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Newsletter

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ASSOCIATION NEWS

Better Late than Never!

From: Ronald D. Smith
AVI Newsletter Editor

This issue of the AVI Newsletter is a little late, due in part to end of semester exams, last minute homework submissions, last minute meetings and faculty retreats, arrival of spring, and my recent acquisition of a Harley-Davidson motorcycle ("Live to Ride, Ride to Live"). The May-June issue should go out in a more timely manner.

I'm especially pleased to include the results of AMIA's informatics literacy skills survey in this issue of the AVI Newsletter. Thanks to Dr. Craig S. Scott for permission to reproduce the report in its entirety. We might consider a comparable survey of AVI membership, veterinary academicians and practitioners. The results should be of wide interest within the veterinary community.

How to Contact AVI

Applications for membership, accompanied by a check payable to the AVI, should be sent to:

Dr. Robin M. Starr; Secretary Treasurer, AVI;
31575 Griffin Drive, Conifer, CO 80433

Phone: 303/674-5231; FAX: 303/674-9717;
e-mail: starrchi@earthlink.net

Membership application forms are available online at:

<http://netvet.wustl.edu/avi.htm>

Dr. Starr is responsible for distribution of the hardcopy version of the AVI Newsletter.

Newsletter items can be sent to:

Dr. Ronald D. Smith, Newsletter Editor, AVI;
UI College of Veterinary Medicine; 2001 South
Lincoln; Urbana, IL 61801.
Phone: 217/333-2449
FAX: 217/333-4628
E-mail: rd-smith@uiuc.edu

If you are an AVI member and would like to be on the AVI Newsletter electronic distribution list, send an e-mail message to the Newsletter Editor. The electronic (PDF) version is faster, searchable, easier to store and retrieve, and environmentally friendly.

Current and past issues of the AVI Newsletter are also available on the Web at:

<http://netvet.wustl.edu/avi.htm>

CORRESPONDENCE

Opportunities in Veterinary Informatics? Another Inquiry

A thread from AVI-L@WUVMD.WUSTL.EDU

QUESTION:

From: Jennifer Cornell <cornell@pullman.com>

I am a senior veterinary student at WSU. I am trying to get my hands on some important information for my senior paper. The topic of my paper is "Unique Career Options in Veterinary Medicine." One of the featured topics in my paper is veterinary informatics. As a result, I would like information on careers for DVM's in the following areas: writing for

databases, working for veterinary libraries, writing for veterinary journals, writing for magazines, and really anything else that is relevant. I would also like information on training programs in this field.

To be honest, the field of veterinary informatics is an extremely new concept to me that I am just learning about recently. I am looking for specific information here, such as specific companies that DVM's could work for in this field, specific job descriptions, contact information, and what pre-requisite experience/qualifications a DVM would need

before applying for a job in veterinary informatics.

RESPONSE:

From: RD Smith <rd-smith@uiuc.edu>

I'm not aware of any clearly defined "career paths" for veterinary informaticians, but there are a lot of veterinarians working in this area. For a historical perspective see:

Smith, R.D. and Williams, M. 2000. Applications of informatics in veterinary medicine. Bull. Med. Lib. Assoc. 88(1):49-55.

We have largely followed the lead of medical informaticians. You can get a good idea of activity in that area by going to their Web site at <http://www.amia.org>

You may also be interested in the informatics short course offered at Stanford which is listed on the educational opportunities page at <http://www.amia.org/lkedtr.html>

There's also a free journal, "MD Computing", that gives a good overview of current medical informatics activities. You may be eligible for a free subscription. See <http://www.mdcomputing.com>

Information and Informatics Literacy Skills in Medical Education: Expectations of Members of AMIA's Education Working Group

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**This report is reprinted here with permission of Dr. Craig S. Scott.
It is available online at: http://depts.washington.edu/uwmeded/amia_99.html**

The basic cognitive skills of information literacy include problem recognition, hypothesis generation, data gathering and interpretation, and critical evaluation of information. They predate the technological revolution and apply to all types of information. Developments in the technology of information provide new avenues for accessing, gathering and processing information. These developments, however, are a double-edged sword. While they are providing powerful avenues for accessing and new tools for processing information, the quality of the information that is becoming available is extremely variable. As a result, the computing and biomedical/health informatics technologies are providing almost instantaneous access to vast amounts of possibly relevant information. What the information means and how it can be best put to use remains for the clinician to determine.

PURPOSE

This study was designed to examine expectations of members of AMIA's Education Working Group (AMIA/EWG), regarding what information and informatics competencies they expect of medical students prior to, during and following completion of their undergraduate medical education.

Four research questions were addressed in this study. They were: (1) How stable are expectations of AMIA/EWG members' expectations regarding what information literacy and informatics skills

may be necessary for medical students? (2) What information literacy and informatics competencies do AMIA/EWG members expect matriculating medical students to have at program entry? (3) What competencies do they expect medical students to acquire during their preclinical and clinical undergraduate medical education? and (4) What skills do they suggest young clinician's acquire during post-graduate training?

METHODS

The Instrument. The 40-item Information Literacy Survey was developed at the University of Washington School of Medicine over a period of years by a series of faculty panels which identified basic or entering informatics competencies; those that could be attained by completion of undergraduate medical education. It was designed as a vehicle for administrative, teaching and informatics faculty to report which informatics content and skills they believed were appropriate for undergraduate and graduate medical education. The survey was piloted locally then placed online at: http://depts.washington.edu/uwmeded/amia_information.html during the spring of 1999. Respondents were instructed to indicate whether, if at all, they felt medical students should acquire the listed competencies and skills. If they did not know or were unsure, they were instructed to leave the item blank. Responses were tied to a 5-point scale as follows: Expected entering competency for all; Competency expected by end of year 1; Competency expected by graduation, A residency acquired skill, and; Not essential for most students.

The Subjects. A 25% random sample of members of AMIA's Education Working Group was selected from the e-mail list provided by the AMIA Central Office. The sample contained a total of 102 AMIA/EWG members. All 102 AMIA/EWG individuals in the sample were invited by e-mail to complete the survey online. Seventeen potential respondents indicated via e-mail that they were not familiar enough with the needs of medical students to complete the survey. This reduced the number of qualified potential respondents to 87. A total of 43 AMIA/EWG members completed the survey online yielding a response rate of 49% (43 of 87). All respondents provided their job title. Among the 43 respondents, 47% (22) identified themselves as either teaching, academic affairs or administrative appointments; 53% (23) reported direct affiliations with a library, most often a health sciences library, or had an informatics-related appointment.

Data Collection. The Web-based Information Literacy Survey was administered during the spring and summer of 1999 to the 25% random sample of members of AMIA's Education Working Group. During the same period, a similar survey was administered to a group of faculty from the MEDEX Training Program at the University of Washington. The focus of this survey was physician's assistant students in a two-year certificate program. For comparative purposes results from this survey are also reported.

Instrument Reliability. Chi-square analyses indicated no significant differences on any of the 40 items between responses of the teaching/academic affairs group and the library/informatics group. Responses of the two groups are therefore reported in aggregate. During the fall of 1999, the 43 respondents were asked via email to complete the survey a second time so that response stability could be examined. Forty-seven percent (20) of the 43 respondents complied with the request. For each of the 40 categorical items, differences between Time 1 and Time 2 responses were examined via independent t-tests for "entering" and "preclinical" percentages combined and for the "residency acquired" percentages. Following the three to five month period between Time 1 and Time 2 the combined "entering" and "preclinical" percentages for only 2 of the 40 items, namely "Subscribe to a listserv and retrieve messages" and "Use information technology for basic or biomedical research" were statistically different with p-values of .040 and .038, respectively. For the 20 AMIA/EWG members that responded both at Time 1 and Time 2, the combined "Entering/Preclinical" percentage for "Subscribe to a listserv and retrieve messages" decreased from 85% to 55%. For "Use information technology for basic or biomedical research" the "residency acquired" percentage increased from 22% to 55%. There were no differences at or

beyond the .05 level between the 40 Time 1 and Time 2 “residency acquired” percentages. Based on these analyses the stability of the survey were deemed to be adequate.

RESULTS

Tables 1 through 4 contrast views of a sample of AMIA/EWG members regarding medical education and of MEDEX faculty regarding physician's assistant (PA) training. In all tables competencies are listed in descending order according to results from the AMIA/EWG sample. The percents that qualified each competency for inclusion in the table are shown in bold and underlined.

Overall, more than 90% of the 40 competencies included on the survey were viewed as essential by both groups, though PA faculty classified more competencies as not essential for future physicians' assistants. Table 1 presents the seven information/informatics literacy competencies that were viewed as "Not Essential" by 50% or more of respondents for medical students and/or for PA students. All seven of the skills were viewed as not essential for PA students. Only one of these competencies, namely, develop a web page, was viewed as not essential for future physicians.

Table 2 lists the six competencies that were viewed as "Expected at Program Entry" by 50% or more of respondents for medical and/or PA students. Four of the competencies expected at program entry were pure informatics skills. These included: transferring files electronically, download files from the web, subscribing to and retrieving messages from listservs, and describing rules for electronic communication. Two of the competencies, both of which were included in the table because of MEDEX faculty expectations of matriculating PA students, were the basic information literacy skills of prioritizing information and of developing effective strategies for making sense of information.

Table 3 presents the seven competencies that 80% or more of one or both groups suggested were important for students to master prior to the conclusion of their preclinical year(s). The reported percentages were computed by summing percents for "program entry" and for "competence expected by the end of year 1." Two of the competencies, namely, describe rules for electronic communication and use traditional and electronic resources for self-directed study, were included in the table because the competencies were viewed as necessary to attain prior to the beginning of the clinical year(s) for both medical and PA students. Three competencies, namely, conducting online bibliographic searches, using listservs, and using Internet-based instructional systems, were included because 80% of AMIA/EWG members reported they were necessary for medical students. MEDEX faculty were less insistent that these skills were needed for PA students prior to the beginning of their clinical year. Two of the competencies, both basic information literacy skills, namely, determine appropriate information gathering strategies and locating useful medically-relevant resources, were included because 80% of MEDEX faculty reported they were necessary for PA students to attain prior to the clinical year. These basic information literacy skills, however, were also viewed as important for medical students to attain prior to their clinical years by nearly 75% of the AMIA/EWG members.

Table 4 presents those competencies for which 50% or more of the respondents of either group suggested that they should be attained by the time the students complete their clinical training. Eight competencies, all of those in the table, were categorized as "should be attained by the end of the clinical year" for PA students. Six of the eight competencies were categorized as "should be attained by the end of the clinical years" for medical students. Adding these percentages to those for “entering” and “preclinical” would result in almost 100% agreement that these skills are important for all to attain some time during medical education and PA training.

Finally, Table 5 presents the competencies that were most often categorized as “residency acquired” by the AMIA/EWG members. Only two of the 40 competencies, namely “Using billing

code systems” and Use practice management software” were categorized as “residency acquired” by more than 50% of the respondents.

DISCUSSION

Medical informatics, along with information literacy, has received increasing attention over the past few years. The AAMC stated in 1993 that medical students must be provided strong foundations “in the use of computer technology to manage information, support patient care decisions, select treatments, and develop their abilities as lifelong learners.”¹ In the recently published report of its Medical School Objectives Project’s (MSOP) Medical Informatics Advisory Panel² the AAMC recommended a framework of medical informatics learning objectives for undergraduate medical education. The AAMC/MSOP³ delineates higher level informatics competencies – i.e. those that graduates should be expected to attain prior to graduation. They also specify basic computer literacy skills that would ideally be present upon program entry, which should be assessed early and remediated if necessary. It is clear that information literacy and applied medical informatics are increasingly recognized as necessary core competencies for undergraduate medical education.⁴

A series of previous studies at the University of Washington has examined matriculating medical students’ computing competencies. Over the past decade, entering medical students have been asked about their computing skills. During that time, self-reported levels of competence on basic computer applications have steadily increased. Successive classes of matriculating students reported increases in e-mail use (22% in 1989 to 97% in 1998) and in the ability to conduct on-line bibliographic searches (17% in 1989 to 75% in 1998). A recently completed national study that examined views of academic affairs and informatics administrators’ regarding information and informatics skills necessary for medical students and compared faculty and student estimates of competence⁵ highlighted how little is known for certain about competence on such skills.

In this study most of the 40 competencies listed on the Information Literacy Survey were viewed as important for the professional development of physician’s or for physicians’ assistants. Differences between the expectations of AMIA/EWG members for medical students and those of MEDEX faculty for PA students are illustrative of the fact that these skills should be examined independently for each of the various health care professions. MEDEX (physicians’ assistant) faculty viewed many more competencies as “not essential” for PA students. This was particularly true for those competencies related to telemedicine, research, report preparation, and use of imaging and practice management systems. AMIA/EWG members expected more competencies at program entry for matriculating medical students than did MEDEX faculty for matriculating PA students. Higher proportions of MEDEX faculty reported that more competencies should be attained by the end of the clinical year for PA students than were reported by AMIA/EWG members for medical students. With respect to what competencies should be attained prior to the clinical year(s), the two groups were quite similar. While expectations of AMIA/EWG members regarding “entering competencies” for medical students were consistent with the recommendations of the AAMC/MSOP regarding premed/entering competencies, much consensus building work remains to be done.

CONCLUSIONS

Curriculum development is not necessarily a data-driven process. Curricula are often developed based on informed expert opinion. This study documents opinions of individuals who are often involved in curriculum development. It sets the stage to determine more precisely which information and informatics literacy competencies students may have or should have at program entry and which they should develop by the time they graduate from medical school. Results highlight differences of opinion about entering competencies for medical and PA students. They

also indicate that AMIA/EWG members believe that most basic information skills fall within the domain of undergraduate medical education.

These results do not address what students actually know or can do at any point in the education process. This reality only underscores the need for more deliberate curriculum planning coupled with competency testing, not only for computing and informatics skills, but for basic information literacy skills as well. The nature of the differences between the expectations for medical students and for PA students suggests that it is important to gather such data separately for each type of health sciences clinician.

There is no doubt but that most young people are entering the health professions education with increasingly sophisticated basic technological skills. With this in mind, educators need to determine which information and informatics literacy competencies students can or should be expected to have acquired prior to program entry, which should be learned during formal training, and which, should be learned later. Such determinations will assist them as they design curricula to prepare learners for the rapidly expanding world of digital information.

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TABLES




Table 1: Areas Rated Not Essential

	AMIA EWG Members: <u>Med Students</u>	MEDEX Faculty: <u>PA Students</u>
Develop a web page	63	100
Use handheld systems (PDA's, Palm-tops, etc.)	29	67
Use information tech. for basic/biomedical research	17	56
Participate in telemedicine consultations	16	50
Use medical imaging systems	13	50
Produce reports incorporating graphics	12	80
Use practice management software	12	56







Table 2: Expected Entering Competency

	AMIA EWG Members: <u>Med Students</u>	MEDEX Faculty: <u>PA Students</u>
Subscribe to listserv and retrieve messages	67	50
Transfer files electronically	65	30
Download files from the Web	64	20
Describe rules for electronic communication ("Netiquette")	63	30
<i>Prioritize information¹</i>	37	50
<i>Develop effective strategies for making sense of information¹</i>	21	50

¹ a basic information literacy skill






Table 3: Competency by End of Preclinical

	AMIA EWG Members: <u>Med Students</u>	MEDEX Faculty: <u>PA Students</u>
Describe rules for electronic communication ("Netiquette")	96	89
Conduct online bibliographic searches	89	50
Use traditional/electronic resources for self-study	89	80
Use a listserv	88	60
Use Internet-based instructional systems	84	30
<i>Determine appropriate information gathering strategies¹</i>	74	80
<i>Locate useful medically-relevant resources²</i>	72	90







Table 4: Competency by End of Clinical

	AMIA EWG Members: <u>Med Students</u>	MEDEX Faculty: <u>PA Students</u>
Retrieve data from clinical information systems	70	70
Access patient records electronically	63	80
<i>Locate resources for patient education¹</i>	61	60
Access clinical guidelines electronically	55	60
Use online clinical record-keeping	51	90
Use simulated medical decision systems	51	50
Use medical decision support systems in pt. care	45	90







Table 5: Residency Acquired Skills

	AMIA EWG Members:
	<u>Med Students</u>
Use billing code systems	68
Use practice management software	61
Participate in telemedicine consultations	49
Use medical decision support systems in patient care	43
Use online clinical record-keeping	36
Use medical imaging systems	35



PRODUCTS & REVIEWS

Veterinary Practice Management Software Review

By Scott Simms, DVM
Contributing Author
DVM Newsmagazine

<http://www.dvmnewsmagazine.com/simsintro.html>

DVM Newsmagazine Editors note: This project was undertaken by Dr. Sims at the request of the Computer Applications Committee of the American Association of Equine Practitioners (AAEP). Dr. Sims first presented the results at the AAEP Annual Meeting in Baltimore, in December 1998.

The spreadsheet itself has been broken into 15 separate pages, each profiling a separate practice management software package.

Readers are cautioned that this data was collected in 1998. Prices and features may have changed since Dr. Sims last contacted the vendors.

This project, a voluntary effort, required countless hours of effort over the span of an entire year. The editors are grateful for the author's permission to republish his paper for the benefit of his colleagues.

INTERNET RESOURCES

INNO-VET Literature Scanning Service

INNO-VET for the veterinary practitioner:

<http://www.inno-vet.com>

is edited by Ray Markus D.V.M. and is a free, internet-based, monthly literature scanning service. It also includes abstracts of several important veterinary journals which are not included in Medline. INNO-VET provides a searchable abstract data base of the latest veterinary medical, human medical and other scientific publications including specifically items of interest to the practicing veterinarian. A

new Avian/Exotic section edited by Keath Marx D.V.M. has recently been added to the Companion Animal section.

INNO-VET gives the busy veterinary practitioner a free, concise and rapid access to the latest journal information and is a prime example of veterinary informatics at work.

Free Medical Journals Online

See <http://www.freemedicaljournals.com/> for a list of medical journals with full text articles available online at no cost.

NEWS & COMMENTARY

Bookbag of the Future

Seven U.S. dental schools plan to replace traditional textbooks this fall with a single DVD that contains the curriculum for all four years of school. Students will purchase the DVD when they enter dental school, exchanging the old version for an updated DVD each semester. The DVD initiative is the first time digital materials have totally supplanted traditional texts for all of a school's students, experts say.

Observers are eager to see how students respond to the DVDs, and whether the technology improves learning. Some experiments have shown that students prefer to

read printed text rather than digital text, and the DVDs will be expensive since the disc includes material for all four years.

However, project coordinators say the DVDs will cost about the same as all the textbooks students would otherwise be required to buy. In addition to NYU's dental school, other participants include the dental schools at the University of Texas, the University of Buffalo, Boston University, the University of Medicine and Dentistry of New Jersey, the University of Florida at Gainesville, and the United States Navy Postgraduate Dental School. (New York Times, 2 March 2000)

MEETINGS & EDUCATIONAL OPPORTUNITIES

See the informatics section of NetVet for a more complete and current list of informatics-related activities at:

<http://netvet.wustl.edu/info.htm>

Stanford Medical Informatics Introductory Short Course

June 12 - 16; August 14-18, 2000
Stanford, California and online

Stanford Medical Informatics is pleased to announce the seventh year of our Medical informatics Introductory Short Course. As in previous years, the course will be offered twice during the summer: once from June 12th through June 16th 2000, and again from August 14th through August 18th 2000. Details are described on

<http://scpd.stanford.edu/misc.html>

A FAQ that answers questions that have come up is available at:

http://www.smi.stanford.edu/faq_shortcourse.htm

Please email additional questions to shortcourse@smi.stanford.edu

The short course is also available now online via streaming video along with 4 other courses in clinical and bio-informatics. For details, please see

<http://scpd.stanford.edu/smiseres.html>

We also have a few copies of the 1998 versions of courses on videotape available. Please contact me if you are interested in obtaining the tapes.

Thanks for your interest,
Larry Fagan,
Director, Short Course
shortcourse@smi.stanford.edu

CLOSING BITS

Scent of a Program: Web Technology Puts Perfume in Your Printer

Internet users can now download tastes and smells from the Internet using a device released last week by TriSenx. The \$398 FirstSENX device combines water-based chemicals to create smells and tastes that are printed on a fiber card-stock paper. Users click on an image that has a digital scent programmed into the

Web page, and FirstSENX prints an image that users can smell and lick. Fragrance manufacturers and food companies have shown interest in FirstSENX. The technology might move into the mainstream if the price falls low enough to bundle the device with computers, says analyst Ullas Naik. Other companies working to bring smell to the Internet include DigiScents and AromaJet.com. (Wall Street Journal, 1 May 2000)