

THE IHS PRIMARY CARE PROVIDER

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



June 2001

Volume 26, Number 6

Accuracy of Using RPMS Data for Measuring Pap Screening Rates

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GPRA measures, stemming from the Government Performance and Results Act of 1993, are reports that are required of the Indian Health Service (IHS) to assure that our agency is appropriately using its budgeted funding to provide a high quality of care to American Indians and Alaska Natives. The GPRA Pilot Study was designed to study whether or not data already contained in clinical components of RPMS (Resource and Patient Management System), IHS's healthcare information system, could be used to perform GPRA measurements with acceptable accuracy, thus reducing reporting burdens on Areas and local programs. To do this, the study was structured to allow us to compare manual reviews of a facility's paper charts with analyses using data contained within the RPMS. This article reports the results of the analysis of a performance measure to assess the Papanicolaou (Pap) screening rate at one of the study sites (a medium-sized facility that primarily delivers outpatient care).

Methods

In this study, a sample of 185 women between the ages of 18 and 65 who were diabetic (we used these criteria so the sample could be used simultaneously for an analysis of another measure) was selected at the identified facility using the PCC (Patient Care Component) application. We then gathered pertinent information from the Headquarters (HQ) ORYX system (demographics, date of visit, ICD diagnostic and procedure codes), on all visits for each of these patients during the nine month study time period, July 1, 1998 through March 31, 1999 (chosen for technical reasons related to the availability of exported data at HQ). A

detailed listing of these visits was provided to the manual chart reviewer.

The patients' charts were pulled and manually reviewed to determine if there was confirmed evidence of a Pap smear (an actual paper Pap report) during any visit during the study time period. The HQ data were then analyzed to determine if there was any indication in the ICD diagnostic and procedure codes that a Pap smear had been performed. In addition, a reviewer individually searched the PCC and Lab Package to determine if there was any indication in either that a Pap had been performed within the same time period. The determinations, using each of the four sources individually, of whether or not a Pap had been performed for each patient during the study time period, were then compared.

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Finally each patient's data were carefully reviewed and verified by an experienced clinician (in many instances the chart was re-reviewed) and a determination was made as to whether or not he believed there was credible evidence that a Pap had actually been performed. This was used as the gold standard and was termed in our results as "best available."

Results

The number of patients who had a Pap within the study period as determined by each of the methods as well as the gold standard review are shown in Table 1, and the number who would have been missed by each is shown in Table 2. Of note, the

Table 1. Number of denominator patients who had a Pap between 7/1/98 and 3/31/99 (Total # of Patients = 185)

Data Source	#	%
According to HQ database (using ICD diagnoses and procedure codes)	29	15.7%
According to chart reviews	50	27.0%
According to local Lab Pkg data	67	36.2%
According to PCC data (Qman search for Pap)	70	37.8%
According to best available data (verified data from any of the four sources)	69	37.3%

Table 2. Percentage of patients with Paps between 7/1/98 and 3/31/99 missed (or overcounted)

Data Source	#	%
HQ data (ICD diagnoses and procedure codes)	40	58.0%
Chart reviews	19	27.5%
Local Lab Package data	2	2.9%
Local PCC data (Qman search for Pap lab test)	-1	-1.4%

methods which best approximated the gold standard were PCC (overestimated the rate by 1.4%) and the Lab Package (underestimated the rate by 2.9%). PCC found 19 patients who had Paps who were not found by chart review. Sixteen had their Paps performed at outlying clinics that maintain separate charts, for one patient the paper report was missing from her chart, and two were "historical," Paps done at non-IHS sites. Two patients had Paps erroneously recorded in the PCC. The Lab Package and the chart review each identified one patient who had had a Pap that was not entered into PCC (the PCC visit for that lab test was erroneously deleted).

During our re-reviews, we found 8 Pap reports that were probably not in the chart at the time of the original review (the re-reviews were conducted over a year after the original chart reviews), but may have been missed in the original review. We chose to include these additional Paps in the numbers we report

for the results for the chart review method (enhancing the actual accuracy of that method) and thus for the comparisons with the other methods.

Using the Lab Package to identify patients who had had a Pap during the designated study period was found to be 97% sensitive and 100% specific (Table 3). PCC was found to be 99% sensitive and 98% specific (Table 4).

Conclusions

Our data showed that at this one facility both the PCC and the Lab Package are highly sensitive and specific sources for information on whether or not a Pap was performed. Our data also confirmed the information from a previous, related study on childhood obesity; chart reviews conducted just at this one facility and not including chart reviews at all chart-maintaining sites within this facility's service unit missed a significant number of Paps. In fact, even the "enhanced" chart reviews at this one facility alone underestimated the number of patients who actually did have a Pap within the designated study period by 28% (Table 2). Pragmatically, this has important implications for how we perform outcome measures for GPRA, ORYX, and other initiatives. Although we could consider just using the PCC or Lab Package as a "record locator" to identify all charts for the selected patients at the various chart-maintaining sites within a service unit (and beyond), all charts would then have to be manually reviewed, something that would likely be prohibitively resource intensive.

Limitations to the conclusions of this study include the fact that this study only provides some of the first formal and rigorously studied, empiric data we have on this specific question. In addition, results and conclusions are based on data from only one facility with its specific circumstances (Lab Package implemented, outside Pap tests recorded in that Package) and only on the data elements and measure studied. Our study did not exhaustively search for Paps performed by outside healthcare

Table 3. Comparison of Lab Package record of Pap versus best available data

Lab Package Data	Best Available Data		Total
	Yes	No	
Yes	67	0	67
No	2	116	118
Total	69	116	185
Sensitivity			97.1%
Specificity			100.0%
Positive predictive value			100.0%
Negative predictive value			98.3%

Table 4. Comparison of PCC record of Pap versus best available data

PCC Data	Best Available Data		Total
	Yes	No	
Yes	68	2	70
No	1	114	115
Total	69	116	185
Sensitivity			98.6%
Specificity			98.3%
Positive predictive value			97.1%
Negative predictive value			99.1%

systems; we only were able to identify those outside Paps already noted in our various records systems. Finally, our manual chart reviewer looked for data in the paper chart with a PCC report in hand and her findings were enhanced by what we found during the re-reviews. Thus the chart review we used for comparison in this study likely overestimated to a significant degree what would have been the accuracy of a more typical manual chart review performed alone.

As we begin to use PCC data for these kinds of measures, we need to continue to evaluate more and different kinds of data

and measure their accuracy, in an ongoing fashion, at multiple and varied facilities.

Acknowledgements

The authors would like to thank Carol Schurz for her assistance in verifying data for this study, Lois Boyd for her assistance in entering the data into the computer, Danny Macias and Karen Carver, PhD, for their assistance in providing the HQ data, and Patricia Osborne and Shawn Tennyson for their assistance early during the study.

University of Nebraska Medical Center College of Nursing Offers Master's Degree via Distance Learning to Nurses in Indian Country

The Health Systems Nurse Specialist (HSNS) program at the University of Nebraska Medical Center (UNMC) College of Nursing prepares nurses for advanced practice leadership positions in nursing. All HSNS courses are offered via distance delivery to nurses in their homes and communities. This delivery enables nurses to obtain their master's degree without leaving their employment positions.

The HSNS program is an innovative, population-based, systems-focused curriculum that prepares graduates with the knowledge and skills to work with communities and health care systems in delivering care to multiple populations. Special attention is given to develop critical thinking and cultural competence. HSNS is a proven curriculum that offers opportunity for nurses to specialize in one of three areas: community health nursing (CHN), nursing administration (NA), or nursing informatics (NI).

According to members of the Aberdeen Area Council of Nurse Administrators, the healthcare systems within Indian country need nurses with advanced practice leadership knowledge and skills in these specialty areas (CHN, NA, and NI). The UNMC College of Nursing faculty is coordinating with the Aberdeen Area Council to make information about the HSNS curriculum available to nurses through their Area.

The HSNS curriculum is available to both full time and part time students. Full time students usually complete the program in two years; part time students may take up to five years to complete the program. A post master's certificate is available for nurses who already have their MSN. Graduates meet course requirements to take certification exams in their specialty area

(CHN, NA, or NI).

Information about the HSNS master's program is available at www.unmc.edu/HSNS/; information about the UNMC community and the college of nursing is available at www.unmnc.edu. Inquiries about Native American scholarships and non-resident tuition waiver may be made to Dani Eveloff at (800) 626-8431, ext. 5184; e-mail develoff@unmc.edu.



Dentist Use of the Internet

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Editor's note: Every effort was made to verify the accuracy of the website addresses and their descriptions. However, given the rapid change that characterizes the Internet, we cannot guarantee that every site is correct or current. We hope our readers will understand.

The Internet is rapidly transforming our economy, our society, and the Indian Health Service as an organization. Technology is changing day by day, making it very difficult for everyone to keep abreast of the latest developments taking place in the world around us. Staying ahead of this change will be a vital issue for everyone in the Public Health Service. For example, every week, two websites, www.FEDtechnology.com, and www.e.gov provide you with the latest developments, trends, and decisions that affect you and your career. The following article will offer some suggestions for everyone, and for dentists in particular about Internet sites that may be of interest.

For many dentists and other health care providers, the Internet has changed how information flows into and out of the office. Here are some of the interesting sites I have found that you might share with co-workers at your hospital or health care facility:

www.physiciansite.com, www.boardcertifieddocs.com, www.searchpoint.com. These groups do physician credentialing. As such, they can be a valuable source for gathering information about new or *locum tenens* doctors. There is no need for an individual trying to scramble and find copies of licenses, diplomas, or previous hospital privileges. All this information can often be obtained from these sites.

<http://www.apohealth.com/>, <http://www.e-dental.com/>, <http://www.dentaldepot.com/>, www.supplies.medsite.com. These sites are for on-line purchasing of medical and/or dental supplies.

www.eclaims.com, www.zirmed.com, www.dentrix.com. These sites file insurance claims over the Internet. It would be ideal if the receptionist could file these claims directly, instead of going through a separate billing

department. As a result there would be an increase in the number of billings, and an increase in revenue for each department.

Internet Health Care (<http://www.faulknergray.com/>), *Health Data Management* (www.hdm.fgray.com), and *Health Care Informatics* (<http://www.healthcare-informatics.com/>) are magazines dealing directly with issues in the e-health care world.

www.doody.com, www.quintpub.com. Each provide a list of dental and medical books for sale to health care providers.

www.accordant.com, www.lifemetrix.com. These sites offer advice about chronic disease management.

www.virtualmedicalgroup.com, www.cpri.org, www.riseinc.com. These sites provide patient records over the Internet. Many of our patients visit several Indian Health Service facilities and private hospitals throughout their lifetime. It would be nice if all their data could be compiled on just one health summary.



www.dental-locums.com, www.forestirons.com, www.mednational.com. Is your clinic looking for contract help? These sites are responsible for speeding and enhancing recruitment of physicians and dentists.

www.compaq.com/healthcare, www.coachorg.com/publications. Data Security for health information systems may be examined at these sites.

www.ditonline.com, www.axolotl.com. Check out drug interactions at either of these.

www.iscribe.com, www.palmdmd.com. Check the accuracy of your prescription on a palm pilot.

www.confer.com/11, www.firstdatabank.com. Software for case diagnosis. It would be ideal if there were a laptop computer in every operator to access this kind of information.

Specifically For The Dentist, Try These Sites

<http://www.nadl.org/>. This is a site for problems with your prosthetic lab cases.

www.dentalfear.org. Provides information to help your apprehensive patients.

www.oncology.com, www.quitsmoking.no-smoking.org, www.oralcancer.org. These are excellent sites for your tobacco cessation committee to review.

<http://www.nohic.nidcr.nih.gov/>. This is the National Oral Health Information Clearinghouse, a resource for patients with special needs.

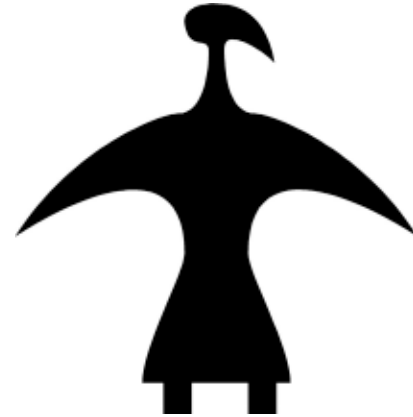
www.osap.org, www.osha.gov. OSAP and OSHA sites are concerned about infection control and safety issues for your practice.

www.braces.org. American Association of Orthodontists On-line. Orthodontists are now recommending initiating treatment at age seven years.

www.dentalstudents.com. A quick reference booklet for dental prescription writing published by University of Pacific Dental School every year in August.

www.andent.net. *The Dental Computer* newsletter is published quarterly. It reviews dental software and hardware.

www.ivanhoe.com. Medical breakthroughs found on Ivanhoe Broadcast News include some interesting



dental articles on treatment of canker sores and fighting cavities without fluoride.

www.prsdentaltravel.com. Visit here to see how you can combine continuing education and overseas travel with friends and family.

www.dentist.ch. This is the site for the Swiss Society for Computer Assisted Dentistry. Interact with your foreign colleagues in a study club.

www.dentalce.umn.edu. The University of Minnesota Dental School. You can register on-line for their CE courses. They also have a CD-ROM on the skull to help you refresh your anatomy.

www.dentaleditors.org. The American Association of Dental Editors.

www.webdental.com. Dental database; the world's premiere dental resources from a directory of dentists to do research on a topic.

www.dentaltown.com. An on-line community of dental professionals helping each other with today's new technology and materials.

www.adsahome.org. American Dental Society of Anesthesiology. Meetings, articles, and patient information on nitrous oxide, conscious sedation, and pharmacology.

<http://fluoride.oralhealth.org>. National Center for Fluoride Policy and Research. Publisher of an on-line fluoride newsletter.

www.pitt.edu/~aaphd. American Association of Public Health Dentistry.

www.iadr.com. International Association of Dental Research and International Conference of Oral Biology.

www.icd.org. International College of Dentists. A non-profit organization providing funding for and organization of international dental projects.

www.fdi.org.uk. World Dental Federation. Provides WHO oral health profiles by country and publishes a monthly International Dental Journal. They represent over 700,000 dentist worldwide.

www.ydw.org. The Young Dentist Worldwide. To promote the needs and interests of dentists out of dental school less than 12 years.

www.odont.ku.dk. Multimedia learning in odontology from the School of Dentistry, University of Copenhagen, Denmark.

<http://www.ihs.ox.ac.uk/cebd>. Evidence based dentistry is being used by more and more insurance companies to justify payment of treatments of dental care.

<http://www.dundee.ac.uk/eadph>. The EADPH (European Association of Dental Public Health) publishes a

quarterly journal with the British Association for the study of Community Dentistry called "Community Dental Health."

www.derweb.co.uk/bscd/bsjour.html. British Society for Computer Associated Learning. Promotes development of computer assisted learning in dentistry through publication of dental educational software.

<http://www.dentalmuseum.umaryland.edu/>. On your next trip to Rockville, Maryland, why not visit the National Museum of Dentistry in Baltimore.

www.communident.com. Dental patient education and motivational multimedia materials.

www.currentdentistry.com. Canadian dentist website with continuing dental education credit from "Current Practice" newsletter.

www.mymedline.com/dent. DENTAL GATE is a time saving custom MEDLINE search tool for dentistry. Incidentally in Pub Med of MEDLINE there is Journal Browsers link where you can access a list of dental journals and their publishing company's home page; the address is <http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi>.

www.laserdentistry.org. The Academy of Laser Dentistry.

www.artoral.be. *Dental Portfolio*, an oral pathology atlas from Belgium.

www.e-dental.com/store/display-books.asp. A 5-minute consultation on dental diseases.

www.newmentor.com. New Mentor Series of endodontics treatment.

www.ada.org/adapco/adapco.html. Monthly dental journal from the American Dental Association. Issues from 1990 to 1998.

www.nohic.nidcr.nih.gov/forms/fullreport.html. The Surgeon General's report on oral health.

www.brooks.af.mil/dis/aboutdis.htm. Dental Investigation Service. The military's evaluation of dental products. This CD-ROM is mailed three times a year.

nnd40.med.navy.mil/ndsbethesda. Naval postgraduate dental school website. Also lists US Army and USAF sponsored CE.



www.healthstreet.com. Is your clinic looking to contract with a local dental specialist or general dentist? This site will provide a list of providers in your area.

www.dentistrytv.com/dtc/default.asp. The Dentistry Channel offers continuing dental education via satellite and videotapes.

www.healthstudies.com. Continuing medical and dental education via correspondence.

www.dentalhealth.org.uk. Try this site if you are looking for tooth beanie babies.

www.webmd.com. Web MD merged with The Health Network. They have a lot of interesting dental articles.

www.dentalbytes.com. *Dental Bytes* is a monthly on-line dental magazine.

www.dentistryonline.com. Dentistry on Line offers free web pages to dentists.

www.dentaladvisor.com, www.cranews.com. Dental advisor and CRA news. These sites both offer reviews on new products.

www.dentalproducts.net. Offers articles and advertisements on new dental equipment and materials.

www.dentaldigest.com. Dental Therapeutics Digest, Dental Materials Digest, Dental Digest Yellow Pages, and Dental Implant Surgical Digest are all found at this site.

One organization geared toward the computerization of dental and medical offices is the American Medical Informatics Society. They have a Dental Informatics Special Interest group that publishes a newsletter called *Megabit e*. Check out their site at <http://www.amia.org/search/fsearch.html>.

There are two books published on the subject of dental information systems. They are *Global Village of Dentistry: Internet, Intranet, and On-line Services for Dental Professionals*, and *Dental Informatics*. There are reviews of both books on www.amazon.com; check the site if you are interested in purchasing them for your facility.

For many people, Yahoo is a favorite search engine, but it may cover only 30% of what's actually on the web. Try using meta-search engines like DOGPILE (www.dogpile.com), GOOGLE (www.google.com), or others at www.mygo.com, www.search.org, www.askjeaves.com, or www.gogettem.com, each of which can give you the results of 10 to 20 search engines. The amounts of information are limitless. There is also a site called All in One Search (www.allonsearch.com), where 500 engines are searching at one time.

This is just a sample of things on the World Wide Web. Last May, I attended an e-healthcare conference in Las Vegas, Nevada, and in one presentation, the speaker reported that only 18% of the dentist in the United States use the Internet and/or e-mail in their practice. We should all try to incorporate these tools into our practice. The next International Conference on Computer Applications in the Dental Practice will be held in San Antonio, Texas, in November 2001. Look at this web site, www.mds.qmw.ac.uk/cdentcare/conf3.html#NEXTTC, for more information and summaries of abstracts from the 1999 meeting in London. Perhaps more dentists will get involved in this expanding and evolving field. The Internet is changing everything. □



Family Practice Residency in Indian Health

The Seattle Indian Health Board (SIHB) offers a three-year physician residency in family medicine at their Seattle, Washington location. Graduates are eligible to take the National Boards in Family Medicine.

Affiliated with the nationally acclaimed Swedish at Providence Family Medicine Residency, in-hospital training is attained at the Swedish/Providence hospital campus, and outpatient/continuity service is at the SIHB clinic located just one mile from the hospital.

Three Indian physicians are included in the SIHB faculty, consisting of four family practice physicians and one pediatrician. All are board certified in their disciplines. The curriculum includes an orientation to traditional Indian medicine and work in alcohol and substance abuse services.

Founded in 1970, the SIHB is a JCAHO accredited community health center providing medical, dental, mental health, residential and outpatient substance abuse treatment, and outreach services to a large, multi-tribal Indian community. The clinical programs are supported by a state-licensed pharmacy, a CLIA-approved laboratory, and a large WIC program. In addition, the SIHB houses the Urban Indian Health Institute, a division devoted to research and surveillance of health conditions effecting urban Indians across the nation.

For more information, contact Shannon Wiegand, MD, Residency Site Director by e-mail at shannonw@sihb.org; or Robin Snyder, Coordinator by e-mail at robins@sihb.org; telephone (206) 324-9360 extension 2619.



Kids Into Nursing Website

Long term solutions to the nursing shortage begin with making children aware of nursing as a possible career. However, young people are hard to reach. The University of Nebraska Medical Center (UNMC) College of Nursing Health Systems Nurse Specialist (HSNS) curriculum project, recently funded by the Division of Nursing, U.S. Department of Health and Human Services, has a long range goal to interest school age youth in nursing as a career. A website targeting elementary and teenage youth is now on line.

An added bonus to developing the site has been the opportunity to have several middle school students evaluate it. Most

of the “student evaluators” are participants in a UNMC campus-wide “Kids into Health Careers Program.” Their only exposure to nursing as a career through this program occurs with this website experience. In addition to learning about multiple career possibilities in nursing, the suggestions and comments of the students have been useful in refining the website content.

If you know young people who need to be exposed to the opportunities provided by a career in nursing, ask them to check out http://www.unmc.edu/HSNS/kids_into_nursing/Default.htm. Besides factual information, there are interactive activities including games and quizzes.



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THE PROVIDER is published monthly by the Indian Health Service Clinical Support Center (CSC). Telephone: (602) 364-7777; Fax: (602) 364-7788; e-mail: the.provider@phx.ihc.gov. Previous issues of THE PROVIDER (beginning with the February 1994 issue) can be found at the CSC home page, www.csc.ihc.gov.

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

Circulation: THE PROVIDER (ISSN 1063-4398) is distributed to more than 6000 health care providers working for the IHS and tribal health programs, to medical and nursing schools throughout the country, and to health professionals working with or interested in American Indian and Alaska Native health care. If you would like to receive a copy, send your name, address, professional title, and place of employment to the address listed below.

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