

Role of Telemedicine in Medical Tourism

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Abstract

Medical tourism is becoming an important alternative for patients' worldwide that allows them to seek their desired medical care in foreign countries. Since it is vital to have pre- and post-care medical check-ups to ensure proper continuum of care, telemedicine is expected to be the medium-of-choice for all such distance consultations as the patients travel from and to their home countries. This paper discusses the ways and means by which telemedicine can play a vital role in this field through an evaluation of the involved business processes, and also proposes a set of high-level requirements for a suitable telemedicine system useful in this area.

Keywords:

Medical Tourism, Telemedicine, Virtual pre- and post-care check up, Continuum of care, Business Process, High-level Requirements, Telemedicine System

Introduction

Medical tourism is nothing short of a very serious business that has the potential to revolutionize the world healthcare industry as never before. Today, patients are combining a vacation of a lifetime with receiving care for a condition that would either be costly or be available only after a considerable time interval or both.

Telemedicine is a serious attempt at bridging the gap between the care receiver and their providers by making physical distances irrelevant and cutting down on travel. It is an essential cog in the wheel of medical tourism. It provides the ability for the patient and her¹ care providers to get to “now each other” before they physically meet each other for the first time, allow all the remote and local care providers to exchange health-related notes throughout the duration of the clinical encounter, and continue to hold follow-up sessions on an on-demand basis. Therefore, it increases the efficiency, productivity, and attractiveness of medical treatment as a whole and medical tourism in particular. Providing the mental relief to all the stakeholders makes medical tourism look even more attractive.

Healthcare Industry in India

¹ The feminine includes the masculine, the singular the plural

The size of the global healthcare industry in 2003 was USD 4 trillion.² In India it grew by more than 13 per cent per annum in the 1990s and in mid-2004 was estimated at INR 1500 billion or USD 34 billion, which works out to USD 34 per capita representing 6 per cent of GDP. With India becoming a serious healthcare destination, medical tourism currently stands at INR 12 – 15 billion, and growing at a rate of 30% annually, it is bound to grow at even faster rate.³

The demand for healthcare services in India has grown from USD4.8 billion in 1991 to \$22.8 billion in 2001-2002, a compound annual growth rate of 16%. The healthcare industry accounted for 5.2% of India's GDP in 2002n and this figure could reach USD47 billion or 6.2% to 7.5% of GDP by 2012.⁴ FICCI states that in 2005 – 06 the private healthcare sector achieved a high growth rate of 12% as did oral care and this represented a high rate of 10% (both sectors) Y-on-Y.⁵ The Confederation of Indian Industry (CII) has predicted a 13% growth for the Indian healthcare industry for the next six years.⁶

Telemedicine

Telemedicine is made up by the combination of the Greek word “Τελε” (tele) meaning distance and the Latin word “mederi” meaning to heal and therefore literally means, “distance healing”. Time Magazine has termed it as “healing by wire”. The term refers to the use of modern telecommunications and information technologies for the provision of clinical care to individuals located at a distance and to the transmission of information to provide that care. Information Technology, through the judicious use of computers, related software, telephone lines, fiber-optic cables and satellite link-ups, is used to deliver quality health care to wherever the patient is physically located.

Medical Tourism

² <http://www.express-computer.com/20031110/newsanalysis01.shtml>

³ <http://www.expresshealthcaregmt.com/20040715/analysis01.shtml>

⁴ <http://www.it-analysis.com/business/research.php?code=PS-6706&pg=1>

⁵ <http://www.indiaonline.com/news/news.asp?dat=72226>

⁶ <http://www.pharmabiz.com/article/>

[detnews.asp?SecArch=s&articleid=4718§ionid=12](http://www.pharmabiz.com/article/detnews.asp?SecArch=s&articleid=4718§ionid=12)

Medical tourism is a term people from all around the world are traveling to other countries to obtain medical, dental, and surgical care while at the same time touring, vacationing, and fully experiencing the attractions of the countries that they are visiting.

There are many companies that can help arrange patients' surgeries, travel arrangements and tours. Many of these companies, acting as some sort of specialized tourist agency, partner with specific hospitals, thereby arranging a cheaper price for their patients than one could arrange on their own through the hospital directly and will make all arrangements regarding travel, visa, accommodation etc., and see to it that every need of the patient is taken care of for a commission.⁷

The modus operandi is to couple the same level of medical treatment delivered immediately with travel and tourism in the same country at a fraction of cost in the patient's own country. This is a great value add to all concerned. The patient gets relief quickly without compromising the quality and quantity of care, and conducts sight seeing and vacationing, all at a fraction of the actual treatment cost in her own country. To provide some numbers in defence of this argument, for example, in April of 2003, Madras Medical Mission, a Chennai-based hospital, successfully conducted a complex heart operation on an 87-year-old American patient at a reported cost of USD 8,000 (EUR 7,000, GBP 4,850) including the cost of his airfare and a month's stay in hospital. The patient claimed that a less complex operation in America had earlier cost him USD 40,000.⁸ The difference of USD 32,000 can be used for a vacation of a lifetime and still have enough to contribute to a charity, trust or pension fund.

The countries where medical tourism is being actively promoted include Greece, South Africa, Jordan, India, Malaysia, Philippines and Singapore. India is a recent entrant into medical tourism. According to a study by McKinsey and the Confederation of Indian Industry, medical tourism in India could become a USD 1 billion business by 2012. The report predicts that: "By 2012, if medical tourism were to reach 25% of revenues of private up-market players, up to INR 10 billion will be added to the revenues of these players". The Indian government predicts that India's USD 17-billion-a-year health-care industry could grow 13% in each of the next six years, boosted by medical tourism, which industry watchers say is growing at 30% annually. Analysts say that as many as 150,000 medical tourists came to India in 2005. However, the current market for medical tourism in India is mainly limited to patients from the Middle East and South Asian economies. Some claim that the industry would flourish even without Western medical tourists. Afro-Asian people spend as much as USD 20 billion a year on health care outside their countries - Nigerians alone spend an estimated USD 1 billion a year. Most of this money would be spent in

Europe and America, but it is hoped that this would now be increasingly directed to developing countries with advanced facilities.⁹

In short, all analysts are more or less uniform in their bullishness regarding the Indian healthcare sector, with the medical tourism sector displaying very healthy numbers. Medical tourism definitely adds to the top-line of the various healthcare provider institutions and although the revenue model is volume-dependent, the capacity and quality of care is adequate enough to ensure healthy profit margins even at reduced rates. With the patients and their families having the prospect of not only receiving relief quickly but simultaneously take in the sights of India at a reasonable cost, the promise of medical tourism in India is great. Other than Greece, none of the other competing countries can promise as much as India can in terms of culture, tradition, diversity, sights and history.

Involved Business Processes

Medical Tourism

In medical tourism, the basic business process is as follows. A patient in an area where she is unable to get relief from her problems due to resource crunches like unable to foot the bill or unable to wait long enough to get treatment due to long waiting times or both. She¹⁰ therefore looks for ways and means whereby she can get relief as soon as possible at equal or lower cost. So, she travels to a place where the cost of comparable quality and quantity treatment is same or less and is readily available. A competent care provider at an institution of her choice reviews her case records and she receives an appointment for the same. She travels to the country where the institution is located and receives her treatment. Pre- or post-treatment, she conducts some sightseeing according to her choice (and budget), and then at the conclusion of her visit she travels back to her country of residence with all her treatment records and post-treatment advice to her primary care physician. For follow-ups required at her place of residence, she is provided with instructions regarding how these needs to be undertaken.

The most important decision point of course being both the quality and quantity of care and ensures patient safety while providing the best of care available anywhere else. The countries where medical tourism is being actively promoted include Greece, South Africa, Jordan, India, Malaysia, Philippines and Singapore. India is a recent entrant into medical tourism¹¹. However, the maximum growths experienced are in India. The reasons are not difficult to

7 http://en.wikipedia.org/wiki/Medical_tourism

8 <http://yaleglobal.yale.edu/display.article?id=2016>

9 <http://www.health-tourism-india.com/growth-of-the-medical-tourism-industry.html>

10 The feminine includes the masculine, the singular the plural

11 <http://www.health-tourism-india.com/growth-of-the-medical-tourism-industry.html>

ascertain. Highly qualified English-speaking care providers in world class institutions coupled with a country with rich cultural diversity and such world heritage sites like the Taj Mahal, Rajasthan and the famous beaches of Goa and Kerala allows the typical medical tourist to combine quality treatment with a vacation of a life time with family and friends at a cost that is less than the cost of receiving the same quality and quantity of treatment in her own country.

However, she will visit and get treated by a set of care providers who have never ever seen her before and will probably never ever see her thereafter. If and when she requires any follow-up evaluation and advice for the actual treatment received, she will have to rely on such care providers who did not provide the treatment. She is left to relying on tele-communications links to help her bridge this gap, perceived or otherwise.

Without telemedicine she is left to make do with letters, faxes, expensive long-distance telephone calls, instant messenger chatting, video conferencing (low grade – inexpensive and informal, high grade – expensive and formal requiring prior appointments), etc. Add to this cauldron the inevitable mayhem of information lost in transmission and faulty instructions being percolated through – all due to the existence of non-integrated information exchange mechanisms that cause serious faults in the healthcare delivery system. Thus, records are neither correctly interpreted nor received on time in many instances. All this leads to a great deal of stress, which is extremely undesirable, especially in a sector where stress-free environment should be the first requirement by both the provider and patient.

With telemedicine, one has a single medium through which a “virtual” clinical encounter can take place in an environment that is garnered towards efficiency and productivity in terms of exchanging data – both textual and visual – at the speed of light. The entire medical record is available to all the stakeholders right from the beginning that is continuously added to as the patient continues to receive her treatment irrespective of her physical location. Once she is back in her country of residence, she can continue to receive follow-ups remotely with her care providers who actually treated her and are consequently in the best position to monitor her progress. Her primary care physician or any other care provider based locally and who have physical access to the patient too can use the technology to hold consultations on an ad hoc basis with her foreign care providers.

Telemedicine

Telemedicine business process, per se, is as follows. The patient and her physician, being physically separated, need to be able to successfully carry out a clinical encounter (consultation) through any method of linking that involves the use of telecommunications, electronics, and information technology.

The process begins when the patient and her physician are able to link up and establish a communication that allows a clinical encounter to take place successfully. Either party, usually the patient, may be accompanied by other participants like her primary care physician, community nurse, healthcare worker, family members, other specialists, etc.

The process ends when the clinical encounter is successfully concluded and the communication link that allowed the two parties to exchange information is closed.

High Level Requirements

1. **Role based access control**
All users, be they local healthcare providers, remote healthcare providers or patients or their friends and relations, need to be authenticated before allowed to use the system. The various parts of the system will be accessible according to their roles. Thus, other than the clinical care providers like doctors and nurses, and the patient, no one may access the electronic medical records or results, etc.
2. **Audit Trail**
Security and privacy being a prime concern, maintaining audit trail of all activities and records of all those who are responsible would go a long way in addressing them
3. **Referral Module**
A reasonably accurate referral module where all matters pertaining to referral may be managed is very important. Patients get successfully treated by being referred back and forth between various physicians. At the very least, once when they get referred for the treatment and again when they get sent back to their home country. If follow up is required, then there can be no limit on the number of referrals that might be required to complete a particular episode
4. **Appointment Scheduling**
Appointments need to be scheduled and kept by all the parties involved. As the participants of any encounter are located not only at great physical distances, it must be remembered that they are also located across different time zones. Coupled to all this is the inevitable pressures on available resources with the physicians involved having to devote ample time for any successful encounter. Unless all the participants are informed well in advance regarding non-attendance, some or all participants may be kept guessing as to what happened to the other party
5. **Clinical Documentation**
For any clinical process to be successful, maintaining and referring to clinical documentation is vital. As patients travel, it becomes a matter of patient-friendliness to allow these medical records be carried back and forth in an electronic form. The patient may be entrusted to physically carry them, or it may be transmitted over the

wired network. It is assumed that this will form a part of the electronic medical records

6. **Medical Administration Records**
All medication administered needs to be made available. It is assumed that this will form a part of the electronic medical records
7. **Results Review**
All reported results needs to be made available for review. It is assumed that this will form a part of the electronic medical records
8. **Discharge Summary**
The discharge summary, vital part of any clinical episode, records all significant clinical events occurring during the episode, admission and final diagnoses and follow-up instructions and dates, need to be made available. It is assumed that this will form a part of the electronic medical records
9. **Follow Up Visit Records**
All clinical documentation needs to be made available for reference and review as required. It is assumed that this will form a part of the electronic medical records
10. **Online Teleconsultation (includes video-conferencing)**
A reasonable method of linking that allows seamless access to the various participants in real-time and the associated notes and records is required

Importance of Electronic Medical Records

From the above discussion on the high level requirements, it becomes obvious that electronic medical records are an integral part of telemedicine, especially as applicable to medical tourism.

Without such a tool at their disposal, both the care provider and the patient would equally be at a distinct disadvantage. With the easy portability, high degree of accuracy and facilitating quick search for particular information, electronic medical records consistently scores over the paper-based ones.

Conclusion

Both telemedicine and medical tourism are here to stay. Both of them are bound to increase in acceptance and practicality to a point where it would be considered not a “nice to have”, i.e., want or premium requirement, but a “must have”, i.e., need or basic necessity.

There is great synergy between telemedicine and BPO in healthcare in general and medical tourism in particular. For any healthcare process, there has to be follow-up and it does not make much sense either to ask the patient to return nor to forget about her once the treatment has been discharged. Therefore, follow-up advice and re-evaluation is imperative as well as instructing the patient’s local care provider

regarding what all that needs to be done further and not. All of this is currently possible only via telemedicine.

It may justifiably be stated that without telemedicine, the medical part of medical tourism is incomplete, especially in modern times. For telemedicine allows for exchange of the patient’s medical record and add to it. Once the treatment cycle is over and the patient is fit for discharge, telemedicine becomes the ideal medium for follow-up remote monitoring and consultation. Since in medical tourism, the patient is always a tourist traveling great distances to avail care, she is expected to be at a physical distance that cannot be easily bridged unless an emergency situation arises and her local care provider is unable to provide adequate help on her own in many situations. Telemedicine accomplishes this and therefore it can rightly be said to be an integral part of medical tourism.

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