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Appropriate Exercise Prescription for Patients with Diabetes Mellitus

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While the importance of a regular program of physical activity and exercise in the maintenance of ideal body weight, cardiovascular fitness, and overall health has been well recognized, recent studies¹ have emphasized the role of exercise as an effective therapeutic intervention in many patients with or at risk for the development of diabetes mellitus.^{2,3,4} However, as with any therapeutic intervention, its indications, contraindication, interactions, and limitations must be clearly understood. This article will review the current recommendations for exercise prescription for our patients with diabetes mellitus as set forth by the American Diabetes Association as an aid for our colleagues in the management of individual patients. Readers may also find it useful in developing exercise programs that might be modeled after the excellent work done by the Shining Mountain Diabetes Program and the SunUte exercise program.

It is important to understand how to analyze the risks as well as the benefits of exercise in our individual patients. The evaluation prior to prescribing exercise requires a detailed history and physical examination, a review of the chart, and appropriate diagnostic studies, occasionally requiring the patient to be referred outside of the facility for more in-depth evaluation. The presence of conditions other than diabetes, or disabilities must also be evaluated as well and incorporated into an appropriate exercise prescription.

The initial medical evaluation requires a careful screening for micro- and macro-vascular complications that may be exacerbated by the prescribed exercise program. The history and physical examination should focus on symptoms or signs of complicating diseases, with close attention to the heart, eyes, kidneys, and nervous system. An exercise stress test may be helpful to assess the cardiovascular risk of those with multiple risk factors, as noted in the flow chart on page 225 (“Exercise Prescription for those with Diabetes”).

Clearly, the greater the age, the longer the duration of diabetes, and the greater the number of risk factors, the higher the prevalence of coronary artery disease. In those diabetic individuals over 35 years of age, those who already have complications, as well as those with other risk factors in addition to diabetes, exercise stress testing should be considered before

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the initiation of a rigorous exercise program. However, in patients planning to exercise only at a low intensity (such as walking with a maximal heart rate of less than 60% of their maximal predicted heart rate), the provider should employ discretion, and clinical judgment should be used. On the other hand, it should be pointed out that the use of stress testing in this population may give us the opportunity to discover coronary artery disease before it becomes clinically manifest, regardless of the patient's intended exercise intensity. Obviously, patient preferences and testing availability may play an important role in these decisions.

In patients with known coronary artery disease or with a worrisome but stable history of chest pain, routine exercise stress testing (or, if there is an abnormal electrocardiogram, nuclear or echo stress testing) is indicated prior to exercise prescription, unless recently performed (within the last 3 to 6 months).

Specific evaluations include:

History

- known cardiovascular disease, including prior coronary artery disease or myocardial infarction, valvular or other heart disease, stroke, abdominal aortic aneurysm, peripheral vascular disease
- the presence of chest pain, including its character, association with exertion, duration, frequency, and pattern (stable or not)
- known history of diabetic complications (including retinopathy, nephropathy, neuropathy)
- symptoms of autonomic dysfunction (including orthostatic dizziness, gastrointestinal or genitourinary symptoms)
- arthritis/joint pains, difficulty or limitations with walking
- dizzy spells, presyncope, or syncope
- the presence of intermittent claudication
- recent change in vision

Physical examination

- vital signs
- orthostasis (systolic BP fall by more than 20 mm-Hg after 2 minutes of standing when moving from a sitting to a standing position)
- standard cardiovascular exam
- peripheral vascular exam, including pulses of the dorsalis pedis and posterior tibial arteries
- close examination for decreased or absent pulses, hair loss, and atrophy

Standard diabetic evaluations

- recent ECG (within one month) prior to exercise program prescription and at least every 2 years thereafter

- ophthalmologic evaluation for diabetic retinopathy (if not done within the past year) and at least annually
- foot examination for neuropathy, ulcers (with podiatry referral as indicated)
- renal evaluation for nephropathy (including microalbuminuria)

Following these evaluations, appropriate exercise prescriptions may be given utilizing the scheme in Figure 1. Specific exercise recommendations for those with diabetic complications are noted in Table 1 on page 226, and recommendations for exercise programs regarding blood sugar monitoring are noted in Table 2 also on page 226. Finally, on page 226 there is a sample that represents a reasonable medical referral form for your utilization.

The optimal exercise program for most individuals focuses on aerobic (high movement, low resistance) activity for a total of about 30 minutes daily on at least three to five days of the week. Once the exercise program has been prescribed, it is important to counsel the individual regarding the importance of a warm up period, prior to the actual exercise. This includes a 5 to 10 minute period of stretching and low level aerobic activity. A similar cool down period is also important to gradually bring the heart rate down to its pre-exercise level.

The importance of adequate footwear cannot be overemphasized. The use of silica gel or air insoles for cushioning, as well as cotton-polyester socks to prevent blisters and to keep the feet dry is extremely important to help prevent diabetic complications. Similarly, adequate hydration is important, encouraging adequate intake within the two hours prior to exercise to compensate for fluid losses during the activity. Avoidance of extremes of heat and cold are generally recommended.



Table 1. Medical recommendations for exercise programs for diabetics with micro/macrovascular complications

Nephropathy

- Patients with overt nephropathy (albumin excretion albumin excretion > 200 mg/24 hours) should be restricted to low-to-moderate intensity exercise programs.

Peripheral Neuropathy

- Patients deemed to have loss of protective sensation by 10g monofilament testing should adhere to the recommended, limited weight bearing exercises listed below only to limit risk of foot ulceration and fractures.
 - **Recommended Exercises:** swimming, bicycling, rowing, chair exercises, arm exercises, her non- weight bearing exercises.
 - **Contraindicated Exercises:** treadmill, prolonged walking, jogging, step exercises.

Autonomic Neuropathy

- Cardiac autonomic neuropathy may be indicated by a resting tachycardia (HR>100), orthostatic changes (SBP drop > 20 mm Hg upon standing after 2 minutes, particularly with little associated change in pulse), or other disturbances in autonomic nervous system function involving skin, pupils, or gastrointestinal or genitourinary systems.
- Because cardiac autonomic neuropathy appears to be a marker for an increased risk of sudden cardiac death and silent ischemia, evaluation for ischemia should be undertaken prior to initiating exercise program, optimally with a nuclear stress test.
- Following medical clearance, because of the risk of developing hypo/hypertension with exercise and disorders in thermoregulation common in these patients, exercise should be done in moderate temperature external environments. Patients should be advised to maintain adequate hydration.

Diabetic Retinopathy

- Patients with active proliferative diabetic retinopathy are at increased risk for vitreous hemorrhage/retinal detachment and should avoid anaerobic exercise and exercise that involves straining, jarring, or Valsalva-like maneuvers.
- An exercise prescription should be tailored to the individual patient according to degree of diabetic retinopathy (see attached).

References:

1. Diabetes and Exercise ADA. *Diabetes Care*. Vol 25, Supplement 1, Jan 2002. p. S64-S68.
2. ADA/ACSM Joint Position Statement, Vol 29, Num 12, December 1997.
3. AHA/ACSM Joint Position Statement Vol 30, Num 6, June 1998

Table 2. Recommendations for exercise program blood sugar monitoring

1. Patients should be made aware of the symptoms of hypoglycemia before initiating an exercise program.
2. The patient's medication profile should be reviewed to see if they are receiving therapy with insulin or oral hypoglycemic medications.
3. Patients who are experiencing frequent (>2/month) hypoglycemic episodes in general or any hypoglycemic episodes during exercise should consult with their physician prior to continuing with their exercise/fitness program.
4. Patients should have blood sugar monitoring before and after exercise when starting a new program or when medications have changed (to evaluate the individual's glycemic response to exercise.)
5. Carbohydrate should be ingested by patients whose blood sugar is below 100 mg/dl before exercise or if hypoglycemia develops during/after exercise.
6. Patients should avoid exercise if blood sugar is >300 dl (which should prompt a medical referral for evaluation/management).
7. Patients (particularly those on insulin or oral hypoglycemic therapy) should be discouraged from fasting prior to exercise.
8. Staff supervising diabetic exercise programs should be trained/equipped to provide basic management of hypoglycemia (oral carbohydrates, glucagon).

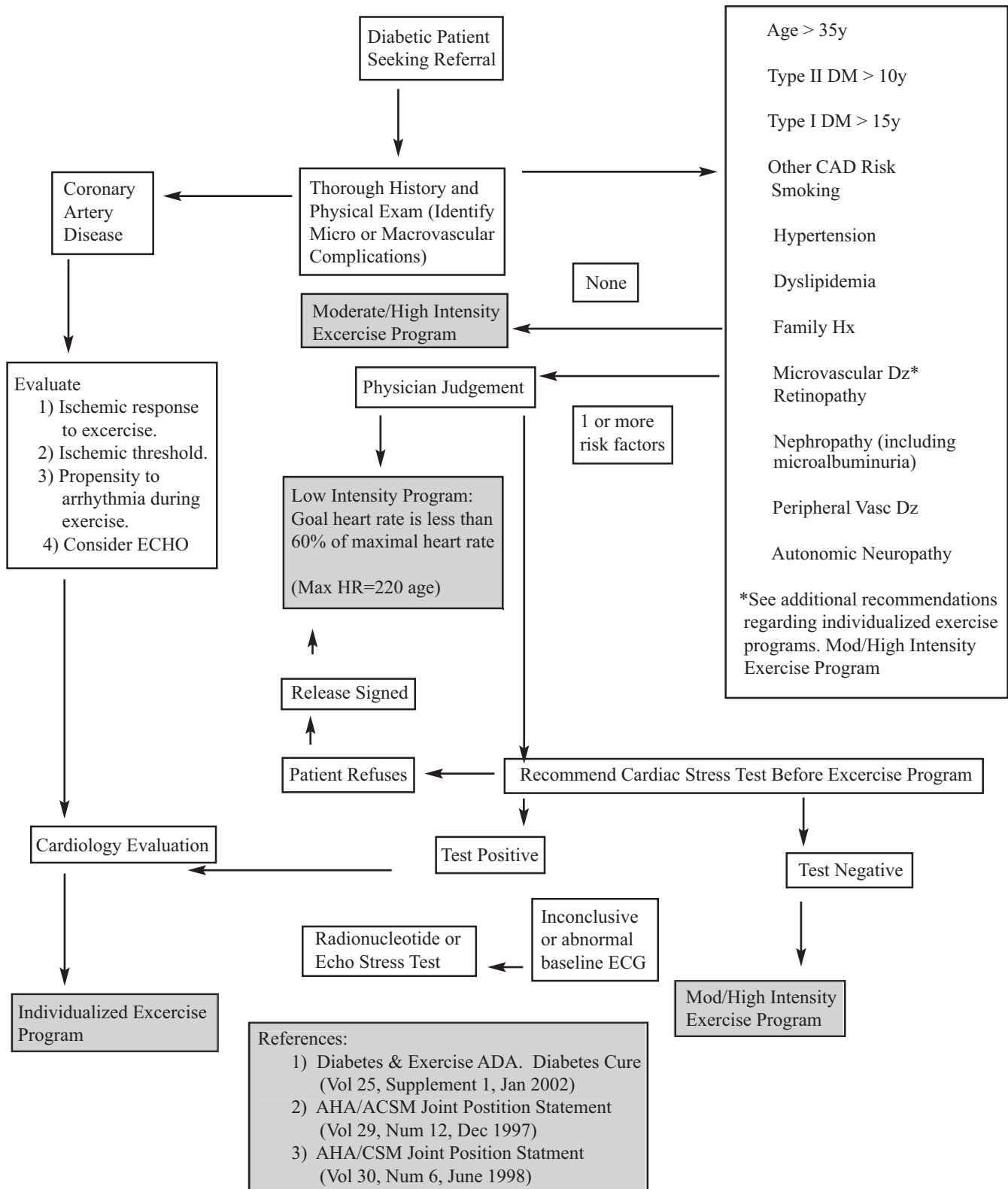
Conclusion

The potential benefits of increased physical activity for all individuals, including those with diabetes mellitus, are well recognized. The role of the provider in advocating physical activity (in conjunction with weight control, tobacco cessation, and blood pressure and lipid control) is essential for the prevention and control of diabetes and cardiovascular disease. The provider holds a unique and important responsibility in motivating our patients in these regards. The professionals who foster this motivation through wellness programs and interventions are vital to the continuing success of the individuals we serve.

References

1. Reduction in the incidence of type 2 diabetes with lifestyle interventions or metformin: The Diabetes Prevention Program Research Group. *New England Journal of Medicine*. 2002;346:393-403.
2. Diabetes and exercise, ADA. *Diabetes Care*. 2002;V25,Supp1:S64-68.
3. Schneider SH, Ruderman NB. Exercise and NIDDM (Technical Review). *Diabetes Care*. 1990;13:785-789.
4. American Diabetes Association: Diabetes and exercise: the risk-benefit profile. In "The Health Professionals Guide to Diabetes and Exercise." Devlin JT, Ruderman N, Eds. Alexandria, VA, American Diabetes Association, 1995, p. 3-4.

Excercise Prescription for those with Diabetes Algorithm For Coronary Risk Evaluation



Exercise Program Medical Referral

Patient Name: _____ DOB: _____ MR# _____

Contact Phone #(s): _____ Referral Date: _____ Census# _____

Section I: Medical Clearance

- This patient has been evaluated and has been found to be at relatively low risk, and may participate in an exercise program without restriction.
- This patient has increased risk for exercise-related medical problems and has been informed of the potential risks. He or she requires an individualized exercise program with certain restrictions.
- This patient has increased risk for exercise-related medical problems and has been informed of the potential risks. He or she has refused the recommended medical evaluation and therefore is not eligible to participate in the Exercise Program at this time.

Section II: Supervised Exercise Program Intensity (Maximum Recommended)

- Low Intensity Program
- Moderate Intensity Program
- High Intensity Program

Section III: Diabetic Complications Necessitating Restrictions

- Peripheral Neuropathy
- Autonomic Neuropathy
- Retinopathy
- Nephropathy

Section IV: Pertinent Medications

- Oral Hypoglycemic Agents
- Insulin
- Other: _____

Section V: Other Recommendations/Restrictions

- Cardiac Stress Test
- Nuclear/Echo Stress Test
- Other: _____

Physician Signature: _____ Date: _____

Chronic Kidney Disease: Screening and Staging

This is the third in the series of articles about chronic kidney disease.

Andrew S. Narva, MD; and Theresa A. Kuracina, MS, RD, CDE, both from the Indian Health Service Kidney Disease Program. Albuquerque, New Mexico

All American Indian patients should be assessed as part of routine care to determine their risk for chronic kidney disease (CKD). Patients with a family history of CKD and those of older age have increased susceptibility for developing CKD. Diabetes and high blood pressure are also potential risk factors. Autoimmune diseases, systemic infections, urinary tract infections, urinary stones, lower urinary tract obstruction, low birth weight, and drug toxicity are other initiating factors.

Screening includes an assessment of glomerular filtration rate (GFR) and measurement of urinary protein excretion. Neither requires a 24-hour urine collection. GFR can be estimated from the creatinine using the Cockcroft-Gault formula as described in the previous article in this series (and repeated below). Protein excretion can be estimated from a spot urine specimen. The ratio of albumin or total protein to creatinine is roughly equivalent to the 24-hour protein excretion in grams. Albumin is the predominant protein in adults with glomerular disease, and an albumin-to-creatinine ratio is preferred. Children may be somewhat more likely to have interstitial disease, and the total protein-to-creatinine ratio is recommended. However, either test may be used. The important concept is to quantify the proteinuria.

Estimation of GFR and testing for other markers of kidney disease are the recommended standard of care. Formulae to estimate GFR are as follows:

Adults	$\frac{(140 - \text{age}) (\text{body wt in kg})}{72 \times \text{serum creatinine}}$ (For women: multiply x 0.85)
Children	$\frac{0.55 \times (\text{length in cm})}{\text{serum creatinine}}$

The following are some general points about measuring protein in the urine:

- No need to collect 24-hour urine samples
- Use untimed “spot” urines to detect and monitor proteinuria

- First morning voids are preferable; however random samples are acceptable
- Standard urine dipsticks are acceptable to screen for proteinuria
- Albumin-specific dipsticks are acceptable to screen for albuminuria
- A 1+ or greater result should have quantitative measurement within three months
- protein-to-creatinine ratio OR albumin-to-creatinine ratio useful
- Two or more positive quantitative tests spaced within 1 - 2 weeks confirms proteinuria

Specific Guidelines for Proteinuria in Adults and Children are as follows:

	Adult	Children w/o Diabetes	Children w/ Diabetes
Screening: Use spot urine	<ul style="list-style-type: none"> • Albumin-specific dipstick • Albumin-to-creatinine ratio 	<ul style="list-style-type: none"> • First morning void preferred to rule out orthostatic proteinuria • Standard urine dipstick • Total protein-to- creatinine ratio 	<ul style="list-style-type: none"> • For post-pubertal children with diabetes for 5 or more years, follow adult screening and monitoring guidelines
Monitoring: Use spot urine	<ul style="list-style-type: none"> • Albumin-to-creatinine ratio • If albumin-to-creatinine ratio is high (>500 - 1000 mg/g), can use total protein-to creatinine ratio 	<ul style="list-style-type: none"> • Total protein-to- creatinine ratio 	<ul style="list-style-type: none"> • For younger children and those with DM < 5 years, follow screening and monitoring guidelines for children without diabetes

Other Markers of Chronic Kidney Disease

Abnormalities in urine sediment or abnormal imaging studies are other markers of CKD. The clinician can further determine the type of kidney disease by assessing these other markers

Urine Sediment Examination

- “Fresh” first morning void is preferred when assessing urine sediment
- Examine for casts, as casts are formed only in the kidney. These casts entrap materials in the lumen at the time of cast formation
- In hematuria, the presence of red blood cell casts strongly suggests glomerulonephritis

- Leukocyte casts along with hematuria may indicate glomerulonephritis
- Urinary eosinophils are associated with allergic tubulointerstitial nephritis

Imaging Studies

Ultrasound is available in many Indian health facilities and is usually the initial imaging procedure of choice. Use caution when using iodinated contrast; this may cause acute kidney damage, especially in the presence of decreased kidney function.

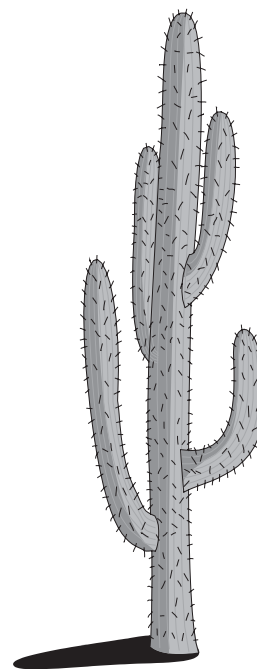
Staging Chronic Kidney Disease

The diagnosis and type of kidney disease, comorbid conditions, severity (as assessed by GFR), complications, risk for loss of kidney function, and presence of cardiovascular disease should be evaluated for all patients with CKD. Diabetic kidney disease will progress faster with higher levels of proteinuria and higher blood pressure, poor glycemic control, and smoking.

The treatment plan is based on a staged approach, as follows:

Stage	Description	GFR (mL/min/1.73 m ²)	Metabolic Consequences
1	Kidney damage w/ normal or ↑ GFR	≥ 90	Diagnose/treat, treat comorbid conditions, slow progression, CVD risk reduction
2	Kidney damage with mild ↓ GFR	60 - 89	Estimate progression
3	Moderate ↓ GFR	30 - 59	Evaluate and treat complications: assess for anemia, check iPTH, Ca, P; refer to dietitian; conduct functional assessment
4	Severe ↓ GFR	15 - 29	Prepare for kidney replacement therapy: refer to specialist; consider low protein diet
5	Kidney failure	< 15 (or dialysis)	Kidney replacement therapy, if uremic

A detailed approach to management of these problems (e.g., anemia, bone disease, malnutrition) will be discussed in upcoming articles.



WebCident: Streamlined Incident Reporting for the Indian Health Service

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An important new tool for saving time and money is on the horizon, and it's called WebCident. To be implemented in January 2003 in all Indian Health Service (IHS) facilities, WebCident is a computer program designed to save time and money when it comes to documenting and tracking incidents. The term "incident" refers to workplace injuries and illnesses, blood borne pathogen exposures, and other events involving safety and security. WebCident helps safety officers and facility directors better understand where injuries and illnesses are occurring, and why. A database management tool designed by IHS Environmental Health Officers, WebCident allows IHS workers and supervisors to document incidents and automatically create reports right from their own workstation.

Why is such a tool important? Primarily, because Federal law requires that incidents are reported and recorded, and this is exactly what WebCident does. When President Richard M. Nixon signed the Occupational Safety and Health Act in 1970, he created the most important piece of worker safety legislation ever enacted. Among its many directives, this law mandated the recording and reporting of worker injuries by employers. The Federal requirement stipulates that information is collected and analyzed to determine how to prevent injuries, illnesses, and deaths in the workplace.

Currently, the IHS fulfills these requirements by using the Incident Report form (IHS-516), with which many may be familiar. IHS-516 is the form we fill out when we get injured on the job, or something is stolen from our office, or we get a needle stick. It usually takes valuable time out of our day to locate the form, fill it out, and send it over to the safety officer, where we often lose track of it. With WebCident, much of that inefficient use of time and energy will come to an end.

Consider the scenario in Figure 1. We can see that the nurse and the safety officer have had to take significant time away from their regular duties to document the needle stick injury. The information, however, never became part of a database where trends and causes of needle stick injuries could

be analyzed. The scenario demonstrates that the "old" system does not capture the essential details of an incident and add them to a data set for future analysis. The inability of the current, paper-based system to make the most of the latest technology has clearly made it obsolete and inefficient.

Figure 1. Needle stick scenario

You are a nurse who is nearing the end of a very hectic 12-hour shift when suddenly you are stuck with a contaminated needle. According to IHS policy, you must report this incident to your supervisor and the safety officer. Since you will be taking a weekend trip to your favorite beach leaving on the first flight out in the morning, you begin working on the form right away. About an hour and a half later, you have managed to locate and complete the form, and send it to the safety officer. The next day, when the safety officer reviews the form, she sees that this incident was a blood borne pathogen exposure requiring additional information not included on the completed form. She sends you another form for entering information specific to needle sticks, such as the type and brand of syringe involved, but you don't receive the form until your return from the beach on Monday. By then you remember very little detail of what happened before you left, and only vaguely remember the needle stick injury at all.

Because of incomplete reporting and potential for mistakes when filling out the current form, the number and types of injuries occurring in and around IHS facilities cannot be easily determined. One actual event provides a powerful illustration of this point. Each year the IHS sends an annual report to the Department of Health and Human Services that describes all work-related injuries and illnesses that have occurred throughout the Agency. In one notable instance, however, the work-related death of an IHS worker was left out of the report because the system failed to relay information about the fatal incident through the proper channels. The incident was not discovered until after the report had been submitted. A system that fails to report the most serious category of incident undoubtedly needs to be revised or replaced with a better one.

Other problems plague the existing IHS incident reporting system. It is not designed to collect OSHA-required blood borne pathogen information or information on ergonomic related injuries. The earlier needle stick scenario provides an example of this, where three separate reports were filled out by hand: the incident report summary, the blood borne pathogen incident summary, and the sharps injury log. Further, the cur-

rent system does not have WebCident's built-in electronic data system that makes it easy to evaluate and analyze the details surrounding reportable incidents. As a result, thousands of hours are spent every year completing forms that do not add to a data set used for devising injury prevention strategies.

WebCident eliminates the weaknesses of the current incident reporting system. It combines all IHS incidents into a comprehensive and confidential data set, and is accessible through the IHS Intranet by anyone who may need to document an incident, namely, all employees and supervisors. The information goes directly into the central database, which is maintained at IHS headquarters. Safety officers can then retrieve all the details for incidents at their facilities, enabling them to determine which incidents occur the most frequently, and why. Therefore, WebCident's most valuable feature is its use as a tool to assist in preventing illnesses, injuries, and deaths within the IHS.

WebCident's value is further enhanced by recent emphasis on patient safety by the Joint Commission on Accreditation of HealthCare Organizations (JCAHO), which now requires documentation and analysis of patient injuries. Awareness of patient safety increased after a report was released in 2001 by the Institute of Medicine (IOM) revealing that an alarming percentage of patients experience adverse events while in the hospital. Following the tenet of the Hippocratic oath, "Above all, do no harm," the concept of patient safety seeks to identify and eliminate hazardous circumstances *before* a patient is injured. Analyzing circumstances of an injury to determine its cause is called "root cause analysis," now required by JCAHO. WebCident is a database management tool that collects information on patient injuries so that, along with fulfilling reporting requirements, permits the performance of root cause analyses, as well.

WebCident is simple to use, and was designed with the "computer-challenged" in mind. Among its many features are the following:

- Reports are automatically generated, including the summarized incident report, OSHA 300 log, OSHA 300 summary, sharps injury log, patient and visitor injury summaries, annual summaries of lost work time events, and several others.
- Every form is user friendly, with pull-down menus and a "check selection" format (see Figure 2).
- For people who do not have access to a computer, the reporting form can be printed and filled out manually.
- WebCident follows "logic pathways," meaning that only those issues relevant to your incident are completed. You won't be wading through unnecessary sections while completing an incident report.
- Computer program installation is not necessary. WebCident is a computer application that is available to all computers on the IHS intranet, so typing in the web address is all that is required for access.

- User names and passwords are not required for accessing WebCident. Once the WebCident home page appears, you are ready to begin entering information. Safety officers, however, will have access to a password-protected area, where they can access all the reports from their facilities.
- WebCident works with most Internet browsers, including older ones, and works great with slow connections.
- It takes about 15 minutes to complete a typical incident report using WebCident.

The target date for having all IHS facilities switch to WebCident is January 1, 2003. Currently, a team has been assembled to find the best way to introduce WebCident into all IHS facilities. The team will appeal to nurses, physicians, administrators, safety officers, and other employees for their support in the transition from the outdated system to the state-of-the-art WebCident system. We expect such a transition to be simple and straightforward.

Figure 2. Sample page from WebCident



Consider the needle stick scenario once again, but instead of using the old incident reporting form, your facility is using WebCident. You sit down at your workstation, type in the web address of WebCident, and begin filling in the details of the needle stick injury. Guided step-by-step by the user-friendly program, you complete the incident report in less than fifteen minutes. You print one copy of the incident summary for your records and one for your supervisor. Then it's off to the beach! The safety officer receives an automatic e-mail notice of the incident and immediately reviews it. He or she then prints a copy of the report summary, along with copies of the blood borne pathogen incident summary and sharps injury log for his or her own records. You spend little time completing the form, information is accurate, and the safety officer is provided with key information needed for preventing needle stick injuries in the future.

For additional information, or to make suggestions, please contact Gary Carter at (301) 443-1054, or via e-mail at gcarter@hqe.ihs.gov.

Electronic Signature of Lab Results – Fantasy or Reality?

It is Monday morning, 8 am at the Chinle Comprehensive Health Care Facility. Dr. Maddie Record arrives, pours herself a cup of coffee, turns on her computer, and signs onto the RPMS. The first thing she sees is this message:

*Good morning Record, Maddie
You last signed on Aug 22, 2002 at 08:51
You have 1 new messages [39 in the 'IN' basket]*

*You have 8 Lab Results to Review
with 2 CRITICAL and 6 ABNORMAL*

Before seeing her patients, she decides to review the critical lab results. She chooses the option to review new labs, and after careful consideration she signs the results using her electronic signature code. At the end of the day, Dr. Record returns to her computer to finish reviewing her lab results. She now has ten new labs to review. After reviewing the first lab she forwards it to one of her colleagues for a second opinion. The second lab result belongs to a patient who was admitted and treated by another physician, so she decides to reassign it to the attending physician. The remaining eight labs she reviews and signs with her electronic signature code. Since she is going on vacation for a week, she assigns her colleague, Dr. Adam, as her surrogate for the week so that he can review and sign her labs while she is gone. She finishes her coffee, puts on her coat, turns out the lights, and leaves knowing that all her lab results will be reviewed while she is gone. Fantasy or reality?

Reality. The providers at the Chinle Comprehensive Health Care Facility have been using the Lab Electronic Signature enhancement, developed by the Information Technology Support Center (ITSC) and Mitretek, Inc. since January 2002. The Lab Electronic Signature enhancement was designed to help providers review and sign off on lab results with more ease. Some benefits providers will gain from the use of this application include:

- Immediate notification that labs are ready for review.
- Alerts indicate the number and type (Critical, Abnormal, Normal) of processed labs returned.
- Increased accessibility to review and electronically sign off on lab results from any RPMS terminal.
- Electronically forward lab results to another physician via RPMS MailMan.
- Electronically reassign lab results to another physician.
- Electronic designation of surrogate physicians to review and sign off on lab results on your behalf.

- No waiting around for lab results to return from the lab.
- Reduced risk of lost or missing lab results.
- Reduced paper use.

Participating providers will have the following new capabilities:

- Receive alert messages of lab results to review when signing into RPMS.
- Review lab results (either complete or pending) through the new menu option.
- Electronically sign off on reviewed lab results.
- Review any lab results from another participating physician who has named you a surrogate.
- Forward lab results to other participating physicians for additional review.
- Run a Signed Lab Results report for lab result tracking.

In addition to the electronic signature capability, a new audit report is available. This report, which can be turned on or off, will track RPMS users who are reviewing lab results. The electronic signature software is now available to all I/T/U sites that are currently using the RPMS Laboratory Package and, like all software developed by the IHS, is free of charge. If a site is interested in using the software, they can contact their site manager or Area Office for installation. Once installed, site managers will assign new security keys and menus to participating providers and assist these providers with assigning themselves an electronic signature using “tool-box” in the RPMS. Security for the software is the same as for other RPMS applications in that the users have unique access and verify codes to sign onto the RPMS and a unique electronic signature code to “sign” the lab results.

Training classes sponsored by ITSC will be available at the Area Offices and at the National Programs training facility in Albuquerque, New Mexico. For information about the application or to obtain the training schedule, please contact Catherine Moore at (505) 248-4430.

New Injury Prevention Program Development Fellowship Announced

The IHS Injury Prevention Program is recruiting applicants for the inaugural class of the new Program Development track of the IHS Injury Prevention Specialist Fellowship. This new training opportunity is the latest addition to the IHS Injury Prevention Specialist Fellowship, which is a nationally recognized program that has offered the best advanced injury prevention training available since 1988. The traditionally offered Fellowship emphasizes the application of epidemiologic research to injury prevention. This new track of the Fellowship was developed to offer the same high quality training with an emphasis on community-based injury prevention program development.

The Program Development Fellowship is a yearlong program open to any individuals interested in addressing the problem of injuries in their community. Ideal applicants include directors of tribal injury programs, tribal health authority and health care staff, CHRs, firefighters, police, health educators, community coalition members, environmental health specialists, previous epidemiology-based Fellowship graduates, and anyone interested in reducing the burden of injury at the community level.

The Program Development Fellowship offers:

- Skills development in program planning, organizing local injury data, coalition building, marketing, advocacy, grant writing, and program evaluation.
- Up-to-date information on the most effective injury prevention programs.
- Ideas and skills for finding new sources of funding for your community injury prevention program.
- Greater community involvement in injury prevention activities.
- Improved effectiveness and satisfaction in your injury prevention work.
- Success stories in the prevention of injuries from motor vehicle crashes, violence, falls, and fires.
- Individualized learning experiences that you choose.
- Completion of a project that will help reduce injury in your community.
- Faculty and local mentors to assist you throughout the year.

During the Fellowship year, participants attend four one-week long courses, conduct a community-based project designed by the Fellow, and report the results of their project at a national forum. Courses will be presented through a combination of classroom, workgroup, field work, and individual assignments by nationally known injury prevention academic and community programs and IHS staff. The Fellow will be

assisted by a mentor, Fellowship academic staff, and local IHS injury prevention staff.

IHS will provide funding for costs associated with travel, per diem, and tuition for participation in the Program Development Fellowship in most cases. IHS cannot provide funding for participations from fully compacted tribes.

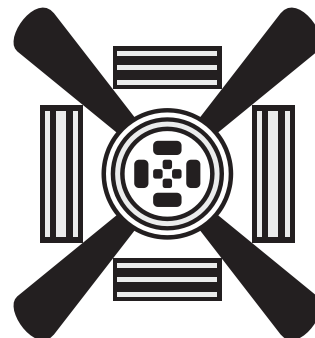
The Program Development Fellowship is open to persons who have:

- Worked at least 12 months in injury prevention.
- Attended the IHS "Introduction to Injury Prevention" course or equivalent.
- Demonstrated a commitment to community injury prevention.
- Have access to the Intranet and e-mail.

Additional information on the Program Development Fellowship and an application packet are available at www.dehs.ihs.gov/noinjuries or from:

Bobby Villines
IHS Environmental Health Support Center
5300 Homestead Road NE
Albuquerque, NM 87110
Telephone (505) 248-4603
E-mail bvillines@abq.ihs.gov

Application deadline: December 2, 2002.



Syndrome of Imminent Death

The following article is the third in an ongoing series in support of the development of a unified approach to palliative care services for American Indians and Alaska Natives. Each will present brief, concise facts and information for providers of palliative care.

Judith A. Kitzes, MD, MPH, Soros Foundation, Project on Death In America Faculty Scholar, University of New Mexico Health Science Center, School of Medicine, Albuquerque, New Mexico

- It is difficult to predict the time of death.
- Do not stop pain medications, especially opioids.
- Dying is an inherently lonely state.

As death approaches, it is important to recognize the final stages into which it may be divided; these stages may evolve over anywhere from the last 24 hours to 10-14 days. These stages and the signs that characterize them are as follows:

Early	Mid	Late
Bed bound Not eating/drinking Cognitive changes	Obtunded Death rattl Fever	Coma Cool extremities Altered respirations

The management of the syndrome of imminent death is guided by the following principles:

1. Once it is recognized, discuss the situation with the family.
2. Note in chart, "Patient is dying."
3. Discuss with the family stopping all treatments not contributing to comfort care, such as hydration, antibiotics, pulse oximetry, vital signs, laboratory studies, ventilator, dialysis, etc.
4. If available, honor advanced directives.
5. Treat "death rattle" with scopolamine patch (1-2 patches), or parenteral glycopyrrolate (0.2-0.4 mg starting dose).
6. Use morphine to control pain, dyspnea, or tachypnea, and maintain other palliative medications, preferably via subcutaneous or transdermal access. Do not assume person is not in pain if they are obtunded or in coma. Opioids can be decreased, if there is concern about a respiratory rate less than 8-10/min. Rapid cessation of opioids can produce a withdrawal syndrome.

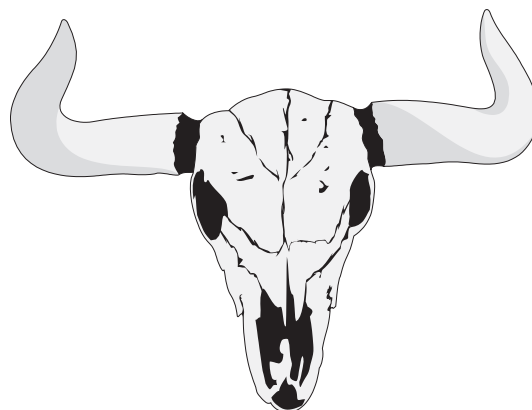
7. Provide excellent mouth and skin care.
8. Treat dying person with respect, always talking to them and touching them gently. The last sensory modality to go is hearing.
9. Maintain open, frequent communication with family.
10. Honor cultural and spiritual traditions regarding the death vigil, prayer, handling of body after death, and other matters.
11. Practice "powerlessness" and the beauty of "being without doing."

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3. Weissman, D. Fast Fact and Concept #03. www.eperc.mcw.edu.

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