As total health care expenditures are expected to constitute an increasing portion of the US gross domestic product during the coming years, the US health care system is anticipating a historic spike in the need for care. Outsourcing medical and surgical care to other nations has expanded rapidly, and several ethical, legal, and financial considerations require careful evaluation. Ultimately, the balance between cost savings, quality, and patient satisfaction will be the key determinant in the future of medical outsourcing.


Offshore medical care is a rapidly expanding practice in the United States. Americans spend more on health care than do people in any other nation, and US spending is projected to rise during the next decade, reaching $4.1 trillion by 2016, almost 20% of the US gross domestic product. A small but increasing number of Americans travel abroad to seek care, often in developing countries. Medical travel was originally termed medical tourism because its roots lay in the practice of seeking an inexpensive cosmetic or dental procedure while vacationing. The market for medical travel for patients is growing rapidly worldwide and includes increasing numbers of Americans seeking treatment less costly than that in the United States. The outsourcing of America’s health care began with telemedicine, which includes electronic delivery of medical services such as x-ray readings, insurance claims processing, diagnostic test interpretations, and videoconference consultations. This market is currently estimated at approximately $80 billion and is growing by 12% every year.

Traditionally, America has been the principal destination for medical travelers. Approximately 40% of the world’s medical travelers come to the United States seeking advanced technology and the perceived “better quality of care” at leading American facilities. However, difficulty obtaining US visas after the events of September 11, 2001, greatly reduced the number of wealthy medical travelers from the Middle East and stimulated investment in more than 100 hospitals across the Middle East and North Africa. The precise number of medical travelers searching for inexpensive care is unknown, but in 2005, a reported 250,000 international patients sought care in Singapore, 500,000 foreigners were treated in India, and 1 million foreigners were treated in Thailand. An estimated 750,000 Americans traveled internationally for treatment in 2007. Predictions regarding the future of medical travel consistently suggest expansion. By 2012, as many as 1.6 million Americans may travel abroad for medical care, and global medical travel was expected to have become a $40-billion-per-year industry by 2010. Worldwide medical travel has been projected to total approximately $100 billion by 2012.

Given the potential profitability of outsourcing, it is not surprising that health care providers have responded internationally. Since 1998, approximately 140 hospitals abroad have been accredited by the Joint Commission International, the global arm of the Joint Commission. Many contain state-of-the-art technology, employ US-trained physicians, and are flourishing in developing countries where labor costs and overhead are substantially lower.
lower than in the United States. These facilities strive to dispel the belief that the United States provides the best health care.

ADVANTAGES OF MEDICAL TOURISM FOR THE UNITED STATES

The most obvious benefit of medical tourism is a cost savings typically ranging from 30.0% to 90.0% (Table 1 and Table 2). Whereas no amount of savings would justify traveling abroad if the surgical care were inadequate, countries such as India and Thailand, recognizing a lucrative market, have invested in building modern facilities and employing high-quality health care professionals. In Thailand's Bumrungrad Hospital, a heart bypass operation costing $100,000 in the United States is $12,000. The hospital employs more than 200 US-trained, board-certified surgeons, suggesting quality similar to that in the United States. At Delhi's Escorts Heart Institute, more than 5,500 heart operations are performed annually and the death rate is only 0.8%—half that of most major US hospitals, although this is probably because patients with less severe disease are most likely to travel and patients with emergency cardiac cases are excluded. Because such hospitals have less incentive to reduce costs, patients are encouraged to convalesce in the hospital or at associated resorts for at least a week after surgery. Even after including these “extras” in the price of the surgery, the costs can still be one-fifth of those in US hospitals.

Medical tourism may help American businesses reduce the cost of health insurance and provide their employees with alternatives for satisfactory coverage. Only a few insurers offer care overseas, but they report remarkable savings. Health Net of California Inc offers a plan that outsources care to Mexico, allowing a family of 4 to save 50% per month on treatments. Blue Shield of California's Access Baja plan has enabled a San Diego employer to save in monthly premiums, extend coverage to employees’ families, and offer vision benefits for the first time. Proximity to inexpensive care across the border is limited to the United States–Mexico border states. Therefore, states further from the border have developed other solutions. The Blue Cross and Blue Shield Association of South Carolina offers coverage for some major procedures performed at Bumrungrad International Hospital and may soon expand coverage to include hospitals in Europe, Singapore, and India.

American hospitals and university medical centers are recognizing the potential profits in outsourcing. Philadelphia International Medicine is building a hospital in Korea. Hospital Corporation of America intends to purchase hospitals in China. Also, Harvard University has partnered with India’s Wockhardt Hospital, The Johns Hopkins University and Tufts University have opened hospitals in India, and Boston University and Harvard University have partnered with the United Arab Emirates to create the Dubai Healthcare City.

Some US hospitals have responded locally to overseas competition. Galichia Heart Hospital in Kansas announced it will charge a flat fee of $10,000 for the most common open-heart procedures (a discount of $25,000). The hospital believes that it can maintain profitability by minimizing administrative bureaucracy and enhancing operational efficiency. Further evidence of market forces is the formation of North American Surgery, an independent service that contracts with US hospitals to provide low-cost surgical procedures at prices comparable to those of offshore hospitals without the risks entailed in traveling overseas.

DISADVANTAGES OF MEDICAL TOURISM FOR THE UNITED STATES

The disadvantages of medical tourism range from dangers to the patient to a negative effect on society. For patients, there are important questions of safety and quality. Not all hospitals overseas are equipped like Bumrungrad, and even within a high-quality hospital, not all

Table 1. Advantages and Disadvantages of Medical Travel for the United States

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offers cost savings to American patients</td>
<td>Provides some patients with access to care unavailable to them in the United States</td>
</tr>
<tr>
<td>Stimulates healthy competition with the potential outcome of greater efficiency in the delivery of health care in the United States</td>
<td>Improves competitiveness of American businesses struggling with high cost of insuring employees</td>
</tr>
<tr>
<td>Provides some patients with access to care unavailable to them in the United States</td>
<td>Provides deluxe amenities and postoperative care in attractive environments</td>
</tr>
<tr>
<td>Fosters potential global spread of disease and infectious agents</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: HIPAA, Health Insurance Portability and Accountability Act.
physicians have the same credentials. Language barriers and lack of available information can make it difficult for patients to ascertain the quality and standards of a foreign hospital or physician, and the criteria are not always clear. Whereas the Joint Commission International has sought to allay this concern, the rise of medical travel has brought new international accreditation agencies whose standards and judgment criteria are less well known. Potential conflicts of interest exist. The credentialing agency for the Dubai Healthcare City, the Center for Healthcare Planning and Quality, is located within the City itself, thus calling into question the regulation of water-source purity, sanitation, laboratory standards, infection control, food preparation, and the availability of a safe blood supply.  

United States physicians have expressed concerns regarding follow-up care for patients who have had procedures performed overseas. Patients may experience a loss of continuity of care, especially in the delivery of standard postoperative care and the treatment of postoperative complications. American physicians are particularly reluctant to care for patients with adverse outcomes resulting from operations performed abroad. It is unclear whether US insurers will reimburse for follow-up care, especially in cases in which materials, procedures, or medications not approved by the Food and Drug Administration are used.

Equally important is the stress of travel, which can be exacerbated by the different language, culture, and living conditions in a developing country. This stress limits the types of operations to those that are not urgent and to patients who are well enough to travel for many hours on an airplane. When estimating the cost of surgery overseas, patients must factor in the cost of bringing a family member and the cost of recuperating before returning to the United States because flying long distances immediately postoperatively can lead to deadly pulmonary embolisms.  

The stress of travel may extend to the dangers of political instability, such as Thailand’s 2006 coup, and to foreign epidemics, such as severe acute respiratory syndrome. The return of Americans from other nations carrying novel infectious agents raises the possibility of furthering the global exchange of viral and bacterial infections.

As for society, outsourcing medical procedures could deprive US hospitals of revenue that subsidizes the care of the uninsured, limit the availability of certain common procedures in the United States, and thereby jeopardize the infrastructure of US hospitals. The expertise and opportunities to train the next generation of US physicians could be diminished if large numbers of Americans travel abroad.

**LEGAL AND ETHICAL CONCERNS**

The most obvious legal concern is the lack of accountability and legal recourse if the standard of care is not met, which may also reflect the differing standards of care internationally. Hospitals abroad might not carry malpractice insurance, the likelihood of winning a lawsuit in a foreign court is low, and the financial settlements would not be likely to compensate the patient to the same degree as in the United States.

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### Table 2. Cost Comparisons of Some Major Procedures Between the United States and 3 Medical Travel Destination Countriesa

<table>
<thead>
<tr>
<th>Procedure</th>
<th>US Retail</th>
<th>India</th>
<th>Thailand</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angioplasty</td>
<td>82711</td>
<td>11000</td>
<td>13000</td>
<td>13000</td>
</tr>
<tr>
<td>Gastric bypass</td>
<td>69316</td>
<td>11000</td>
<td>15000</td>
<td>15000</td>
</tr>
<tr>
<td>Heart bypass</td>
<td>176835</td>
<td>10000</td>
<td>12000</td>
<td>20000</td>
</tr>
<tr>
<td>Heart-valve replacement</td>
<td>230138</td>
<td>9500</td>
<td>10500</td>
<td>13000</td>
</tr>
<tr>
<td>Hip replacement</td>
<td>63238</td>
<td>9000</td>
<td>12000</td>
<td>12000</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>29489</td>
<td>2900</td>
<td>4500</td>
<td></td>
</tr>
<tr>
<td>Knee replacement</td>
<td>58702</td>
<td>8500</td>
<td>10000</td>
<td>13000</td>
</tr>
<tr>
<td>Mastectomy</td>
<td>34246</td>
<td>7500</td>
<td>7000</td>
<td>9000</td>
</tr>
<tr>
<td>Spinal fusion</td>
<td>90679</td>
<td>5500</td>
<td>7000</td>
<td>9000</td>
</tr>
</tbody>
</table>

Abbreviation: ellipses, not applicable.

aCosts reported in US dollars, with rates including at least 1 day of hospitalization.

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Privacy is another legal concern. Foreign countries are not bound by America’s HIPAA (Health Insurance Portability and Accountability Act). Violations of this act would be difficult to prosecute. Furthermore, intermediaries that facilitate overseas medical tourism are not necessarily bound by HIPAA regulations. The liability for the overseas hospital is also unclear and may depend on the level and type of involvement of the hospital in seeking patients in the United States.

The ethical concerns cover a wide range. Some patients travel for advanced medical procedures that are available overseas but have not yet been adopted by US surgeons. Others travel for procedures that are banned in the United States, such as those involving human stem cells or devices awaiting approval by the Food and Drug Administration. Concerns regarding organ procurement are particularly troubling. The most desperate medical travelers are those in need of a transplant. The World Health Organization reported in 2007 that in some Pakistani villages, as much as 50% of the population had only 1 kidney, having sold their other kidney to a wealthy foreigner. In China, the government has been charged with executing death-row prisoners when a matching donor is found.

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### BENEFITS TO DEVELOPING COUNTRIES

The most obvious benefit of outsourcing for developing countries is the influx of foreign capital (Table 3). In 2006, more than 55 000 Americans sought medical treatment at Bumrungrad, 30% higher than during the previous year. In India alone, the number of medical travelers is projected to rise by 600% in the next 5 years. This financial incentive has inspired countries to invest in their medical infrastructure.

The phenomenon termed brain drain might be reversed if hospitals that cater to medical travelers can lure some physicians back to their native countries. According to the largest hospital group in India, many Indian physicians are returning home “because they have something to come back to.”

A thriving medical practice in their homeland is a powerful incentive to return. However, concerns persist that these private hospitals will entice leading physicians to treat foreign medical travelers...
rather than practice in hospitals dedicated to treating the local population.

Ultimately, individual nations decide how to allocate the revenues gained from medical tourism. It has been proposed that developing countries use these profits to subsidize the treatment of the local population. While this practice is not widespread, in India, Devi Shetty, MD, has created a state-of-the-art hospital staffed with Western-trained physicians who treat medical tourists, impoverished local citizens, and the indigent patients of neighboring countries such as Pakistan, Bangladesh, and Burma. Despite caring for the poor, the hospital is solvent and is the subject of a case study at Harvard University Business School to institutionalize this hospital model and extend it beyond India.30

FACTORs PREVENTING THE UNITED STATES FROM DELIVERING CARE FOR A SIMILAR PRICE

Since American economic principles emphasize that competition in a free-market economy generates maximum quality for minimum price, why is US health care the most expensive in the world? A free market functions best when consumers can influence prices through their purchasing decisions. However, health care purchases are often not optional; patients cannot wait for the price of heart surgical procedures to drop and they generally do not buy insurance, their employers do. Therefore, there is no end-consumer “feedback loop” to increase quality or reduce price.

Whereas malpractice claims account for only 0.46% of overall health care expenditures in the United States, the effects of practicing defensive medicine to avoid litigation are costly.31 Rising US health care costs are driven by the costs of labor, administrative functions, equipment, facilities, and pharmaceuticals—all of these are significantly less expensive in developing nations.32 Prescription drugs can be as much as 45% less expensive in Canada and France,32 and salary and facility costs are also significantly lower. Physicians in Thailand make less than one-tenth the salary of their American counterparts.33 Recognizing these factors, some have suggested that medical travel could provide some insights into ways to decrease the costs of American health care.3

THE FUTURE OF MEDICAL TRAVEL

The potential cost savings with medical outsourcing are evident, but real change in the amount of use will occur only when Americans perceive medical care abroad to be safe and effective. Such a change would be similar to Americans’ shift in attitude toward cars manufactured in Japan—once considered shoddy, they are now perceived to be reliable and efficient.34 If perceptions of medical travel become more positive, more businesses and insurance companies will explore this option.

In 2008, Hannaford Bros Co (Portland, Maine) announced that it would cover 100% of the costs if an employee traveled abroad for joint replacement.20 Hospitals in the region responded by offering to match the price given by a foreign hospital. To date, 10 Hannaford Bros Co employees have undergone the operation in the United States and none have traveled internationally.32

Two forces that may shape the future of medical tourism are the global economic crisis and the newly legislated US health care reform.36 Reports suggest that the economic downturn of 2008 prompted a decline in US medical travelers and a temporary slowdown in the expected growth of medical travel.7 A decline in funding to build new hospitals may limit the ability of foreign nations to achieve a competitive advantage in specialized health care. The efforts of the Obama administration to reform health care may result in changes in the delivery system that would reduce the incentives for Americans to travel abroad.

EFFECT OF THE GROWTH OF MEDICAL TRAVEL ON THE US HEALTH CARE INDUSTRY AND LEGISLATIVE ACTION

Since medical tourism entails the outsourcing of medical care to foreign nations, an important question is whether health care jobs in the United States will disappear just as manufacturing jobs did in the 1980s. Will medical tourism significantly reduce demand, causing US hospitals to abandon certain procedures or even close? It is not difficult to imagine that clinical tasks that do not require the physical presence of the physician (eg, diagnostic radiology and pathology) could be outsourced abroad.37 However, surgery and other interventional medicine practices will likely be insulated from the types of outsourcing that decimated the manufacturing sector in the 1980s because, for most procedures, the potential savings to the patient would not outweigh the cost of travel. A 2006 survey of Americans’ willingness to travel for medical care found that nearly 25% of uninsured people, but only 10% of those with health insurance, would travel abroad for savings of $1000 to $2400 and, for savings exceeding $10,000, approximately 38% of the uninsured and 25% of those with insurance would travel abroad.3

The types of procedures that are suitable for medical tourism are limited. One report concluded that, “Off-shore care must be limited to non-urgent, short-duration treatments costing more than $15,000 to $20,000 in the US for conditions that aren’t exacerbated by air

Table 3. Advantages and Disadvantages of Medical Travel for Developing Countries

<table>
<thead>
<tr>
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<th>Disadvantages</th>
</tr>
</thead>
<tbody>
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<td>Generates increased revenue through an influx of foreign capital</td>
<td>Diverts resources to care of medical travelers away from facilities that treat local population</td>
</tr>
<tr>
<td>Stimulates development of local hospitals and the infrastructure of the foreign health care delivery system</td>
<td>Raises ethical questions regarding practices such as purchasing organs for transplantation</td>
</tr>
<tr>
<td>Promotes retention of international medical graduates in their native countries</td>
<td>Entices local health professionals to leave public facilities to work in private facilities that cater to wealthy medical travelers</td>
</tr>
<tr>
<td>Encourages biotechnology and industry development internationally</td>
<td>Results in exposure to novel and unfamiliar diseases</td>
</tr>
</tbody>
</table>

Results in exposure to novel and unfamiliar diseases

Disadvantages

<table>
<thead>
<tr>
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<th>Advantages</th>
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travel; these include major cardiac and orthopedic procedures. The report estimated that treatments meeting these criteria account for less than 2% of US spending on noncosmetic health care. However, research indicates that younger consumers are more comfortable with researching the Internet and traveling long distances and are almost 20% more likely to travel for health care. If this demographic trend is correct, according to Deloitte LLP, the United States could lose as much as $599.5 billion to medical tourism by 2017.

Currently, the US medical system has little competition and prices have risen dramatically. In response, legislators in West Virginia and Colorado have introduced bills encouraging medical tourism for state employees with the intent to “put pressure on domestic health-care companies, to put more pressure on prices” by stimulating competition. Medical travel became the focus of the 2006 Senate Special Committee on Aging when Howard Staab, a self-employed carpenter, described being quoted $200,000 for an operation to repair his mitral valve prolapse in the United States. After forgoing surgery for a year, he traveled to India to undergo surgery for $6700. One company discussed how the rising cost of insuring its aging employees threatened to close the plant. The company offered employees a percentage of the savings to undergo procedures in India. At the conclusion of the meeting, Senator Gordon Smith (a Republican from Oregon) commented that “Americans should not have to travel overseas to obtain affordable healthcare . . . [however] for the nation’s uninsured, traveling overseas for low-cost procedures is an understandably attractive option.”

MEDICAL TRAVEL’S INFLUENCE ON THE RISING COSTS OF SOCIAL SECURITY

Currently, Medicare provides coverage for domestic care, with few exceptions. An amendment to the Social Security Act would be necessary to extend coverage to foreign health care providers. Measures to overcome this hurdle are in the early stages of analysis and discussion. One study found that if 10% of patients scheduled for 1 of 15 “highly tradable” surgical procedures were to travel abroad, the United States would save $1.4 billion annually and approximately $690 million would accrue to Medicare. Some speculate that Medicare does not allow patients to travel to foreign hospitals to avoid having to introduce coverage for the sizable number of US retirees living abroad and to prevent the potential destabilizing effects of a radical innovation to the existing system. However, allowing access to less-expensive care to retirees in the United States could substantially offset the costs of providing coverage for those living abroad. In addition, if the true cost of care abroad is lower, a tax could be applied that would still leave the consumers who seek care abroad better off while subsidizing care of the poor.

CONCLUSIONS

Outsourcing of medical and surgical care to other nations is rapidly expanding. Several benefits and challenges will result as American patients travel to other countries for medical care, and the ethical, legal, and financial considerations will require careful evaluation. Cost savings, quality, and safety of care will be primary determinants as the practice continues to evolve.

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Correspondence: John Maa, MD, FACS, Department of General Surgery, University of California, San Francisco, 513 Parnassus, Rm C347, San Francisco, CA 94143-0790 (mja@urgery.ucsf.edu)

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REFERENCES