Globalization comes to radiology

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With a fellowship in abdominal imaging from Cornell University and another in neuroradiology from Yale, Kalyanpur is well qualified to perform these preliminary interpretations. He has done preliminary studies for Florida Radiology Consultants in Fort Myers for nine months without a single notable discrepancy.

"He is probably the best imager in my group," said Dr. John Howard, the group's president.

Elsewhere in Bangalore, Indian-trained radiologists contracted by Wipro HealthScience are performing similar tasks. Unlike Kalyanpur and his partner, who trained at Baylor University, the 12 radiologists employed in Wipro's global radiology reading room do not possess American Board of Radiology certification. They are not licensed to practice in any state, nor are they credentialed to practice in any U.S. hospital. Only two are qualified to call themselves radiological subspecialists, but their advanced training was received in India.

Because of their lack of credentials, the Wipro physicians cannot legally bill Medicare for radiological services and are barred from licensure in some states. But their company has devised a way to coordinate their work with board-certified practitioners in the U.S., as a means of improving radiologist productivity.

Wipro's "collaborative reading" service, which has performed 10,000 studies for four undisclosed U.S. customers since September 2002, warrants attention because the company is a world leader in information technology outsourcing. Its third-ranking executive is Vivek Paul, a former GE Medical Systems global marketing manager who sees multimillion dollar opportunities in outsourced radiology services.

The radiology department at Massachusetts General Hospital has contributed to Wipro's position: It may have unwittingly helped Wipro develop the PACS technology on which collaborative reading is based.

Although only a few miles separate Kalyanpur's office and Wipro's reading center, the two services cover the extremes of current global teleradiology business and practice. One provides nighthawk teleradiology services; the other hopes to introduce the outsourcing of imaging services to clinical practices.

Global teleradiology is experiencing a rambunctious adolescence. Firms specializing in night coverage are enjoying broad acceptance and solid growth. Radiologists who like to live in exotic locations are lining up for the work. And speculators, some with less than honorable intentions, are hoping to go along for the ride.

The demand for global teleradiology services is so strong and the stakes so high that there is almost a gold rush feeling to some business activities associated with this new market. Radiology group practices are under pressure to handle more medical imaging in the face of an unrelenting radiologist shortage. There was enough imaging volume in 2001 to support 7000 additional radiologists, according to American College of Radiology economist Mythreyi Bhargavan, Ph.D. The demand for cross-sectional imaging continues to rise by 7% to 16% annually, depending on the modality. About 900 newly board-certified radiologists enter the field every year.

Along with additional imaging during the day, hospitals now require radiology coverage at night. That demand, supported by a Medicare mandate for 24/7 coverage, stems from the explosive growth of emergency room CT and ultrasound applications.

The huge differences in incomes earned by U.S. board-certified radiologists compared with imaging practitioners elsewhere in the world are also encouraging business activity. The average annual salary offered to candidates for U.S. radiology positions in 2002-2003 was $317,000, according to Merritt, Hawkins & Associates, an Irving, TX, recruitment firm.
Interviews conducted in September with radiologists in Bangalore, Bombay, and New Delhi revealed that a typical Indian radiologist earns between $15,700 and $21,000 annually. Radiologists skilled enough to read CT, MR, and ultrasound typically earn the Indian equivalent of $26,000. Yet, until recently, the same regulatory barriers that affect Wipro and its aspirations to become a radiology outsourcer had kept foreign-trained radiologists from becoming a competitive factor in the U.S. The global nighthawk firms that employ only board-certified radiologists are performing extremely well. About 20 companies provide services either from the U.S. or from overseas reading rooms, according to Dr. Eric Trefelner, CEO of NightShift in San Jose, CA, and a columnnist for Diagnostic Imaging.

Market leader Nighthawk Radiology Services of Coeur d'Alene, ID, employs 16 U.S.-trained radiologists who practice from its reading room in Sydney, Australia. They will read more than 300,000 studies this year, up from 100,000 in 2002, according to Nighthawk vice president Jonathan Berger. Dr. Paul Berger, Nighthawk founder, is planning a new service in Zurich, Switzerland. Virtual Radiology Consultants in Eden Prairie, MN, has grown in less than two years from its three founders-all University of Minnesota radiology faculty members-to a staff of 18 radiologists. The company will have handled about 180,000 nighthawk studies this year from about 200 hospitals in 30 states.

VRC radiologists can work anywhere with broadband access, according to CTO Brent Backhaus. They are working in Bangalore; Charleston, WV; Denver; Dresden; Duluth, MN; Hong Kong; Los Angeles; Maui; Minneapolis; New York City; Paris; Sydney; and Tampa. The firm is hiring two radiologists per month.

Radiologists affiliated with group practices that contract for nighthawk services are happier and more productive than radiologists who still take night call, Howard said. Nighthawks save them from working double or triple shifts to cover late-night hours, and the group practice gets more productivity by avoiding the half- or full day that night-call radiologists typically take off to recover.

ADVANTAGES FOR RADIOLOGISTS
If night call is drudgery for fatigued radiologists at the hospital, it can be satisfying work for an alert nighthawk working via the Internet and a broadband connection. Most of the caseload originates from the emergency room and involves mainly CT and ultrasound, with a small proportion of MR and plain films in the mix. Working conditions for nighthawk radiologists may be among the best in Western medicine. The nighthawk reading room in Sydney is located high in an office tower, giving its radiologists spectacular views of the Opera House and Harbor Bridge. Nighthawk teleradiology allowed Dr. John Schlakman to fulfill his dream of living in Jerusalem.

"It is a wonderful place for my wife and me to raise our family," he said.

Radiology group practices are the main customers for nighthawk services. Because Medicare is forbidden by federal law to pay for most medical services performed outside the U.S., global nighthawks concentrate on performing preliminary interpretations that groups pay for directly. A member of the group follows up the next day with a primary interpretation that is billed to Medicare. The final reading also serves as a check against the nighthawk's performance. The cost varies. Some firms require a retainer; others charge for workstation setups. Charges for a preliminary interpretation range from $50 to $80, depending on modality and complexity. The greatest resistance to global nighthawks comes from referring physicians and hospital administrators, said Dr. Garrett Ward, president of Logic Radiology, a group in Atlanta. Referring physicians at Ward's hospitals are sometimes not comfortable about having a radiologist they don't know diagnose their patients.

"They wonder why the reports have to be read in India," Ward said. "But I never hear another word after they learn about Kalyanpur's credentials and see the quality of his reports."

CREDENTIALING
Hospital credentialing is the greatest barrier to entry to practice in the U.S. for overseas radiologists because few are trained and board-certified in the U.S, said VRC CEO Dr. Sean O. Casey. Noncertified radiologists might qualify for medical licensing in some states, but they would hit a brick wall if they applied for hospital credentials. The Centers for Medicare and Medicaid Services delegates questions about credentialing to its local carriers, said Thomas Greeson, an attorney with the law firm of Reed Smith in Falls Church, VA. Most carriers, however, require board certification in diagnostic radiology for the interpretation of medical imaging performed by independent diagnostic testing labs. Opportunities for mischief abound, considering the huge distances that separate remotely based radiologists from their clients. Critics fear that radiologists based in developing countries could...
subcontract to marginally qualified local physicians for easy profits. And some radiologists are concerned that health maintenance organizations and profit-oriented imaging center chains are willing to outsource image interpretation to cut-rate operations overseas, said Dr. John Haaga, director of radiology of University Hospitals of Cleveland.

"There is a potential dark side of teleradiology that people fear," he said. "The risk for patient care is that unless you are absolutely sure that you have American-trained and boarded radiologists onsite, you would really worry about international sites using noncertified people."

In the summer of 2003, Trefelner encountered several would-be global teleradiologists who appeared to have little knowledge or regard for U.S. regulations. In one instance, an Indian caller asked for a bid to read 500 chest CT exams originating from a hospital from Texas, a state with particularly tough licensing requirements. When Trefelner told him that he does not have a Texas license, the caller claimed that Trefelner's California license would suffice because that's where the images would be read. Trefelner tried to correct the error, only to be told that a lot of work could be sent his way if he cooperated.

A few weeks later, an Indian radiologist called Trefelner from Canada to inquire about a job. When asked if he was board-certified, the caller said no, but he claimed certification wasn't needed because nighthawks provide only preliminary reports.

"This was the third or fourth time I heard that argument from people abroad trying to sell their service in the U.S.,” Trefelner said. "It shows me that pressure is increasing abroad to crack our market."

The ACR has taken notice of this trend. Dr. E. Stephen Amis, chair of the ACR board of chancellors, said in a written statement that the ACR has taken no position on global teleradiology, but a task force chaired by Charlotte, NC, radiologist Dr. Arl Van Moore has been appointed to study the situation and propose a position.

OUTSOURCING FEARS

Some radiologists worry that primary radiology interpretations will eventually be outsourced, with economic ramifications similar to those that now afflict information technology workers. With the IT industry mired in a recession since 2000, a number of unemployed software programmers in Northern California's Silicon Valley blame the outsourcing of jobs to India for the worst job market ever in their industry.

Outsourcing companies have downplayed the role of IT outsourcing in U.S. unemployment. Wipro's Paul compared the current backlash to U.S. anxieties about Japanese economic competition in the 1980s.

"Offshore outsourcing is good for the U.S. economy, and it's good for globalization," he said in a speech at a June 2003 outsourcing conference in Los Angeles.

Still, Wipro's scale and growth are daunting to radiologists who are accustomed to dealing with imaging services firms that generate a few hundred million dollars per year. It reported $902 million in revenue in its last fiscal year, and it employs 13,474 people. The scope of its outsourcing empire includes telemarketing, IT help desk and technical support services, insurance claims processing, billing services, benefits administration, hiring and recruitment, data mining, and data management. Increasingly more sophisticated jobs and even entire software development projects have been exported to Bangalore.

Wipro's HealthScience group generated sales of only $19 million last year, but it represents a big growth opportunity.

"There is more and more pressure to manage the cost of healthcare and growing demand for imaging services delivered to patients whose care is being compromised because of a shortage of radiologists," Paul said. "We want to be ready and available to meet that demand."

The extent to which Massachusetts General Hospital radiologists were aware of Wipro's intentions is unclear, but in 2002 they conducted two informatics experiments in Wipro's global reading room. In a 3D workstations project, Wipro physicists and technicians in Bangalore provided customized 3D image reconstruction services to MGH using a component of the hospital's global PACS. The project has since become a viable business.

And MGH's global PACS project, coordinated by radiology professor Dr. Sanjay Saini, was a technical success. The PACS experiment was actually an extension of an earlier Yale University study that proved the feasibility of transmitting large cross-sectional CT studies, physician orders, and patient files for interpretation in Bangalore. That formed the technical basis of Kalyanpur's service.

Saini and Dr. James Thrall, radiologist-in-chief at MGH, wanted to demonstrate that all the features of their in-house PACS could be used at a site halfway around the world. Instead of relying on clerical staff to fax patient records and maintain work lists, radiologists working for MGH in Bangalore or
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elsewhere could download all the patient and image information available to staff in Boston. Using global PACS, former faculty members living overseas could be contracted to interpret imaging studies. They would have fast access to current exams and could download prior studies, reports, and patient history with as much ease as if they were working in an MGH reading room in Boston, Thrall said.

Wipro contributed space in its Bangalore facility and access to its wide bandwidth telecommunications lines from Bangalore to the coast, where data were transmitted to the U.S., Saini said. Manipal Hospital, a 650-bed teaching hospital in Bangalore, was also involved.

"It was always implied that Wipro would be the infrastructure provider," Thrall said.

The project's objectives had been met by February when Thrall traveled to Bangalore to check out the system. Thrall planned to establish a late-night service for MGH based in the Wipro global reading room, using personnel recruited from his existing Boston staff. But no one at MGH was willing to move to Bangalore, even when guaranteed the same rights and salaries they received in the U.S. Non-board-certified Indian radiologists were explicitly excluded from consideration so that nothing would suggest that MGH was outsourcing its late-night work, he said.

"The MGH team realized there was some danger that radiologists back in the states would think that its Bangalore reading operation was staffed with incompetent people from the Third World," Thrall said.

But that turned out to be precisely the conclusion some radiologists drew from press reports about the project. They were incensed by an error-ridden feature in the India New England News, a Boston-based publication that can be read on the Internet. The magazine reported in January that Wipro and MGH would recruit U.S. radiologists to work in India and educate Indian physicians at MGH. An interview with Saini implied that the venture would pay radiologists $100,000 in India to capitalize on that nation's lower salary scale.

NO DEAL

According to Thrall, however, no deal to allow non-board-certified radiologists to read for MGH exists.

"We have not had a single case interpreted by a non-MGH radiologist, nor do we have any contractual agreement in place to do so, regardless of what Wipro has implied," he said.

Wipro has implied a lot. Its publicity machine repeatedly refers to a collaboration with a major hospital in Massachusetts. Anup Raina, general manager of clinical process outsourcing and new business development at Wipro HealthScience, said the company still plans to build a pipeline of doctors going from India to MGH for their radiology education.

"Under this plan, MGH would get added help generally, and because of the time difference, it would get night coverage as well," he said.

In reality, without the hope of recruiting U.S. board-certified radiologists from MGH or elsewhere, Wipro was forced to think creatively to keep its radiology outsourcing aspirations alive. In interviews with Diagnostic Imaging, Raina repeatedly referred to the importance of scalability to his group's planning orientation. In business parlance, scalability forces business managers to focus attention on projects promising the largest revenue growth and profit potential for their companies. Plans at Wipro to enter the nighthawk business were delayed because the firm could not attract enough board-certified radiologists to build what it considered to be a major business. The only way to assure scalability in radiology is to eventually involve hundreds of Indian-trained radiologists and to develop spin-off services, such as billing management and radiology therapy planning, to expand the operational scope, Raina said.

INTRODUCING GLOBALRAD

By September, 12 Indian-trained radiologists had been recruited from Manipal Hospital for an entirely new service called GlobalRad. It is billed as a productivity improvement tool based on online collaborations between board-certified radiologists, who retain the ultimate professional responsibility for their patients, and Indian-trained "junior" and subspecialist radiologists. The Indian radiologists, located in Bangalore, provide draft interpretations and advice about the primary interpretation of radiological studies.

In any given case, the primary diagnosis begins in India, where a junior radiologist dictates a draft diagnosis by examining the current study, prior reports, and patient information transmitted from the client's hospital. The junior radiologist's draft and related images are then examined by a subspecialist who signs off on the report before it is transmitted to the attending radiologist in the U.S. Attending radiologists perform their review using the draft for guidance, with online and phone access to the subspecialist as they view the films, edit the findings, and sign off on the report.

"It is like manual computer-aided diagnosis. It is an intelligent person working on the other side of the world supporting your diagnosis," Raina said.
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The service is held together by Wipro's sophisticated PACS, a system based on the same design philosophy as the global PACS that MGH tested in Bangalore, Raina said. Collaborations are possible because junior radiologists, subspecialists, and attending radiologists can simultaneously access current and prior radiological images, patient records, and demographic information. The GlobalRad concept is designed to aid U.S. radiologists, not to compete with them, Raina said. "We will make radiologists more productive so they can earn more and accelerate the delivery of care," he said.

PRODUCTIVITY GAINS
The first 10,000 studies performed with the system confirmed its potential benefits, Raina said. Wipro officials found that the productivity of board-certified radiologists using GlobalRad rose by 30% to 40%. The improvement was partially offset by a 15% to 20% increase in unit costs for access to the service.

If the unit costs seem remarkably low, it is because Wipro is capitalizing on the low labor costs associated with practicing medicine in India. Wipro pays its radiologists $30,000 to $40,000 annually, a rate high enough to have Indian radiologists queuing up for the jobs.

Dr. Robhit Malik, a consulting radiologist and sonologist in Mumbai would jump at a chance to earn that amount. He is accustomed to earning about $3 per study. "Why would I mind being a teleradiologist? It will allow me to make better money. I can work fewer hours and moonlight less, which will mean being able to spend more time with my family," he said.

If GlobalRad performs according to expectations, many Indian radiologists will have a chance to sign on. Wipro plans to have at least 500 Indian-trained radiologists in the network by the end of 2005. The company expects to sign up 100 radiology group practices for the service in the next two years, Paul said.

Although some U.S. radiologists find fault with Wipro's approach, the collaborative formula may meet U.S. legal requirements, according to Dr. Leonard Berlin, radiology chair at Rush North Shore Medical Center in Chicago. Berlin sees similarities with the sort of curbstone consultations that are a routine part of hospital practice. "If they are just giving me their opinion and leaving the decision to me, then I don't see where you would have a legal problem," he said.

The scheme could pose a problem if a case read by the Indian collaborators led to malpractice litigation, however. Berlin wonders if a jury would accept the collaborative framework as a legitimate radiology practice. "I'm looking at it from the perspective of a shrewd plaintiff's lawyer who knows that anything that looks odd will influence a jury in the plaintiff's favor," he said.

IMAGE PROCESSING
Although GlobalRad is bound to be controversial, outsourced 3D imaging reconstruction services from Wipro may appeal to a larger audience. The demonstration project with MGH successfully created a seamless workflow connection between the MGH PACS and 3D workstations in Bangalore. Dr. Udai Patil, head of clinical services at the global reading center, spent almost four months in Boston learning 3D reconstruction and volume rendering techniques. Back in India, he has trained 30 radiologists and technologists. The company plans to double the number of technologists in its image formatting operation by the end of 2004. Six customers, including MGH, have signed on for the service.

Outsourced labor-intensive image reconstruction can help hospitals cope with technologist shortages, Saini said. The MGH radiology department transmits its night and weekend requests and overflow weekday volume to Bangalore for processing.

Wipro is using its 3D workstation experience as a springboard to providing outsourced planning for inverse treatment planning for intensity-modulated radiation therapy. The company is pitching potential U.S. customers to outsource their imaging billing services as well. "As we get into the collaborative work, we want to take the billing and the transcription pieces too," Raina said.

The next step for some nighthawk companies is a move into providing primary readings, which they say is an additional opportunity to improve radiologist productivity. Outsourcing final readings to nighthawks would spare the hospital-based radiologists from reading studies performed the night before.

The upside of this trend for the nighthawks would be the ability to squeeze more work from their teleradiology hardware during daylight hours and capitalize on the higher reimbursement rates associated with final reports. Medicare cases could be directed to domestic services to avoid the overseas ban. The remaining 80% of the work could be channeled to their foreign stations.
The downside is the loss of final interpretations as a quality assurance tool to test the reliability of preliminary readings, Howard said. VRC hired a new pool of radiologists in September to specialize in domestic day work, performing final interpretations. Because of differences in turnaround times and the amount of detail dictated in preliminary and final reports, the company decided against assigning its radiologists both types of cases. Nighthawk Radiology Services has chosen not to provide primary readings for the same reason that some radiologists are anxious about global outsourcing, Berger said. "We want to be perceived as providing a valuable service to radiologists, not as a competitor," he said. Monika Raj provided additional material from Mumbai and New Delhi, India, for this article.

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