized with a strong recommendation, recommendation, option, or no recommendation. There are seven evidence-based AOM statements and thirteen for OME. It is beyond the scope of this article to discuss all twenty statements, but highlights for the most important are presented. See Table 2 for a listing of all the statements. Notice only two received a strong recommendation, otalgia and pneumatic otoscopy. Both guidelines include an extensive bibliography as well.

Table 2. Evidence-based topics and corresponding rating

AOM Topic	AOM Rating
1. AOM diagnosis	Recommendation
2. Otalgia	Strong recommendation
3A. Observation without antibiotic	Option
3B. Antibiotic treatment with amoxicillin	Recommendation
4. Failure with initial treatment	Recommendation
5. Risk factors	Recommendation
6. Complementary and alternative medicine	No recommendation
OME Topic	**OME Rating**
1A. Pneumatic otoscopy	Strong recommendation
1B. Tympanometry	Option
1C. Screening	Recommendation
2. Documentation	Recommendation
3. Child at risk	Recommendation
4. Watchful waiting	Recommendation
5. Medication	Recommendation
6. Hearing and language	Recommendation
7. Surveillance	Recommendation
8. Referral	Option
9. Surgery	Recommendation
10. Complementary and alternative medicine	No recommendation
11. Allergy management	No recommendation

The Three-Step Method

Pneumatic otoscopy is the preferred approach when performing a thorough ear exam, and as an evidence-based statement it received a strong recommendation. It must be done on every ear exam. A three-step method was devised to assist and support providers in performing a thorough ear exam using pneumatic otoscopy.[7] Step one is seeing or visualizing the TM; step two is describing the TM; and step three is treating the TM. It is essential to see and describe the TM in order to determine the appropriate treatment. Once providers have the skills and equipment to accurately see and describe the four characteristics of the TM, the treatment plan is relatively straightforward.

Step 1: See It

The TM must be examined to accurately diagnose AOM. Seeing the TM can be difficult for several reasons. Children, especially those under three years of age, are often frightened, uncooperative, and active while having their ears examined. In addition, young children's ears are often small, hairy, and waxy. If cerumen is present, it may require several minutes, a cooperative parent, and a restrained child to remove the cerumen and complete the ear exam. Properly restraining and immobilizing a child facilitates a safe and thorough ear exam. A restraining method, such as a papoose board, allows the parent to hold the child's head with two hands while the provider performs the ear exam.

Proper equipment must be available to complete the ear exam. The otoscope should be equipped with a pneumatic attachment and a light source with optimal output. The speculum tip should be enlarged at the end, to provide a good seal. With a proper seal, negative and positive pressure can be introduced into the ear canal to evaluate the mobility of the TM. Specula for the otoscope are available in a variety of sizes to allow for a comfortable fit of the child's auditory canals. Specula that are too large do not allow access to the ear canal for proper visualization of the TM. Tips that are too small do not provide an adequate seal to evaluate movement of the TM. Unfortunately, speculum tips used in most clinics are too small (2.5 mm, 4 mm) and are tapered at the end. These speculum tips do not provide a good seal, and pneumatic otoscopy cannot be done accurately. Speculum tips are available in a variety of sizes (2.5, 3, 4, 5, and 7) and all sizes should be available to providers.

If inspection of the external ear canal reveals the presence of cerumen, it must be carefully removed in order to see the TM. Wax curettes, alligator forceps, wall suction, overhead lighting, and a headlight are other equipment needed to remove cerumen successfully.

Seeing the TM is the only accurate method of making the diagnosis of AOM or OME. Signs and symptoms for AOM mentioned in the literature are otalgia, irritability, fever, vomiting, pulling the ear, otorrhea, anorexia, and diarrhea. However, none are diagnostic for AOM or OME, and a history of pulling at the ear is very unreliable.

Step 2: Describe It

After seeing the TM, the next step is to describe the TM. The four characteristics of the TM to be evaluated and described in every ear exam include mobility, position, translucency, and color. The normal TM responds briskly to positive and negative pressure (mobility), is neutral or slightly retracted (position), clear (translucent), and is pearly gray (color). Mobility and position are the two most important characteristics of the TM to evaluate. Mobility indicates whether or not fluid is present, but does not differentiate between AOM and OME. However, position is the key for differentiating between AOM and OME. In AOM, the TM is usually bulging. In OME, it is typically retracted or in the neutral position.[1] Words used to describe these four characteristics are noted in Table 3.

Table 3. Tympanic membrane characteristics and description

Characteristics	Description
Mobility	Normal, good, fair, and poor
Position	Normal, retracted, full, and bulging
Translucency	Normal, clear, translucent, opaque, increased vascularity, and dull
Color	Normal, gray, red, pink, white, and yellow

Mobility

Pneumatic otoscopy evaluates TM mobility. Pneumatic otoscopy received a strong recommendation as the primary diagnostic method for OME in the OME guidelines, and should be done in every ear exam. In the definition for AOM and OME, one of the criteria is evidence of a MEE, which is best demonstrated by a change in TM mobility. Assessing TM mobility provides valuable information to the provider in determining the presence or absence of fluid in the middle ear space, and the type and amount of fluid. For instance, a TM that has characteristics of fairly good movement (mobility), slightly retracted (position), dull (translucency), and gray (color), most likely has a small amount of serous fluid in the middle ear space (OME). A TM that has poor movement, is very retracted, has increased vascularity, and is dull, most likely indicates the presence of a large amount of thick mucoid fluid in the middle ear space (OME). Both examples are OME, but differ in the type and amount of fluid and degree of hearing loss. Assessing TM mobility also assists in confirming the presence of a perforation versus a monomere, and whether or not an ear tube is patent. The TM will have no movement with a patent tube or perforation.

A normal TM may be slightly retracted. When performing pneumatic otoscopy, deflate the bulb before inserting the otoscope speculum, then apply negative pressure to the TM. If positive pressure is applied to a TM that is normally slightly retracted, the TM may not move, even though it is normal. Also, a TM that has some mobility does not indicate that the middle ear space is fluid free. Almost any intact TM will have mobility if enough pressure is applied.

Position

The position of the TM is the key in distinguishing between AOM and OME. The normal position of the TM is neutral or slightly retracted. With AOM, the TM is almost always full or bulging, whereas in OME the TM is almost always slightly retracted to very retracted. Rarely, will the position of the TM be normal or slightly retracted in the presence of AOM. The landmark to best evaluate the position of the TM is the short process of the malleus. When middle ear inflammation is present with AOM, there is a fullness or bulging appearance to the TM, resulting in the visual loss of the malleus short process. With OME the short process is almost always clearly visible, which indicates the TM is in a normal position or varying degree of retraction.

Translucency

A normal TM is translucent. The translucency of the TM refers to how well illumination from the otoscope is transmitted through it. With normal translucency, the silhouette of the middle ear structures, such as the incus and chorda tympani, can be visualized, as well as middle ear fluid and air bubbles. Lack of translucency usually occurs with both AOM and OME, and does not assist in making a differential diagnosis. When tympanosclerosis (chalky-white patches) is present, parts of the TM may appear to be opaque; whereas certain areas of the TM may appear to be transparent (thin monomere) when an acute perforation heals. Sometimes an acute perforation heals in only one or two of the three layers of skin found in a normal TM. Also, reference to the presence of a cone of light is not important to document. Its presence or absence does not rule in or out any significant pathology.

Color

Color is mentioned last, because other TM characteristics (mobility and position) are more important to document than TM color; nevertheless most providers emphasize the color of the TM in diagnosing AOM.[7] The importance of the color of the TM is vastly overrated. A red TM, in the absence of other findings, does not indicate a diagnosis of AOM. Distinct redness of the TM has a poor predictive value for AOM.[8] The presence of a fever, cerumen removal, or crying may cause the

TM to appear red.[1] However, in my experience, these circumstances rarely cause the TM to appear red.

In reviewing charts (nearly 700) of children five years of age and younger diagnosed with AOM on four Native American Indian Reservations in Montana, mobility was documented 15% of the time, position 23%, translucency 21%, and color 93% of the time. In these chart reviews, AOM was greatly overdiagnosed because providers made their diagnosis based on TM color (least important) while the two most important TM characteristics to assess (mobility and position) were evaluated less often. Pneumatic otoscopy was performed only 15% of the time.

Step 3: Treat It

After seeing and describing the TM, the diagnosis should be apparent and accurate. The three most common TM diagnoses are a normal TM, AOM, and OME. Once an accurate diagnosis has been made, providers initiate a treatment plan. Antibiotics are routinely used for AOM and OME in the United States. However, some European countries commonly treat the symptoms of AOM without antibiotics and use antibiotics if the child does not clinically improve after two or three days. The AOM guidelines suggest one in seven to twenty children will benefit from antibiotic treatment. The OME guidelines say antibiotics do not have a long term benefit and are not recommended for routine management, and that about seven children would need to be treated with an antibiotic to have one short term benefit. Both guidelines present appropriate treatment options for AOM and OME.

AOM Guideline

The AOM treatment guidelines found in the May issue of *Pediatrics* outline a treatment plan for uncomplicated AOM in children 2 months through 12 years of age. Children not included in the guideline include those with cleft palate, Down syndrome, immunodeficiencies, or cochlear implants; children with a recurrence of AOM within 30 days; or AOM with underlying chronic OME.

The treatment of AOM should include an assessment of pain and fever. Acetaminophen and ibuprofen are quite effective for mild to moderate ear pain and are the mainstay of pain management for AOM. Analgesic ear drops may also provide some pain relief.

The guidelines discuss at length observation without antibiotics as a treatment option for AOM in selected children based on age, diagnostic certainty, illness severity, and assurance of follow-up. Observation without antibiotics has been used in several European countries (Netherlands and Sweden) for some time, but it is a relatively new option in the United States. However, the state of New York has used observation as an AOM treatment plan since around 2000. Observation is not withholding treatment; rather it is deferring antibiotics in selected children for up to 72 hours, while providing analgesia and symptomatic relief.[9] A Metanalysis of 63 articles concluded that the AOM symptoms of fever and pain resolved without antibiotics in 61% of children at 24 hours and in 80% by two or three days.[10] Also, an initial antibiotic for uncomplicated AOM has no effect on outcome at 24 hours and about eight children must receive an antibiotic for one additional child to have improvement at seven days when compared to results from the natural history of untreated AOM.[11] The observation option for AOM changes the debate on the treatment for AOM. Instead of the emphasis on which antibiotic to use, it focuses on whether an antibiotic should be used at all. See table 4 for a summary of the observation option for AOM.

Table 4. Criteria for initial antibiotic treatment or observation in children with AOM

Age	Certain Diagnosis	Uncertain Diagnosis
< 6 months	Antibiotics	Antibiotics
6 months to 2 years	Antibiotics	Antibiotics if severe illness *Observation option if nonsevere illness
>2 years	Antibiotics if severe *Observation option if nonsevere illness	*Observation option
*Observation is an appropriate option only if follow-up can be ensured and antibacterial agents started if symptoms persist or worsen. Nonsevere illness is mild otalgia and fever < 39 C (102 F orally or 103 F rectally) in the past 24 hours. Severe illness is moderate to severe otalgia or fever ≥39 C .		
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When the decision has been made to prescribe an antibiotic, the treatment guidelines recommend antibiotics found in Tables 5 and 6. Most children should receive high dose (HD) amoxicillin (80 to 90 mg/kg/day). Keep in mind, risk factors for bacteria resistant to amoxicillin include children attending day care, antibiotics within the past 30 days, and age younger than two years.[2] Table 5 represents the initial treatment of AOM with an antibiotic or with an antibiotic after failure of initial observation after 48 to 72 hours. Table 6 represents recommended treatment after clinically defined treatment failure at 48 to 72 hours following the initial use of an antibiotic. The treatment guidelines do not explain clinically defined treatment failure, but generally it is considered to be a lack of clinical improvement in signs and symptoms such as ear pain, fever, and TM findings of redness, bulging, or otorrhea after three days of therapy.[12]

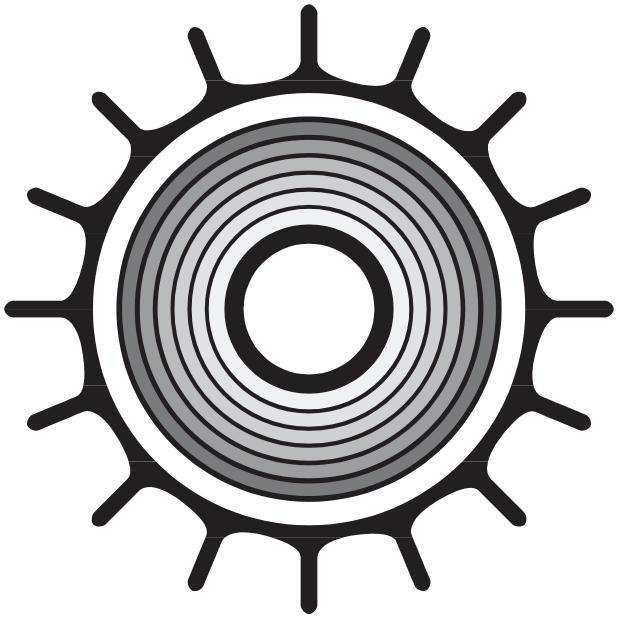

Table 5. Treatment with antibiotics at initial AOM diagnosis or after observation failure

Severity	Recommended	Alternative for Penicillin Allergy
Nonsevere	Amoxicillin 80 to 90 mg/kg/day	Non type 1: Cefdinir Cefuroxime Cefpodoxime Type 1: Azithromycin Clarithromycin
Severe	Amoxicillin-clavulanate (90 mg/kg/day of amoxicillin, with 6.4 mg/kg/day of clavulanate)	Ceftriaxone IM, 1 or 3 days
*Type 1 = urticaria or anaphylaxis		
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Severity	Recommended	Alternative for Penicillin Allergy
Nonsevere	Amoxicillin-clavulanate (90 mg/kg/day amoxicillin with 6.4 mg/kg/day clavulanate)	Non type 1: Ceftriaxone IM X 3 days Type 1: Clindamycin
Severe	Ceftriaxone IM X 3 days	Tympanocentesis Clindamycin
*Type 1 = urticaria or anaphylaxis		
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In an attempt to use antibiotics appropriately at the correct dose and duration, Table 7 represents a summary of the correct dosing and duration of selected antibiotics in the treatment of AOM. Appropriate antibiotic use is defined as:

- Prescribing antibiotics only when treatment is likely to benefit the patient
- Selecting agents that target likely pathogens
- Using these agents at the appropriate dose and for the correct duration[9]

Table 7. Appropriate antibiotic dosing and frequency with selected antibiotics mentioned in AOM guideline (in alphabetical order).

Antibiotic	Dose	Frequency	Duration
Amoxicillin	80 to 90 mg/kg/day	÷ BID	X 10 days
Amoxicillin-clavulanate	Amoxicillin 90 mg/kg/day with clavulanate 6.4 mg/kg/day	÷ BID	X 10 days
Azithromycin	10 mg/kg/day Then 5 mg/kg/day	Once daily Once daily	X 1 days X 4 days
Cefdinir	14 mg/kg/day Or 7 mg/kg/day	Once daily DBI	X 10 days X 10 days
Cefpodoxime	10 mg/kg/day (max 400 mg/day) Or 5 mg/kg/day (max 200 mg/dose)	Once daily DBI	X 10 days X 10 days
Ceftriaxone	50 mg/kg/day	Once daily	X 1 or 3 days
Cefuroxime	30 mg/kg/day (max 1000 mg)	÷ BID	X 10 days
Clarithromycin	15 mg/kg/day	÷ BID	X 10 days
Clindamycin	30 to 40 mg/kg/day	÷ TID	X 10 days
Erythromycin-sulfisoxazole	50 mg/kg/day erythromycin and 150 mg/kg/day sulfisoxazole (up to 6 g/day)	÷ TID or QID	X 10 days
Trimethoprim-sulfamethoxazole	8 mg/kg/day TMP and 40 mg/kg/day SMZ	÷ BID	X 10 days

The guidelines make no recommendations for complementary and alternative medicine (CAM) in the treatment of AOM. However, providers are encouraged to present information to parents on the prevention of AOM through the reduction of risk factors. Factors that parents should consider include breast feeding, reducing day care attendance, eliminating exposure to passive smoke, avoiding supine feeding position (bottle propping), reducing or eliminating pacifier use after six months, and immunizing their child with the pneumococcal conjugate vaccine.[2]

OME Guideline

In the treatment of OME, the guidelines emphasize distinguishing the child with OME who is at risk for speech, language, or learning problems from those who are not. Table 8 summarizes the risk factors for developmental difficulties. Children at risk for speech or language delay are likely affected by hearing problems with OME, but definitive studies are lacking.[8] Management of the child with OME, who is at risk for developmental delays, includes hearing testing, speech and language evaluation, and more prompt interventions (hearing aid, amplification devices, speech and language therapy, and tympanostomy tube insertion).[8]

Hearing testing is recommended when OME has been present for three months or longer or at any time that language delay, learning problems, or significant hearing loss are suspected. A conductive hearing loss with OME may adversely affect binaural processing, sound localization, and speech perception.[8] Language testing should be done when hearing loss is present. Speech and language testing can be tested at 6 to 36 months by using the Early Language Milestone Scale. Children with repeated and persistent OME that results in hearing loss during early childhood may be at a disadvantage for learning speech and language.[8] However, results of another study published in 2004, indicated minimal or no negative associations between OME and hearing loss to children's later speech and language development.[13]

Medications do not seem to be effective in the treatment of OME. Antimicrobials and corticosteroids have not demonstrated a long term benefit and are not recommended for routine management. Antimicrobials may have a modest short term benefit for two to eight weeks.[8] However, about seven children would need to be treated with antimicrobials to achieve one short term benefit.[8] Antihistamines and decongestants are ineffective for OME and are not recommended.[8]

When the provider has identified a child with OME who is not at risk for speech, language, or learning problems, management is watchful waiting for three months from the date

Table 8. Risk factors for developmental difficulties.*

1. Permanent hearing loss independent of OME 2. Suspected or diagnosed speech & language delay or disorder 3. Autism-spectrum disorder and other pervasive developmental disorders 4. Syndromes (Down) or craniofacial disorders that include cognitive, speech, and language delays 5. Blindness or uncorrectable visual impairment 6. Cleft palate with or without associated syndrome 7. Developmental delay
*Sensory, physical, cognitive, or behavioral factors that place children who have OME at an increased risk for developmental difficulties (delay or disorder).
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of OME onset or diagnosis. Even if the OME is present for more than three months and is asymptomatic, treatment is not necessary. Most OME is self-limited, and about 75% to 90% of the OME that follows an episode of AOM resolves spontaneously by three months.[8]

Children with persistent OME who are not at risk should be reexamined at three to six month intervals until the effusion resolves, significant hearing loss is identified, or structural abnormalities of the TM or middle ear are suspected.[8] When the TM appears to have structural changes such as significant retraction, atelectasis, or a retraction pocket, a referral to an otolaryngologist should be made. Children with a history of failed hearing screens in Early Headstart, Headstart, or school may indicate a previous history of OME without complete resolution. Also, the longer OME is present, the less likely it will resolve spontaneously, and relapse is common. Factors that make a spontaneous resolution less likely are:

- Onset of OME in summer or fall
- Hearing loss more than 30 dB in better hearing ear
- History of prior tympanostomy tubes
- Not having had an adenoidectomy[8]

Whenever a child becomes a surgery candidate for OME, tympanostomy tube insertion is the recommended initial procedure. An adenoidectomy is not recommended initially, unless distinct indications such as nasal obstruction or chronic adenoiditis are present. Repeat surgery consists of an adenoidectomy plus myringotomy, with or without a tympanostomy tube. Tonsillectomy or myringotomy (without tympanostomy tube insertion) is not recommended to treat OME.[8]

It is my experience that tympanostomy tube insertion for children close to two years of age or older with recurrent AOM (middle ear fluid-free between episodes) may not be necessary. Many children who turn two years of age and are past the winter season, seem to "outgrow" their ear problems. Children who seem to benefit most from tympanostomy tubes are those with: OME with hearing loss that does not resolve over time; physical or structural changes to the TM such as significant retraction, retraction pocket or atelectasis; and children who alternate from AOM to OME to AOM without having the middle ear space be fluid free.

Tympanostomy Tube Otorrhea (TTO) and External Otitis (EO)

Otorrhea is the main characteristic for TTO and EO. Initially, most episodes of TTO and EO do not require culturing and are best treated with otic drop preparations, not oral antibiotics. However, it is common for many providers to treat TTO and EO with an oral antibiotic without prescribing an antibiotic ear drop. Treatments with ciprofloxacin dexamethasone (Ciprodex) or ofloxacin (Floxin) are two antibiotic ear drop preparations recommended to treat TTO. With these two medications, ototoxicity is not a concern. TTO that does not improve initially with antibiotic ear drops may be treated with an oral antibiotic. A follow up exam at seven to ten days should be conducted to ensure that the TTO has resolved.

With EO and an intact TM, otic preparations such as neomycin, polymixin, and hydrocortisone or two percent acetic acid are preferred because their cost is significantly less than that of fluoroquinolone otic drops. Complicated EO may need treatment with a wick and oral antibiotic. Otalgia is not usually present with TTO, but is with EO. Pain management for EO are oral analgesics such as acetaminophen, ibuprofen, or a narcotic, not analgesic ear drops because other ear drops are already being placed in the ear canal to treat the infection.

For antibiotic ear drops to be most effective, debris in the ear canal should be removed. At home, a bulb syringe can be used to suction out some of the otorrhea. When using ear drops, warm them first, place the drops in the ear canal, lie down with the affected ear up for several minutes, pump the tragus five to ten times, place a piece of cotton in the ear canal, and leave the cotton in for thirty to sixty minutes. Lastly, prescribe ear drops at the proper dose, frequency, and duration.

Conclusion

The ear exam is difficult, and many providers have not received proper training. Often, pneumatic otoscopy is not done, resulting in an inaccurate diagnosis of AOM and the

inappropriate use of antibiotics. In order to make an accurate diagnosis, the TM must first be seen and then described. To see the TM, the child should be restrained and the provider must have proper equipment and cerumen removal skills. To describe the TM accurately, pneumatic otoscopy must be done and the TM characteristics of mobility, position, translucency, and color described in detail. Decreased TM mobility usually indicates fluid is present in the middle ear space, but does not differentiate between AOM and OME. However, the position of the TM is crucial in differentiating between AOM and OME. The landmark best used to evaluate TM position is the short process of the malleus. With AOM there is a fullness or bulging appearance and visual loss of the short process, while with OME the short process is almost always clearly visible. After seeing and describing the TM, treat it.

The May 2004 issue of *Pediatrics* has treatment guidelines on AOM and OME. The reader is advised to read and become familiar with them. The natural history of untreated AOM (observation) suggests many children do not require antibiotics. Observation without antibiotics, especially in selected children two years of age and older, is now being recommended, with a priority on management of otalgia and fever. The emphasis is not on which antibiotic to use, but whether an antibiotic should be prescribed at all. However, when prescribing an antibiotic, do so only when it is likely to benefit the child, and select one that targets the most likely pathogens. Then prescribe it at the correct dose, frequency, and duration.

In order to use antibiotics more appropriately, an accurate diagnosis must be made. Establishing a more accurate ear diagnosis combined with implementing AOM and OME guidelines, patients will receive improved health care and at a reduced cost, will receive far fewer antibiotics, and will have fewer concerns about antibiotic resistance.

Readers are encouraged to review the editorial comment in the "IHS Child Health Care Notes" section published in The Provider *(Volume 30, Number 3, March 2005, page 74) referencing the American Academy of Pediatrics' clinical practice guidelines for the diagnosis and management of otitis media. To view the guidelines, go to* www.aap/org/policy/aomfinal.pdf.

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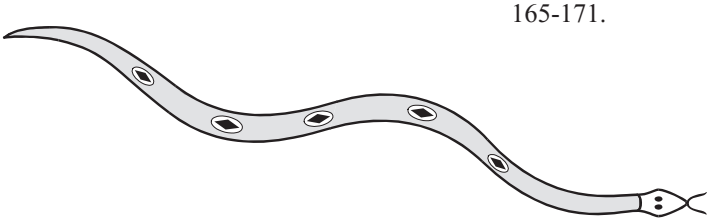

Accuracy of Administrative Data for Tracking Preventive Services among American Indian Cancer Patients

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Abstract

The increasing disparity in cancer survival and increased incidence of other age-related chronic conditions among American Indians calls for accurately documented progress in preventive service delivery. ***Objectives:*** *Determine the accuracy of preventive services recorded in electronic administrative data in relation to the chart for cancer patients at five Indian Health Service (IHS) hospitals.* ***Methods:*** *American Indians with a cancer diagnosed in 1995 were identified through the New Mexico Tumor Registry (NMTR) a participant in the National Cancer Institute's (NCI) Surveillance, Epidemiology and End Results (SEER) Program. Information on preventive services performed was abstracted from the medical chart one year before and after cancer diagnosis. Electronic records included the laboratory module and the Patient Care Component (PCC) of the Records and Patient Management System (RPMS), and IHS Fiscal Intermediary contract care (mammography only).* ***Results:*** *We identified 172 patients in the registration match. Of these, 135 patients had a visit during the period and an accessible chart. The following cancer screening events were missing from electronic records: pap smears 21.1 % (8/38) mammographies 72.2% (13/18); clinical breast exams 57.7% (15/26); digital rectal exams 100% (17/17); and prostate-specific antigen tests 64.3% (9/14). In addition, this review did not locate 41% (131/317) of outpatient blood glucose tests, 61.9% (17/23) of Hemoglobin A1c tests, 25.1% (52/207) of total blood cholesterol tests, and 73.9% (17/23) of adult vaccinations in the electronic records.* ***Conclusions:*** *IHS administrative records substantially underestimate the prevalence of clinical preventive services received by cancer patients. Current efforts to develop the IHS electronic health record are addressing this data accuracy issue.*

Introduction

Among American Indians, the increasing incidence of cancer, diabetes, and childhood obesity calls for an intensified focus on comprehensive disease prevention efforts within the clinic and community settings.[1-4] The need for effective cancer prevention is heightened for American Indians, who have the lowest documented cancer survival rates of all groups in the United States. Because improvements in survival have lagged for American Indians, this cancer disparity has increased over time.[5-11]

A first step in evaluating the effectiveness of cancer prevention programs is acquiring data on the delivery of preventive services. The increasing availability of administrative medical data in electronic form has the potential to provide an efficient source for assessing the delivery of health care services and patient outcomes. Such data sources have been used by health managers, policy makers, and epidemiologists alike to assess the effectiveness of cancer screening, incidence of disease, comorbidities, patient outcomes, cost of care, and disparities in medical treatment.[12-22] This multitude of uses highlights the importance of electronic data accuracy, which is the focus of this study.[23-32]

The Indian Health Service (IHS) provides primary care services to approximately 95% of the American Indian population in the southwestern United States. In this paper, we describe an evaluation of the accuracy of the IHS electronic record in relation to the medical chart for preventive services delivered to cancer patient in five IHS clinical facilities in the southwest.

Methods

Through the New Mexico Tumor Registry (NMTR), a participant in the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) Program, we identified all American Indians in New Mexico or Arizona diagnosed with a malignancy at any site during 1995. The date of diagnosis was determined according to the SEER program criteria. We then matched these patients to IHS and Blue Cross Blue Shield (BCBS) of New Mexico registration records. Blue Cross Blue Shield of New Mexico is the fiscal intermediary for the Indian Health Service's contract care programs. Matching was conducted by exact field matching on 1) social security number only; or 2) last name and date of birth. Exact matches were then manually reviewed for agreement of name, date of

birth and social security number. If a cancer patient was not located by exact matching, we used partial-field manual queries on name, social security number, and date of birth.

After the data linkage to the IHS registration database, we located the medical charts of cancer patients registered at one of five IHS hospitals. A reviewer performed chart abstraction for the time period of one year prior to, to one year after the date of diagnosis. The following information was abstracted from the chart onto a standardized data collection form and entered into EpiInfo: date of visit, type of preventive service rendered, laboratory tests associated with preventive services, and tumor markers. Preventive services listed on the data collection form included the majority of those recommended by the American Cancer Society and the US Preventive Services Task Force, Second Edition.[33] We classified services associated with cancer prevention as: screening, follow-up, or indeterminate/unknown according to the chart record. The chart reviewer was blinded to the information present in the electronic record.

We compared the preventive services found in the chart to the electronic records at the same IHS facility for the same patient. In order to extract electronic records from the IHS Records and Patient Management System (RPMS), we used the Indian Health Service and National Cancer Institute Patterns of Care Among Native American Cancer Patients Data Retrieval System (CPDRS, Version 2.0), a software package developed by the authors (RTW and NC) in collaboration with Cimarron Informatics, the software developer for the IHS RPMS. The CPDRS extracted visit (inpatient and outpatient) and laboratory information for the period of one year prior to, to one year after the date of cancer diagnosis. Visit information for both the RPMS and Contract Care data included International Classification of Diseases, version 9, Clinical Modification (ICD-9-CM) diagnosis codes, V-codes, and procedure codes (ICD-9, 1996). The far right columns of Table 1 summarize the ICD-9 disease codes, V-codes and procedure codes searched for in IHS electronic records. Because mammography is often paid for through contract care services, we also searched the BCBS electronic contract care data for mammography services, if they could not be found in the IHS electronic record.

We also searched laboratory files for preventive services identified during the chart abstraction. We determined the laboratory reference date, which was the earliest date of any laboratory tests recorded for cancer patients at each facility to determine whether results were not being electronically recorded. Laboratory information included the text-field name of each test. Because one facility stored pap information in a separate electronic database not linked to RPMS, this database was searched manually by patient health record number, patient name, and social security number. Partial field searching was also performed in order to identify cancer patients without an exact match in this external lab database. In all hospital laboratory files, we identified nosologic variation among and within facilities through a full frequency listing of all laboratory test names appearing in computer records during the time period. We then used this list to select the names of labs associated with preventive services from the laboratory files. For example, Hemoglobin A1C was listed as either glycosylated Hemoglobin or glycohemoglobin.

Using the chart as the "gold standard," we calculated the number of preventive service events missing in the electronic record. If the event was not found on the exact date listed in electronic records, then the event of interest was searched for within a week of the charted date, and if found, was accepted to be in agreement with the chart. For clinical breast exams (CBE), we made the assumption that all exams coded as an annual gynecologic exam (ICD-9 CM V72.3), included a CBE, and we accepted the ICD-9 procedure code (89.36 "manual examination of breast," N=1) as evidence of a CBE in the electronic record. Digital rectal exams were searched for as an ICD-9 procedure (89.34) and as a cancer screening event (V76.41). Total cholesterol was searched for as a V-code, or disease code 272.x. All other preventive services searched for are listed in Table 1.

This study received approval from the IHS National Institutional Review Board (IRB), Navajo Nation IRB, University of Iowa IRB, and the five participating hospital community health boards.

Results

Through the New Mexico Tumor Registry (NMTR), we identified 492 cancer patients diagnosed in New Mexico or Arizona in 1995. The exact field match with the IHS registration database located 96% (473) of cancer patients. The secondary partial-field manual database search yielded 3 (0.6%) additional matches. Of these, we found 172 cancer patients in the registration records of the five participating facilities, and charts for 154 (89.5%) of these were located at the same facilities. We could not review the remaining 18 charts because they had been archived at a federal records facility. IHS facilities generally archive charts for patients when more than three years has elapsed since their last visit. After reviewing chart records, 135 (78.5%) of the 172 eligible cancer patients were found to have at least one visit to the facility during the year prior to or the year after diagnosis.

Table 1 summarizes the number of services documented in the chart and the proportion that were not found in electronic records. Compared with the chart, the following events (including both screening and other) were missing from electronic records: 17.5% (10/57) of pap smears, 82.8% (24/29) of mammographies, 57.7% (15/26) of clinical breast exams, 100.0% (17/1 7) of digital rectal exams, 51.4% (19/37) of prostate specific antigen tests, 100.0% (2/2) of fecal occult blood tests, 80.0% (4/5) of colonoscopies. One example of miscoding for clinical breast exams found in the chart, but which we considered missing from computer records, were

Table 1. Total number of preventive services according to the chart and the percent not found in electronic records.

Preventive service	Total Event sin Chart	Number Missing in Electronic Records	% Missing in Electronic Records	ICD-9-CM Diagnosis or V-Code(s)	ICD-9-CM Procedure Code(s)
Pap Smear (for any reason)	57	(10)	17.5	V76.2, V72.3	91.4, 89.26
Cancer Screening	38	(8)	21.1		
Other reason	19	(2)	10.5		
Colposcopy	11	(3)	27.3	None	70.21
Mommography (for any reason)	29	(24)	82.8	V76.11, V76.12	87.37, 87.36
Screening	18	(13)	72.2		
Other reason	11	(11)	100.00		
Clinical Breast Exam	26	(15)	57.7	V72.3, V76.10, V76.19	89.36
Digital Rectal Exam	17	(17)	100.00	V76.41	89.34
Prostate Specific Antigen	37	(19)	51.4	790.93	60.18
Screening	14	(9)	64.3		
Other reason	23	(10)	43.5		
Fecal Occult Blood Test	2	(2)	100.0	None	None
Cancer Screening	1	(1)	100.0		
Colonoscopy or Sigmoidoscopy	5	(4)	80.0	V76.41	45.23, 45.24
Screening sigmoidoscopy	0				
Cancer prognosis labs					
Alpha-Fetoprotein	6	(4)	66.7	None	None
Carcinoembryonic Antigen	25	(16)	64.0	None	None
CA-125	15	(3)	20.0	None	None
CA-15-3	1	(0)	100.0	None	None
CA-19-9	6	(2)	33.3	None	None
Total	25	(53)	47.2		
Cancer Treatment Refusal	3	(3)	100.0	V64.2, V62.6	None
Diabetes					
Blood glucose (outpatient)	317	(131)	41.3	V77.1, 790.2, 790.6 648.8	None
Hemoglobin A1C (glycosylated)	21	(13)	61.9	None	None
Coronary Heart Disease				272.	
Total blood cholesterol	207	(52)	25.1		
Infectious Disease					
Vaccination, Adult	23	(17)	73.9	V03.x, V04.x, Vo5.x, V06.x	99.51, 99.52, 99.55
Tuberculosis (PPD/Mantoux)	9	(3)	33.3	V74.1, 795.5	None
Chlamydia Culture, Any	42	(18)	42.9	V74.4, V73.6, V73.88, V73.9	None
Obesity					
Height and wieght	63	(54)	85.7	N/a	N/a
Couseling, general	18	(10)	55.6	V25.x, V26.3, V26.4, V61.1x, V61.20-2 V62.83, V65.3, V65.x	94.45, 94.46 94.49
Total number of patients	154				

encounters coded as breast cancer (174.9), a lump or mass in the breast (611.72), pap screening (V76.2), a follow-up exam (V67.9) a general medical exam (V70.9), or surveillance of contraceptive methods (V25.49).

For procedures designated as cancer screening (according to the chart), this review did not locate 21.1% (8/38) of pap smears, 72.2% (13/18) of mammographies, and 64.3% (9/14) of prostate specific antigen (PSA) levels in electronic files. With regard to procedures listed for reasons other than cancer screening, 10.5% (2/19) of pap smears, 27.3% (3/11) of colposcopies, 100.0% (11/11) of mammographies, and 43.5% (10/23) of PSAs could not be found in electronic files by our review.

We also did not locate 47.2% (25/53) of several laboratory measures which are used as indicators of cancer prognosis and recurrence, with the following breakdown: 4/6 alpha-fetoprotein, 16/25 carcinoembrionic antigen, 3/15 CA-125, 2/6 CA-19-9 and 0/1 CA-15-3. Finally, we noted that one patient refused cancer treatment on three separate occasions, according to chart records. None (0/3) of these refusals were recorded in electronic records.

With regard to preventive services for other chronic conditions among cancer patients, our review did not find 41.3% (131/317) of outpatient blood glucose tests, 33.3% (22/66) of inpatient glucose levels (data not shown), 61.9% (13/21) Hemoglobin A_{1c} tests, 50.0% (2/4) of glaucoma exams (data not shown), 25.1% (52/207) of total blood cholesterol tests, 73.9% (17/23) of any immunization, 33.3% (3/9) of tuberculosis screening (PPD) tests, and 42.9% (18/42) of chlamydia cultures, in electronic files. Lastly, 85.7% (54/63) of height and weight measurements, and 55.6% (10/18) instances of health counseling by clinical providers noted in chart records were not found in the electronic record.

Discussion

In comparison with chart records, electronic records in this study did not provide an accurate picture of clinical preventive services. These records also did not accurately capture services provided for reasons other than screening. The frequency of missing electronic records ranged from 18% to 100%. Among services associated with cancer prevention, the percentage of missing preventive services was lowest for pap smears (17.5%) and highest for: PSA (51.4%), clinical breast exam (57.7%), colonoscopy (80%), mammography (82.8%), and digital rectal exam (100%). We have previously reported these findings to the participating hospitals.

The problem of inaccurate and missing electronic records is long-recognized and international in scope, and is not limited to preventive service delivery. Electronic administrative data have been found to underestimate the incidence of and/or mortality from several different diseases, [23,34-37] underestimate certain comorbidities and inaccurately represent treatment complications,[35,38-42] over-estimate others,[43] and inaccurately reflect treatment[35,44] when compared with the medical chart. With regard to preventive services, other studies have found that electronic administrative records underestimate immunization rates[15] and the number of ambulatory visits.[45] The results of our study agree with this trend.

There were limitations to our study that should also be noted. First, not all IHS laboratory data system versions were collecting information on PSA, FOBT, or Hemoglobin during 1994-96. However, glucose, cholesterol, pap smear, and chlamydia were electronically recorded during the time period of this study (RPMS lab version 5.2, Informatics, personal communication). The significant proportion of these tests that were also missing, and the fact that only one missing lab occurred before the laboratory reference date, suggest that the reason for missing electronic information for these and other tests was due to nonentry rather than the laboratory software version. Second, it is possible that several mammographies could be found in the Women's Health Package component of the RPMS database. The PCC component of the RPMS requires a programming switch so that data elements from the Women's Health Package can be seen by providers searching the PCC database. This programming switch does not always occur. For the most part, we sought to represent the data as would be seen by the primary search engine used by providers and others within the RPMS, Q-man. During the time of this study, Q-Man searched PCC and did not search Women's Health Package files. Third, we were missing information on 18 patients whose charts were archived. However, we do not have reason to suspect that these patients would be any more or less likely to have missing electronic entries of preventive services. Fourth, we chose the chart as the "gold standard," although it should be noted that the chart has its own limitations in providing a complete picture of clinical care.[34,36] Finally, our study was also limited to cancer patients diagnosed in five facilities and may not be generalizable to other IHS facilities or other patient groups.

The strengths of this study included the abstraction of records by one person blinded to the discharge codes found in the electronic record and the exhaustive search in inpatient, outpatient, contract-care, and laboratory electronic records. Searching the contract care database for mammographies was important as only one of the IHS facilities in this study had an on-site screening facility, and women at the other facilities would have received a mammography via contract care.

The Indian Health Service was an early pioneer of electronic health records, with the development of the RPMS over 30 years ago. Many deficiencies that we found in this study probably were a result of several slow and imprecise steps between the provider's written note and the entry of those data, by a minimally trained clerk, into the electronic record. Current software under development by IHS and the Veteran's Administration, the Electronic Health Record, will allow direct provider entry of provider notes and laboratory data, and is expected to reduce the rate of errors and omissions.[47] The emphasis on preventive services within the Indian Health

Service, as well as focused provider training, and the use of the Electronic Health Record to bill third party payers are also expected improve the performance of the electronic records system in tracking preventive services.

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Conflict of Interest

The authors have no financial interest in the companies and data management products mentioned in this publication.

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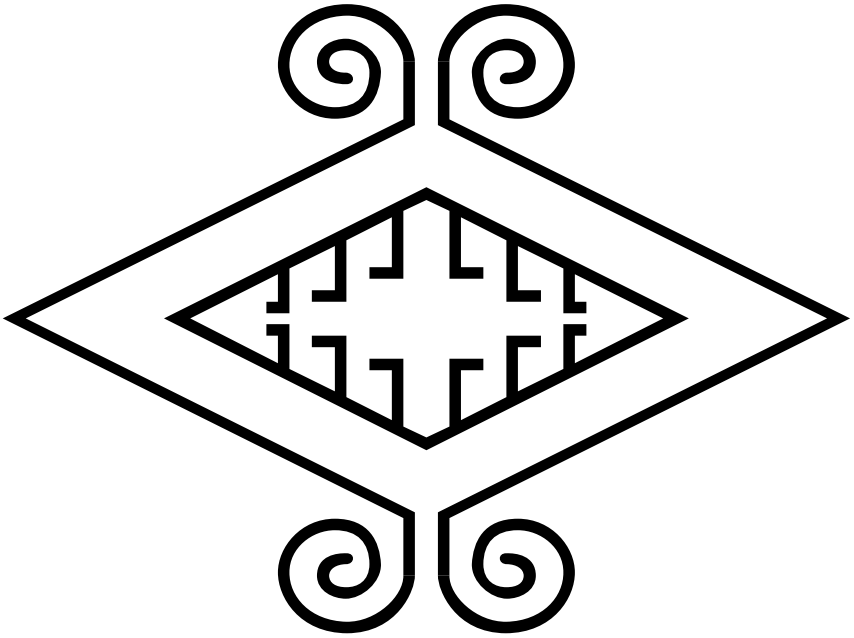
The Use of Internet-Based Evaluation Survey Tools

Megan Powers, Deployment Coordinator, National EHR Implementation Team, Phoenix, Arizona

Evaluations are an essential component of all training programs. They ensure that objectives are met and aid in further program development by pointing out successes, problems, or weaknesses. The Office of Information Technology (OIT) has recently begun utilizing a standardized, online evaluation tool in place of the former handwritten surveys, in an effort to streamline and improve the evaluation process. Following each OIT sponsored training class, attendees must fill out a training evaluation survey, providing valuable input for the instructors and OIT. In the past, these surveys were handwritten, and subsequently were read and compiled by an OIT staff member. Due to handwriting legibility and other human factors, errors could easily be made when compiling the surveys for final analysis, and the compilation process is very time consuming (up to 1/2 day per training course).

In order to produce more accurate results in a timelier manner, OIT is using SurveyMonkey, an online survey tool *(http://www.surveymonkey.com/)*. With SurveyMonkey, training evaluations can easily be created prior to the training event, and an Internet web address to the survey is generated. At the end of the training, all attendees can simultaneously go online to complete the survey. SurveyMonkey tabulates the results instantly and provides several reporting format options. The instructors are also able to use a web address generated for that particular survey to view results instantly, so that the information can be used for debriefing sessions following the training. In addition, the use of SurveyMonkey has decreased the survey compilation time tremendously.

Although the use of Surveymonkey is currently limited to a number of OIT sponsored programs, the use of Internet-based evaluation programs may become increasingly popular in the near future.



Editor's Note: The following is a digest of the monthly Obstetrics and Gynecology Chief Clinical Consultant's Newsletter (Volume 3, No. 7, July 2005) available on the Internet at http://www.ihs.gov/MedicalPrograms/MCH/M/OBGYN01.cfm. *We wanted to make our readers aware of this resource, and encourage those who are interested to use it on a regular basis. You may also subscribe to a listserv to receive reminders about this service. If you have any questions, please contact Dr. Neil Murphy, Chief Clinical Consultant in Obstetrics and Gynecology, at* nmurphy@scf.cc.

OB/GYN Chief Clinical Consultant's Corner Digest

Abstracts of the Month

USPSTF recommends that clinicians screen all pregnant women for HIV. Rating: A Recommendation.

Rationale: The U.S. Preventive Services Task Force (USPSTF) found good evidence that both standard and FDA-approved rapid screening tests accurately detect HIV infection in pregnant women and fair evidence that introduction of universal prenatal counseling and voluntary testing increases the proportion of HIV-infected women who are diagnosed and are treated before delivery. There is good evidence that recommended regimens of HAART are acceptable to pregnant women and lead to significantly reduced rates of mother-to-child transmission. Early detection of maternal HIV infection also allows for discussion of elective cesarean section and avoidance of breastfeeding, both of which are associated with lower HIV transmission rates. There is no evidence of an increase in fetal anomalies or other fetal harm associated with currently recommended antiretroviral regimens (with the exception of efavirenz). Serious or fatal maternal events are rare using currently recommended combination therapies. The USPSTF concluded that the benefits of screening all pregnant women substantially outweigh potential harms.

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen for human immunodeficiency virus (HIV) all adolescents and adults at increased risk for HIV infection. Rating: A Recommendation.

Rationale: The USPSTF found good evidence that both standard and U.S. Food and Drug Administration (FDA)-approved rapid screening tests accurately detect HIV infection. The USPSTF also found good evidence that appropriately timed interventions, particularly highly active antiretroviral therapy (HAART), lead to improved health outcomes for many of those screened, including reduced risk for clinical progression and reduced mortality. Since false-positive test results are rare, harms associated with HIV screening are minimal. Potential harms of true-positive test results include increased anxiety, labeling, and effects on close relationships. Most adverse events associated with HAART, including metabolic disturbances associated with an increased risk for cardiovascular events, may be ameliorated by changes in regimen or appropriate treatment. The USPSTF concluded that the benefits of screening individuals at increased risk substantially outweigh potential harms.

The USPSTF makes no recommendation for or against routinely screening for HIV adolescents and adults who are not at increased risk for HIV infection. Rating: C Recommendation.

Rationale: The USPSTF found fair evidence that screening adolescents and adults not known to be at increased risk for HIV can detect additional individuals with HIV, and good evidence that appropriately timed interventions, especially HAART, lead to improved health outcomes for some of these individuals. However, the yield of screening persons without risk factors would be low, and potential harms associated with screening have been noted (above). The USPSTF concluded that the benefit of screening adolescents and adults without risk factors for HIV is too small relative to potential harms to justify a general recommendation.

OB/GYN CCC Editorial comment

This decision by the USPSTF reinforces several recent CCC Corner Indian health items on this topic (See March 2005 and June 2005). The USPSTF issued a new recommendation calling for all pregnant women to be screened for HIV. This recommendation is based on evidence that currently available tests accurately identify pregnant women who are HIV infected and that recommended treatment strategies can dramatically reduce the chances that an infected mother will transmit HIV to her infant. The Task Force also reaffirmed its 1996 recommendation that all adolescents and adults at increased risk for HIV infection be screened and has broadened its definition of high risk. In addition to patients who report high-risk behaviors, all patients receiving care in high-risk settings such as homeless shelters or clinics dedicated to the treatment of sexually transmitted diseases should be tested. The Task Force found at least fair evidence that screening adolescents and adults who are not at increased risk can improve health outcomes, but concluded that the balance of benefits and harms is too close to justify a general recommendation.

In addition, HIV testing and education are Indian health system GPRA indicators, so there are significant clinical and administrative reasons to improve HIV screening in pregnancy and its documentation. As you see, the GPRA system gives you credit for HIV counseling and education as well as testing (as well as refusals).

GPRA # 33

HIV Screening: Support screening for HIV infections in appropriate population groups. [outcome]

Prenatal HIV Screening: In FY 2005, establish the baseline number of women screened for HIV in pregnancy.

Prenatal HIV Screening: In FY 2006, increase the proportion of pregnant female patients screened for HIV. In FY 2006, assure that the proportion of pregnant female patients screened for HIV does not decrease more than 1% from the FY 2006 level.

For more information, contact Jim Cheek, MD, DPHS/Epi, telephone (505) 248-4226.

From Your Colleagues

Kat Franklin, Sante Fe

Simple Patient Education Handouts. I have accumulated the following sites for OB/GYN-specific issues. Try *http://www.ihs.gov/MedicalPrograms/MCH/M/documents/PtEDHANDOUTS.doc.*

Here is a helpful site for simple patient education handouts from the National Library of Medicine: *http://www.nlm.nih.gov/medlineplus/easytoread/all_easytoread.html.*

Hot Topics

Obstetrics

Treatment of GDM reduces perinatal morbidity, may improve health-related quality of life.

Conclusions: Treatment of gestational diabetes reduces serious perinatal morbidity and may also improve the woman's health-related quality of life.

Crowther CA, et al. Effect of treatment of gestational diabetes mellitus on pregnancy outcomes. *N Engl J Med*. 2005 Jun 16;352(24):2477-86.

OB/GYN CCC Editorial Comment

This RCT confirms the observational studies and blinded controlled studies reported in last month's CCC Corner. In combination, these data should put a final nail in the coffin for the erroneous statement that "Gestational diabetes is a diagnosis still looking for a disease."

The authors randomly assigned women between 24 and 34 weeks' gestation who had gestational diabetes to receive dietary advice, blood glucose monitoring, and insulin therapy as needed (the intervention group), or routine care. Primary outcomes included serious perinatal complications (defined as death, shoulder dystocia, bone fracture, or nerve palsy), admission to the neonatal nursery, jaundice requiring phototherapy, induction of labor, cesarean birth, maternal anxiety, maternal depression, and health status. This Level I randomized trial found the rate of serious perinatal complications was significantly lower among the infants of the 490 women in the intervention group than among the infants of the 510 women in the routine-care group (1 percent vs. 4 percent; relative risk adjusted for maternal age, race or ethnic group, and parity, 0.33; 95 percent confidence interval, 0.14 to 0.75; P=0.01). However, more infants of women in the intervention group were admitted to the neonatal nursery and experienced other measures of morbidity.

Gynecology

High intake of calcium and vitamin D may reduce premenstrual syndrome.

Conclusions: A high intake of calcium and vitamin D may reduce the risk of PMS. Large-scale clinical trials addressing this issue are warranted. Given that calcium and vitamin D may also reduce the risk of osteoporosis and some cancers, clinicians may consider recommending these nutrients even for younger women.

Bertone-Johnson ER, et al. Calcium and vitamin D intake and risk of incident premenstrual syndrome. *Arch Intern Med*. 2005 Jun 13;165(11):1246-52.

Child Health

Oral contraceptives effective for relieving dysmenorrhea pain in adolescents: RCT.

Conclusions: Among adolescents, a low-dose oral contraceptive relieved dysmenorrhea-associated pain more effectively than placebo. Level of Evidence: I.

Davis AR, et al. Oral contraceptives for dysmenorrhea in adolescent girls: a randomized trial. *Obstet Gynecol*. 2005 Jul;106(1):97-104.

How to get your child off the couch? Evidence-based physical activity for youth. Increasing levels of habitual moderate- to vigorous-intensity physical activity in youth is a health promotion and disease prevention strategy. Recommendations are as follows:

- School-age children and adolescents should participate every day in 60 minutes or more of moderate to vigorous physical activity that is enjoyable and developmentally appropriate.
- As general movement skills become established in the preschool and early school stages, health, fitness, and behavioral components of physical activity increase in importance.
- Health-related activities include those that emphasize cardiovascular and muscular endurance and muscular strength, and those that involve weight bearing.
- The setting of physical activity is especially important in achieving positive behavioral outcomes.
- Although there is less emphasis on the development of motor skills during adolescence, refinement of those skills is important, and new movement skills can be learned and can contribute to a physically active lifestyle

Strong WB, Malina RM, Blimkie CJ, et al. Evidence based physical activity for school-age youth. *The Journal of Pediatrics.* 2005;146(6):732-737.

Chronic disease and Illness

Death rates for CVD are higher among AI/AN than other U.S. groups (AHRQ). National vital events data published by the Indian Health Service (IHS) prior to the early 1990s suggest that cardiovascular disease (CVD) mortality rates (for example, for heart attack and stroke) are lower for American Indians and Alaska Natives (AI/AN). This finding is somewhat puzzling, given that American Indians have for years had some of the nation's highest rates of major CVD risk factors, such as smoking, diabetes, and obesity. AI/AN have higher CVD mortality rates than the rest of the U.S. population, and these rates may have been higher for more than a decade. Furthermore, CVD mortality is increasing among AI/AN but decreasing in the general population, widening a previously unrecognized disparity, notes Dr. Rhoades. She used IHS vital events data to compare trends in CVD mortality from 1989-1991 to 1996-1998 among three U.S. population groups: AI/AN, all races, and whites.

Rhoades DA. Racial misclassification and disparities in cardiovascular disease among American Indians and Alaska Natives. *Circulation*. 2005 Mar 15;111(10):1250-6.

Each pound of weight lost may reduce knee load per step fourfold.

Conclusion: Our results indicate that each pound of weight lost will result in a 4-fold reduction in the load exerted on the knee per step during daily activities. Accumulated over thousands of steps per day, a reduction of this magnitude would appear to be clinically meaningful.

Messier SP et al. Weight loss reduces knee-joint loads in overweight and obese older adults with knee osteoarthritis. *Arthritis Rheum*. 2005 Jul;52(7):2026-32.

Features

Case Managers Corner, Donna Brown, Anchorage

What is an RN case manager? I was asked by my newest provider when we were introduced almost a year ago, "What do you do? Are you a social worker?" At Southcentral Foundation Women's Health Services (WHS), case managers are, first and foremost, registered nurses. There are currently nine full-time positions. The turnover rate in WHS is the lowest I have ever experienced in 25 years of nursing. The background of education and experience of the case managers is very diverse. Some of the case managers were just emerging from the security of nursing school, while others are counting down the years until retirement.

Each case manager has physician and mid-level providers with whom we work very closely as a team for a positive patient outcome. We work with our providers within the clinic to provide preoperative teaching and postoperative care. The case managers each have a region within the state of Alaska for which to coordinate continuity of patient care. We schedule patients for surgical procedures and transfer high risk prenatal patients for antenatal care and delivery in Anchorage. We also have a telephone triage nurse available from 8 am to 4 pm Monday through Friday.

We utilize the ACOG recommendations found in the Telephone Triage book for Obstetrics and Gynecology by Vickie E. Long, MSN, CNM and Patricia C McMullen, JD, MS, CNS, CRNP (Lippincott, 2003). The CCC Corner has no economic interests in this publication. We are interested in hearing how other case managers are utilized in providing services for American Indians and Alaska Natives. Please feel free to contact me at *dnbrown@anmc.org*.

OB/GYN CCC Editorial Comment

The inclusion of RN case managers at the ANMC Women's Health Service has revolutionized clinical care and remarkably increased patient satisfaction. Many kudos to all the Indian health case managers! The CCCC welcomes this new posting from Donna Brown.

Medical Mystery Tour

Two positive blood cultures were found in a postpartum patient with a fever. This 22 year old G1 P0 presented in active labor at 40 weeks gestation after a benign prenatal course that was significant only for a positive perineum and rectal screening culture for beta streptococcus group B at 36 weeks and a weight gain of over 50 pounds with a normal glucose challenge test.

The patient had a Stage I of 17:40 and a Stage II of 00:23 with delivery of a viable male infant weighing 4407 g with Apgars of 8/9 over a large fourth degree laceration. There was also an extensive left perineal laceration with avulsion. Stage III lasted 00:05 with delivery of an intact placenta. The patient had a standard repair of the 4th degree laceration and a right vulvar skin flap closure of the left perineal laceration in the delivery room. What followed was an unremarkable post partum course. The patient was discharged locally on the third post partum day. The patient remained afebrile throughout with an intact perineal repair and had a normal bowel movement prior to discharge.

The patient returned on postpartum day #5 with a temperature of 101.9 degrees F, a tender uterus with an intact perineum, and a WBC of 13.3K. The patient was rehospitalized for endometritis and treated with metronidazole and ampicillin/sulbactam. The patient defervesced and was discharged home again on post partum day #8. The patient was called back into the hospital within hours of leaving when it was noted that two of her blood cultures had become positive.

The blood cultures were positive for what organism? What was the source?

If you have the answer or need other information, please contact *nmurphy@scf.cc*. Otherwise we will discuss "the rest of the story" in the August Medical Mystery Tour.

Navajo News, Jean Howe, Chinle

Active management of the third stage of labor among American Indian women.

Objective: This study's objective was to judge whether active management of the third stage of labor is as effective in reducing maternal blood loss among rural American Indian women as in randomized trials.

Methods: We collected retrospective data on a cohort of largely multiparous American Indian women having singleton vaginal births at a rural hospital in 2000-2001, comparing measures of blood loss among women receiving active (n = 62) versus routine (n = 113) management of the third stage of labor. Outcomes included both objective (postpartum hemoglobin decline) and subjective (estimated blood loss) measures of maternal blood loss.

Results: Active management was associated with reduced maternal blood loss on several measures when compared to routine management, including incidence of a 3 g/dl or greater postpartum hemoglobin decline (5% versus 27%), mean postpartum hemoglobin decline (1.7 versus 2.2 g/dl), and mean estimated blood loss (355 versus 430 ml). Compared to women who received routine management, women who received active management had 87% reduced odds of a 3 g/dl or greater postpartum hemoglobin decline after adjusting for preeclampsia, manual placental extraction, laceration repair, and maternal age.

Conclusions: Our findings suggest that active management of the third stage is as effective in reducing maternal blood loss among rural American Indian women as in randomized trials in maternity hospitals.

Fenton JJ, Baumeister LM, Fogarty J. Active management of the third stage of labor among American Indian women. *Fam Med*. 2005 Jun;37(6):410-4.

Comment from George Gilson, MFM, Anchorage

Get Active. World-wide, postpartum hemorrhage, a readily preventable event, is the leading cause of maternal death. In the U.S., PPH is likewise an important cause of maternal morbidity and mortality. There is a significant body of evidence, now added to by an investigation in an Indian health setting, which should urge all of us to implement some form of "active management of the third stage of labor" into our own practices. It is simple, cost-effective, and can be life-saving.

Active management of the third stage of labor consists of:

- administration of a uterotonic medication after delivery of the infant's shoulders
- early clamping and cutting of the umbilical cord
- application of controlled traction to the cord (Brandt-Anders maneuver)

Active management of the third stage of labor is used to hasten placental expulsion. It's simple, evidence-based, and non-intrusive. It's particularly appropriate in all Indian health practice settings that attend births, but do not have access to a large blood bank or readily available surgical facilities. I hope you will follow the links above to review the evidence and then "get active"!

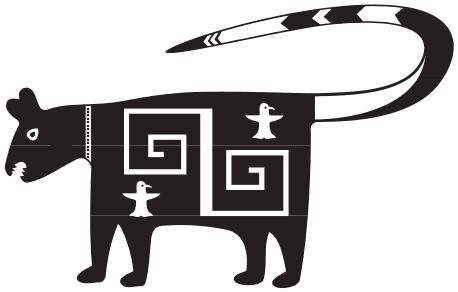
OB/GYN CCC Editorial comment:

All Indian health facilities that provide maternity care/labor and delivery should incorporate the active management of the third stage of labor into their routine practice guidelines. The studies reviewed used oxytocin, ergometrine, or a mixture of those drugs administered intravenously or intramuscularly immediately after delivery of the infant. A subsequent review found that the combination of oxytocin and ergometrine resulted in greater reductions in postpartum blood loss (but not in need for transfusion) compared with oxytocin alone. However, more adverse effects (e.g., nausea, vomiting, hypertension) were observed with use of the combined medications. Based on these reviews, oxytocin appears to be the agent of choice for third stage management in low risk women, because of the incidence of side effects associated with ergometrine. Hence, one common method is to administer oxytocin,10 units, intramuscularly.

Trial findings did not substantiate the concerns regarding retained placenta. Trials using oxytocin alone showed reduced rates of manual removal of the placenta, whereas those using ergot preparations demonstrated increased rates. The slight trend of increased manual removal mentioned in the Cochrane meta-analysis above was entirely due to the results of the single trial that used intravenous ergot.

Educating obstetric providers about early cord clamping and controlled cord traction will be necessary in maternity units where active management is not standard. Other agents, including prostaglandins such as misoprostol, are currently under investigation for use in the management of the third stage of labor.

This abstract was forwarded to the CCCC by Larry Leeman, formerly at Zuni, now at the University of New Mexico. This article was coauthored by John Fogarty, one of the affiliated FP faculty at Crownpoint IHS.



Notes from the Elder Care Initiative

What's New

Medicare Medical Adult Day Care Demonstration

CMS has published an RFA for a Medical Adult Day Care Demonstration to test an alternative approach to the delivery of Medicare home health services. Medicare beneficiaries receiving home health may be eligible to receive medical adult day care services as a substitute for a portion of home health services that would otherwise be provided in the beneficiary's home. The demonstration will run for a period of three years and will be conducted through no more than five home health entity sites selected by CMS. Up to 15,000 beneficiaries may participate in the demonstration at any one time. Information regarding the demonstration can be found at *http://www.cms.hhs.gov/researchers/demos/MADCS/default.asp*.

CMS will be hosting a **Special Open Door Forum** (Monday, July 18, 2005, 2 - 4 pm EDT) to provide information regarding the provisions of the **Medical Adult Day Care Demonstration.** This is an opportunity for interested individuals to participate in a discussion about details of the demonstration as it pertains to home health and adult day care providers and beneficiaries. To participate by phone, dial (800) 837-1935 and reference the conference identification number: 7733210. **This is worth investigating for tribes and urban programs with home health and elder day care.**

From the Literature

The National Osteoporosis Foundation has an excellent, brief review of the benefits and limitations of quantitative heel ultrasound in screening for osteoporosis at *http://www.nof.org/cmeexam/Issue1QUS/QUSOnlineCME.pdf.*

The review complements and supports the approach suggested by Brown and Finke in the October 2004 issue of the *IHS Primary Care Provider* (Volume 29, Number 10, pages 230 – 234) that heel ultrasound can be used to increase access to osteoporosis screening and treatment where central DEXA is not available. However the NOF article suggests a lower threshold for DEXA following heel ultrasound (DEXA if less than -1 or between 1 and -1 if there are risk factors) than is suggested in the algorithm accompanying the article by Brown and Finke.

Brown SR and Finke B. Osteoporosis and fracture prevention in the Indian health system: Toward a public health approach. *The IHS Primary Care Provider.* October 2004;29(10):229-234.

Osteoporosis screening and management is a rapidly evolving area and one in which evidence-based strategies must be reviewed frequently and adjusted to reflect new information.

Conferences and Training Opportunities

The Second Annual Alzheimer's Disease and Dementia Update Conference: Challenges in the Care of American Indian Elders

August 19, 2005; Flagstaff, Arizona

Sponsored by the Sun Health Research Institute, this is a conference designed specifically for Indian Country, targeting a broad audience including health care professionals, caregivers, and program staff working with elders with dementia. For conference information, go to *http://www.shri.org/conference/index.cfm*.

Annual UCLA Intensive Course in Geriatric Medicine and Board Review

September 14 – 17; Marina del Rey, California

This is an excellent, comprehensive review with faculty who are national leaders in geriatrics. It is the perfect course for a primary care clinician willing to serve as the local geriatrics consultant, interested in developing specialty services for elders, or just wanting to update geriatric skills. They are offering a discounted VA rate ($575) to Indian health providers. Note "IHS" on the conference registration form.

The conference brochure can be found at *http://www.medsch.ucla.edu/CME/Courses/geriatric03/geriatric.htm*. For information about the Indian health conference rate, contact Dr. Bruce Finke at *bruce.finke@ihs.gov*.

Critical Clinical Issues in the Care of the Older Adult: Pain Management and Palliative Care

October 6 - 7, 2005; Ann Arbor, Michigan

The VA Ann Arbor Geriatric Research, Education and Clinical Center (GRECC) and the University of Michigan Medical School invite Indian health clinical staff to attend "Critical Clinical Issues in the Care of the Older Adult: Pain Management and Palliative Care" in Ann Arbor, Michigan on October 6 - 7, 2005. The program is designed for primary care physicians and providers (nurse practitioners and physician assistants), geriatricians, oncologists, and hospice and palliative care providers (physicians, nurses, social workers, and chaplains). There are a limited number of slots reserved for Indian health at the special VA registration fee of $150.00.

The conference brochure can be found at *http://www.cme.med.umich.edu/events/pdf/U012215.pdf.* For registration information, contact Dr. Bruce Finke at *bruce.finke@ihs.gov*.

This 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

"*Sleeping is no mean art. For its sake one must stay awake all day.*" Friedrich Nietzsche

Articles of Interest

Clinical assessment of pediatric obstructive sleep apnea. *Pediatrics*. 2004 Jul;114(1):33-43. *http://pediatrics.aappublications.org/cgi/content/full/114/1/33*.

- Obstructive sleep apnea (OSA) is thought to occur in 1 - 3% of all children.
- Tonsillectomy and adenoidectomy (T & A) will cure sleep apnea in 90% of children.
- The accuracy of a clinical diagnosis of sleep apnea was thought to be poor – only 30 - 50% of clinical diagnoses of OSA were confirmed on sleep studies.
- The AAP currently recommends that all children considered for T & A for OSA should have a sleep study first. However, sleep studies are expensive and often difficult to obtain.
- Children with clinical evidence of OSA but negative sleep studies who underwent T & A had significant improvement, suggesting that symptoms of OSA may be a better predictor of need for T & A then sleep studies.

Excessive sleepiness in adolescents and young adults: Causes, consequences, and treatment strategies. *Pediatrics*. Jun 2005;115:1774-1786. *http://pediatrics.aappublications.org/cgi/content/full/115/6/1774?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=sleep&searchid=1122219026136_3622&stored_search=&FIRSTINDEX=0&sortspec=relevance&volume=115&firstpage=1774&journalcode=pediatrics*.

- Adolescents are often excessively sleepy.
- This sleepiness can have a deleterious effect on mood and performance.
- The article reviews available scientific knowledge of sleep changes in adolescents.
- An algorithm for work up of excessively sleepy adolescents is provided.

Editorial Comment

Physicians, in general, don't have much clinical expertise in treating sleep disorders. These two articles will help. The first article about OSA reaffirms what is often true in clinical practice. If the history and physical suggest a disorder, further testing may not help or may even be deleterious. Children who have clear histories of OSA do not benefit from sleep studies, and such studies may not be the best measure of disordered breathing. Children with negative sleep studies but a clinical history of OSA had significant benefit from T & A. Especially for most of us serving Native American children, access to a pediatric sleep lab may be nearly impossible. Direct referral for T & A may be the best choice when clinically indicated.

Teenagers are sleepy. That doesn't sound like news, especially to anyone who has adolescent children. However, there is now a surprising bit of science on this subject. It is not sloth but the anterior hypothalamus that makes teens want to stay up late and wake up late. Teens need 9 - 10 hours of sleep per night but rarely get it. The sleep debt has to be retired which is what leads high school students to sleep until noon on weekends. There is a lot of interesting science covered in this technical report from the AAP. There is even a useful algorithm for work up of sleepy teenagers.

Recent literature on American Indian/Alaskan Native Health

Tuberculosis among American Indians and Alaska Natives in the United States, 1993-2002. *Am J Public Health*. 2005 May;95(5):873-80. *http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15855468&query_hl=11*.

- TB rates have declined in the past decade for AI/AN.
- The decline was 40%, which was the smallest decrease among US born ethnic groups.
- The TB rate for AI/AN continues to be almost five times the rate of US born whites.
- TB rates continue to decline for AI/AN groups, but TB remains a disproportionate burden for AI/AN populations.

Pediatric *Locum Tenens* Service

The AAP Committee on Native American Child Health has developed a website to help IHS and 638 contract sites find pediatric *locum tenentes*. The website has an online form you can fill out describing your *locum tenens* needs and which will be posted for AAP members. Go to *www.aap.org/nach.* In addition, the AAP is interested in helping sites find pediatricians to fill permanent vacancies. Contact AAP staff member Sunnah Kim at (847) 434-4729.

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THE IHS PRIMARY CARE PROVIDER

A journal for health professionals working with American Indians and Alaska Natives

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