

RESTORING PROFESSIONAL PRIDE IN MEDICAL SELLING

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2 Restoring professional pride to medical selling

- Dr. R.B. Smarta

The Indian Pharma Industry has grown from a few crores at Independence to over ` 60000 crores today. This growth has fuelled the career and professional stature of Pharma professionals in various departments be it Manufacturing, QC, R&D, Exports, etc. But there is one person who, in this booming growth and dynamic environment, has experienced a decline in his professional stature – The Indian Pharma Medical Representative. With each passing year, his pride has ebbed and has reached low troughs. Today, the industry hardly attracts fresh science graduates and the attrition rate for Pharma Medical representatives is very high. This lead article addresses this serious issue and outlines strategies aimed at 'Restoring Professional Pride' to Medical Selling.

7 CRM in Pharma Marketing

- S. Krishnan

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11 Generics – Evolving Marketing Strategies

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India is fast emerging as a force to reckon with in the global generics and branded generics arena. What are the changes that drive this market and what are the emerging new marketing strategies that can accelerate ones generic business to capitalize on the demand in global and local marketes, is elucidated in the article

15 Sales Force Productivity in Animal Healthcare

- R.K. Arora

India boasts of having one of the world's largest cattle population, with 530 million Livestock, 10 million Pets (companion animal and 500 million poultry population. Yet, the Animal Healthcare Market size in India is a mere ₹ 2000 crores, which indicates a monthly healthcare expense of merely ₹ 2 per animal! Thus there is tremendous opportunity to improve the sales productivity in the Animal Healthcare segment. This article explores ways and means to achieve the same.



19 Personalised Medicines and Pharmacogenomics

- Mala Raj

After the Human Genome Project, scientific community and researchers have forayed deeper into the area of understanding the genetic basis of health and ill-health and substantiated that no two individuals can be identical in their response to illness and their treatment. This has given rise to the interesting concept of, 'Pharmacogenomics & Personalised Medicines'— the revolutionary concept that diagnosis and treatment can be tailored to ones' unique genetic code. This article explores various facets of this emerging area of research and analyses the opportunities and hurdles of the same.



FROM THE PUBLISHER'S DESK

Changing Landscape

Looking back at the domestic as well as international pharmaceutical business, you would observe that the business models, value chain, technology in drug discovery and development, as well as demographics and behavior of medical profession and patients are changing very rapidly and today, we have an absolutely **different landscape** available for pharmaceutical companies to operate.

Globalization to localization, brands to generics, one-on-one interactions to CRMs (customer relationship management), generalized medicines to customized medicines, block-buster model to innovative models and many more such aspects have drastically changed in the domestic markets and also in international markets. Hence, they are influencing this **changing landscape** of pharma industry and business.

On the contrary, the **promotional model** which is working since last 60 years to represent pharma industry is **yet not displaced**, although, changing slowly in its values. Interactions between medical profession and pharma companies are at centre of promotion. As per Professor Peter Drucker, every activity overtime, degenerates or reshapes;, so is the case with these activities! The profession of medical selling and the Medical Detailmen or Representative, overtime, is losing his pride and the repercussions are faced by the Industry in terms of difficulties in attracting and retaining them. Perhaps **enhancing pride in professional medical selling** would help companies to interact with Medical profession effectively in this changing landscape.

In this **Interlink Insight**, you will contemplate on ways of looking at this changing landscape through **developing strategies for generics and branded generics, increasing sales force productivity, customer relationship management, personalised medication** and also ponder on keeping the pivotal person involved in medical selling by **enhancing his pride**.

For readers, this issue of **Interlink Insight** gives a challenge to look at this **changing landscape** and formulate different strategic moves not only on those aspects discussed in this issue but also on those to which organizations are sensitive.

Good reading!

Dr. R. B. Smarta

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Restoring professional pride to medical selling

– Dr. R.B. Smarta



The Indian Pharma Industry has grown from a few crores at Independence to over ₹ 60000 crores today. This growth has fuelled the career and professional stature of Pharma professionals in various departments be it Manufacturing, QC, R&D, Exports, etc. But there is one person who, in this booming growth and dynamic environment, has experienced a decline in his professional stature – The Indian Pharma Medical Representative. With each passing year, his pride has ebbed and has reached low troughs. Today, the industry hardly attracts fresh science graduates and the attrition rate for Pharma Medical representatives is very high. This lead article addresses this serious issue and outlines strategies aimed at ‘Restoring Professional Pride’ to Medical Selling.

The business of pharmaceutical industry in India spans over 6 decades. Where the reforms have helped the Indian pharma industry, even before the reforms, there were national and multinational companies who increased pharma business with their own insights and vision. The networking India has seen in the 60's and 70's with brands and companies was as good as what is happening in these times. There were therapy franchisees, brand franchisees, and royalties to represent companies.

There are however, vast changes in the environment from the time of independence to the modern era of reform. Strategies and tactics have changed in every decade. 1971 onwards, we have also seen intervention of procedures through Drug Price Control Orders (DPCO). Every 8th year, the Drug Price Control Order has reshaped the Indian Pharma industry and made it much more agile.

One person who was witnessed these changes from 60's till date, silently yet actively, as he has been involved in the ever present Business Model of pharma industry—Medical Representative. He was constant through different designations. To state the obvious, his position, his stature, his background, his profile, his role has undergone tremendous change. Decade by decade, he has got transformed.

In the 60's he was an Ambassador for the company, as he was the only interface between the prescriber and the company. Yet over the decades while the role remains unchanged, the position of Ambassador has long since been vacated. The style, the contents, the knowledge, the skills, the authority, the understanding and complexity of competition—coupled with different sales and marketing strategies and tactics have transformed him from an Ambassador to a knowledge worker to a sales representative.

Reexamining the profession

The Medical Representation profession may not be the profession of choice for youngsters who are graduating from

the colleges today. Those who are engaged in this profession by design or by default have done well in all aspects of their lives.

Who is this medical representative and why does he exist?

He is a professional. Let us consider the word, "Professional". When one follows a profession, one is following a principal calling, vocation or employment, and a 'Professional' is one who gains his livelihood by utilizing the knowledge and skills he has acquired by intense, lengthy training and practice. He follows a single line of work and becomes adept at it. Though employed by a pharmaceutical company to promote products to physicians, the Medical Representative is as much of a professional as a lawyer, an engineer, a computer software programmer, an airline pilot or, indeed, a medical practitioner!

Professionals keep on learning throughout their lives!!

What does he do? Does he disseminate knowledge or influences his prescribers or gives options to improve the quality of patient treatment?

Professional or Service agent?

The real confusion is caused by the word 'Service'. Many interpret it to a relationship of servant and master. Servility is expected of such situation where the servant is usually perceived as a humble, obedient and uncomplaining for his employer's comfort.

Many Medical Representatives behave in a servile manner in the physicians' chambers. It must be emphasized, that Medical Representatives are not employed for their innate quality of service. They are never inducted in the field that way. This attitude of servility is perhaps acquired in the field.

The good news is that since the current behavior of the Medical Representative is a learned one, it can be unlearned. The first step in the road back to regaining dignity and self-esteem, is for a Medical Representative to become clearly aware of the real meaning of the word 'Service' in his role.

In the diagnostics industry, we have Sales Representatives and Service Representatives. Unlike Pharma, they service all equipments and also increase the use and usages of the equipments bought or rented.

Most of these equipments work well, and then comes the day when the customer encounters a problem in running the equipment. It provides the wisdom of entering into an Annual Maintenance Contract for consumables; as well as getting a 'service' done, to ensure that the engagement continues to work satisfactorily.

In the field of medicine the Medical Representative is the qualified 'service provider, that keeps on servicing physicians running on the development' of the therapy. As a Medical Representative, his knowledge is kept in the areas of pharmacology, pharmacokinetics, pharmacodynamics, pharmacoeconomics, dosage, drug interactions, compatibility with other drugs, side effects and all the important issues which are related to the drug interface with the bodies is supposed to know and disseminate, as he represents the company! Yet does he display this?

Without the Medical Representative's regular 'service', the entire medical profession would have lost knowledge of the pipeline of drugs. This gives a challenge to this profession. But many Medical Representatives are not aware of this role as a serviceman. They simply serve the doctor.

It is time that Medical Representatives open their eyes to current reality and resolve to set perspectives right. He can be fortified by his company but he has to be gain credibility for the purpose of business and also for instilling confidence in the minds of doctors!

MR – the knowledge worker

Unlike the door-to-door vendors of cosmetics and vacuum cleaners, Medical Representatives do not sell their products directly to buyers. Consumers pay for prescription drugs, but physicians control prescriptions.

Medical Representatives increase drug sales by influencing physicians, and they do so with finely titrated professional skills.

Medical Representatives are also trained to assess physicians' personalities, practice styles, preferences, and to relay this information back to the company. Personal information is also important like prescribing preferences. Medical Representatives are supposed to profile their physicians on family life, professional interests, and recreational pursuits etc. These are usually typed into a database for better servicing of Physicians.

These databases are dynamic; the best Medical Representatives tailor their messages constantly according to their client's reaction. Physicians, who refuse to see Medical Representatives, are approached and detailed by innovative means and ways by the Medical Representatives.

Gifts create both expectation and obligation. "The importance of developing loyalty through gifting cannot be overstated", writes Michael Oldani, and anthropologist and former Medical Representative. Pharmaceutical gifting, however, involves carefully calibrated generosity. Many prescribers receive pens, notepads and coffee mugs, all items kept close at hand, ensuring that a targeted drug's name stays uppermost in a physician's subconscious mind.

Medical Representatives also service "thought leaders" (physicians respected by their peers) for providing Continuing Medical Education. Such Physicians invited by a Medical Representative to speak to their peers may increase their knowledge and skills and express their gratitude. Anything that improves the relationship between the Medical Representatives and the prescribers usually leads to improved market share.

Pharmaceutical companies monitor the return on investment of detailing – and all promotional efforts – by prescription tracking information.

Medical Representatives use prescribing data to see how many of a physician's

patients receive specific drugs, how many prescriptions the physician writes for targeted and competing drugs, and how a physician's prescribing habits change over time. One training guide states that an "individual market share report for each physician...pinpoints a prescriber's current habits" and is "used to identify which products are currently in favor with the physician in order to develop a strategy to change those prescriptions".

So, the need of a knowledge worker who can carry out this multifaceted role of a medical representative is an intrinsic part of Pharmaceutical selling and business development.

The reality is that medical selling is one platform where one can grow to the position of vice president or SBU head and if one decides to find out the niche, one can especially make a mark in a culture where the customer is more knowledgeable, in all aspects.

Changing dynamics of market & stakeholders of pharma business

There has been a change visible in market dynamics of pharmaceutical industry. Many factors have contributed to increasing challenges for detail men, such as Virtually no mechanism of sales forecasting from field sales level – leading to huge deviations, lack of time-share planning towards developing customer base for future markets, less time of prescribers for sales calls, absence of analysis on the amount of time invested on profitable and not-so-profitable physicians & customers.

The bargaining power of physicians has increased due to increase in organizations and service offerings.

Due to advent of technology in various forms like internet, social networking sites and health portals, the patients are becoming more health conscious, well-educated and informed. Also the increase in high disposable incomes along with increase in lifestyle-related disease like obesity, cardio vascular diseases, diabetes etc. has been increased in healthcare spending and better expectations from

pharmaceutical industry. Patients today, demand for better, faster and economical medicines which will not only cure them but also keep them healthy in the long run.

Medical Representatives have to also deal with pharmacists – who are considered as one of the important stakeholders – along with physicians. But due to the intense competition among organizations within the industry and increased healthcare spending by population, there has been a change in investment and stocking patterns among the pharmacists. Their bargaining power naturally increases as a number of options are made available to them. Hence the role of a Medical Representative in keeping the pharmacist aware of the brand and distributing stocks on time has become important.

A cultural dimension

An ethical organizational culture is imperative for any industry. In an ethical and strong organizational culture, standards and guidelines are known and shared by all the employees from top level managers to medical representatives, and provides a common direction for day-to-day behavior.

If the organizational culture is weak, behavioral consistency among employees is difficult. Through better organizational culture, pharmaceutical companies can create the most desirable behaviour among their employees. Opinion research also supports this view.

Any unethical behaviour by the subordinates (medical representatives) should not be ignored or given tacit approval by their first-line or regional managers for short term sales goals.

As nuclear generator plants and aviation are high-risk industries, chemical and pharmaceutical industries are also high-risk industries. However public ignorance, weak governance, cut throat competition and last but not least the greed, has affected the general image of the industry.

According to the literature reviews, organizational characteristic factors such as organizational culture, leadership style and the degree of leaders' involvement in communication systems, and human resource management methods could shape the successful implementation of ethics in the pharmaceutical industry.

However, individual factors such as locus of control, achievement orientation, Machiavellianism, perception of individuals on marketing norms or regulations, job satisfaction etc. will be constructive variables in studying the ethical behavior. In addition to this, some external factors such as competition, influence of doctors, regulation system, political influence is also very important to consider.

Limitations

Noticing the demanding behaviours observed among physicians, patients and pharmacists towards the pharmaceutical industry, the response from the industry to the stakeholders hasn't been appealing. The pharmaceutical organizations in an advent to fulfill the ever growing demands of stakeholders, have been taking blind steps while considering the recruitment, roles and responsibilities of a Medical Representative. Many companies compromise while selecting Medical Representatives. This issue has got further complicated when there is an attrition of almost more than 20%! On the other side, to increase top line, the number of Medical Representatives is welling in every company! This results in compromise at every level.

Way forward

Considering the changes which are taking place in the demographics, market and environment, it is important to appreciate and recognize these

changes amongst all the stakeholders of pharma industry. Added to these changes, behaviours of physicians, patients, regulatory framework and also the organizations, it is essential to find out how to really maintain the changing balance of environment, organization and the business! This is possible through taking care of this one individual – the Medical Representative who is going to interact with the stakeholders of the industry.

In order to take care of him and address attrition, it is essential to instill professional pride among those who are already engaged in this profession and also create a talent pool by demonstrating the professional pride of this profession to all engaged and potential Medical Representatives. It is equally important to demonstrate this pride during interactions throughout the process of selling. Medical and health insights are equally crucial along with professionalism to make things happen in the industry.

In order to finally achieve the sales numbers, nobody ever likes to get pushed into a corner for performance. Hence, crucial aspects of social and selling skills are the determinants of professional pride as well as medical and health insights along with professionalism.

As it has been already said the behavior of this group of professionals can be learned and unlearned, regular process of learning and providing them necessary knowledge, attitude and skills will develop tomorrow's breed of new Medical Representatives. Hopefully they will over time use their professionalism to inculcate social and selling skills and feel proud when they accomplish goals – personal and organizational.

Reference available on request

Dr. R.B. Smarta, Founder Director of Interlink marketing Consultancy, has more than 40 years of experience in the industry including over 28 years in management and business consulting. Being a thought leader, he has helped number of organizations set up and grow through strategy consulting, sales and marketing effectiveness, organizational development interventions, successful mergers / acquisitions and innovative video based training packages for Indian pharmaceutical industry.

CRM in Pharma Marketing

– S. Krishnan



‘CRM is a business strategy directed to understand, anticipate and respond to the needs of an enterprise’s current and potential customers in order to grow the relationship value.’

CRM, as defined above by authoritative sources, and CRM that is witnessed in the Pharma industry today are strikingly different in their objectives, techniques, methodology and end-results. The fact that there is more to CRM than mere Doctor gratification through gifts and trips, is explored by the author.

Increasingly, Pharma Marketing is becoming heavily dependent on ‘Customer Relationship Management’. The experience in the recent times reveals that “CRM” as it is known in the Industry today has been reduced to planning personalized gifts and personalized services.

Pharma companies, are investing a lot of promotional spend, but whether they have understood the meaning of real CRM leaves much to be desired.

Do product managers spend time in researching their customer and make efforts in strategising towards building relationships or do they have an easy way out by giving gifts which are nothing but bribes in the disguise of brand reminders. Obviously this has led to a lot of introspection amongst the top management and look out for answers/solutions towards this all important activity of CRM. The article dwells into some key aspects of this activity and how managements can orient their thinking of how best to realise building customer relations towards ensuring a healthy bottom line.

CRM is the prescription for Pharmaceutical Companies

In the early 50’s and 60’s when a medical representative would go to a town, Doctors would visit them in the quest of improving their knowledge bank, so that their diagnostic skills are honed and they could also treat their patients with the best possible therapeutic management. This scenario changed as more companies begin to come into the industry as an avenue of business opportunity.

Unlike other businesses in which a service is being provided directly to customers, pharmaceutical firms influence doctors, who in turn write prescriptions to patients. That means that these companies do

not have direct contact with customers. Pharma is very unique and so is the way data is collected and analyzed compared to other marketing businesses.

Just having tech-enabling tools or giving gifts and that too of high value does not solve the problem.

CRM Defined and Understood

There is no universally accepted single definition of CRM. In fact, there are nearly as many definitions of Customer Relationship Management (CRM) as there are CRM software vendors and system integrators who specialize in the industry. Nonetheless, when you recognize that CRM is a strategy focused on evolving customer relationships, the following definition seems best suited.

‘CRM is a business strategy directed to understand, anticipate and respond to the needs of an enterprise’s current and potential customers in order to grow the relationship value.’

CRM is not merely Sales Force Automation (SFA) software, although SFA software is a component of CRM. CRM is also not an implementation or an event; it is a process sponsored from the highest levels of an organization, embedded into the corporate culture and pervasive throughout the organisation. CRM is not a destination, it is a journey of continuous learning, process improvement and customer relationship evolution.

As an example of a CRM business process that doesn’t require any technology, think of the old adage ‘service with a smile’ or ‘the customer is always right’. These are examples of CRM processes made popular long before the introduction of CRM software technology.

Pharmaceutical CRM

‘Product differentiation’ is the modification of a product to make it more attractive to the target market by differentiating it from competitors’ product. If the product is great, beats the competition by miles, and it attends to the consumers’ needs, the product attains the position of a cash cow. Sometimes, however good a product is, the competition is always so close by, that the differentiation may not look reasonably well for the consumers to use one product vs. the other. What are companies supposed to do in such instances? This is where PRM (Product relationship marketing) or CRM can help greatly. This creates more differentiation in product characteristics (a post product release attribute created and identified with the product), by an intelligent combination of PRM and the product marketing.

Let us take the example of anti Psychotics. When Janssen Cilag Pharma launched its range of Antipsychotics there was stiff competition from similar range of products from competition. The company adopted a program called Janssen Psychiatric Council (JPC). This involved forming a team of leading Psychiatrists across the country who were part of advising the marketing team in terms of communication strategies and also helping in conducting CMEs in smaller towns. Further the team was also advising Janssen in new product lines. The strategy helped in creating a separate niche for the range of antipsychotics for Janssen. This helped Janssen in not only distancing themselves from competition but also enabled them in having a good base of customers. Janssen went on to introduce more products including the latest Risperidol from this platform. This can further be extended to Patient care.

The key insight here is the product differentiation

A simple structure for executing the CRM:

- Acquire and Retain Doctors and patients (consumers) using patient intelligence (CRM – PRM – Analytics)
- Structure IT and Analytics in keeping with the patient confidentiality and privacy
- Continue this cycle with increasing revenue and profitability

Last, but not least is using Doctor intelligence for further product innovation. Whether anybody recognizes or not, the ongoing strong years of this customer care intelligence will have so much of knowledge about the product, its efficacy, side effects, co-effects, life-style, and pharmaco-demographic effects, that it can lead to product innovation.

Making CRM the Central Marketing Strategy

CRM is not a separate program but a central tenet of the entire marketing organization.

In many companies, the marketing function oversees the CRM program. The companies aim to fit all of its CRM activities into its brands’ relationship marketing strategies. For brand teams and the broader marketing organization, customer relationship management is not a discrete program that simply covers data management or add-ons such as direct mail campaigns.

Instead, comprehensive relationship management is the dominant paradigm for all marketing teams. By avoiding the disjointed, uncoordinated efforts, all elements of customer management occur under the broader umbrella of customer relationship management. Patients and physicians move through a process that begins with education and awareness for relevant brands and treatments. Individuals then move through customer acquisition

to adherence and, finally, advocacy. The steps are not new, but the marketing organization views customers holistically by understanding their position and progress on the CRM ladder.

CRM Specialists and Dedicated CRM Teams

Preferably companies should adopt a dedicated CRM team, which reports into a marketing operations function and fills gaps in brand managers' knowledge. Brand managers tend to have strong general capability in terms of advertising and branding in specific drug classes and disease states.

The CRM team addresses other areas, such as direct marketing or consumer-focused marketing. These areas often include direct mail, e-marketing, and any element of direct response marketing. Because they complement the brand managers' deep brand knowledge, the centralized CRM team members are able to serve as valuable direct marketing advisors. One challenge that accompanies this structure is the gray areas that fall between the brand team, the CRM team and external marketing partners. Clear communication and delineation of responsibilities helps the groups avoid conflict and inefficiency.

Reasons to embark on adopting CRM

- Need to increase the profit potential from a strong customer relationship
- Deliver a superior customer service
- Lower operational costs
- Improve customer retention rates
- Reduce time to market of new propositions
- Increase market share and revenue per customer
- Improve workforce productivity

Reference available on request

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- To establish a low cost communication link between the company and its regular customers
- Improvement in process flow

Benefits derived from CRM initiative

- Increased efficiency through automation
- Ability to provide faster response to customer inquires
- Having a deeper knowledge about the customers
- Getting more marketing or cross selling opportunities
- Better information for better management
- Reduced costs of sales and increased medical representative productivity
- Receiving customer feedback that leads to new and improved product/s or services
- Doing more one-to-one marketing

CRM program involves three basic business processes

- Customer Sales, Service & Support Solution
- Sales Solution
- Marketing Solution

CRM has become the key in pharma, as companies can uncover, analyze, and leverage Doctors' data to improve the effectiveness of their sales force and, ultimately, boost prescription volume. Analytical tools are needed because of the unique sales methods in the pharmaceutical space.

Finally, CRM takes a dimension of building lasting relationships through innovative product oriented strategies rather than adopting the easy way of giving different gifts which ultimately have a limited value or of no value in a CRM strategy.

Generics – Evolving Marketing Strategies

– K. Chandrasekharan



India is fast emerging as a force to reckon with in the global generics and branded generics arena. What are the changes that drive this market and what are the emerging new marketing strategies that can accelerate ones generic business to capitalize on the demand in global and local markets, is elucidated in the article

The Indian pharmaceutical industry has been undergoing various changes both in terms of approach and in terms of viability of operation. The scenario of the last decade, where almost all known domestic giants were looking at global markets as a major source of business growth, is no longer seen as very viable, given the changing policies that are being adopted by the various governments to protect their own domestic manufacturers.

The Indian pharmaceutical industry has developed over the last decade into a major producer of bulk drugs and is acknowledged as among the top in the world. India has been able to establish technological capability for manufacture and supply of generic drugs. This 'generics capability' of India has attracted worldwide attention. A noticeable willingness towards mergers and acquisitions with either a foreign company seeking a stake in an Indian counterpart or vice versa reflects the attractiveness Indian pharmaceutical industry offers.

During the current decade a new visible trend has been emerging in the business approach of both MNCs and Indian pharma majors. With the Indian pharma market remaining highly competitive and driven by price considerations, these companies have now started acknowledging the scenario and have shown a marked flexibility towards adapting to these market realities. India has the second largest population in the world and a growing middle class population. Since the changing economic scenario across the globe offers no insurance to these companies for their business growth sustenance, India has now become the target market given its sustainable growth momentum. The changing governmental health policies

which have now enabled better health spend and the favorable shift in the rural income growth is also playing a major role in the way Indian pharmaceutical market is being perceived.

Changing Indian Market Scenario

Indian pharma market is dominated by the generics product to a great extent. These generics can be classified as branded generics and generic generics. In a country where the patient health spend is at the lowest by the government and health insurance is at the infancy state, the patient has to bear the full expense of his treatment.

However the government has played its role in ensuring that the drug prices do not get out of reach of the common patients by bringing in various price control mechanisms. This has ensured that most of the lifesaving drugs remain in the affordable category to the patients.

The major shift that has been observed in the recent past is the affordability displayed by the rising middle class population. These groups of patients have ensured that the premium pricing tag is acceptable once the quality of service is proved. It is mainly due to this shift one has witnessed a very big growth in corporate hospitals. These hospitals have now occupied the space left vacant by the governmental institutions in treating both the wealthy patients and the upwardly mobile middle class population.

The other influencing factor for the change in the market is the increase in the acceptance of private medical insurance. This sector has been showing a steady growth owing to better advertisement and quality affiliations with medical institutions. While the

scope of coverage is currently limited to only in-patients, it is generally expected that over a period of time the outpatient prescriptions also will be covered. Once this happens the need for quality and affordable medicines will increase.

Impact of Changing International Market Scenario on Indian Generic Market

In the last decade there has been a dramatic shift witnessed in the global markets as the need for more affordable generic products grew sharply. This scenario made India as a generic destination and a blessing for people in the under developed countries looking for cheap medicines. The economic slowdown witnessed has been a blessing to the Indian Generics as it has been seen by the steady growth enjoyed by this sector. The generic drug companies in India have broad technological and diversified market capabilities. As more and more patents expire, the generic portion of the pharmaceutical market is expected to continue to have increased sales. Indian companies are attempting to tap the generic drug markets of the developed countries. While the spate of products that are likely to go off patent is a major influencing factor in keeping the interest alive in foreign markets the Indian generic manufacturers are becoming more alive to the changing domestic market scenario and are taking steps to respond to the same. The changing dynamics of the generics market are driving strategic evolution of leading players, with portfolio management, geographic expansion and alliance networks determining success and failure. With cost-containment a focus for all healthcare players, the growth of the generics market is outpacing the branded sector by a considerable margin. Effective portfolio

management is critical to future success in the generics market. Maintaining breadth of portfolio and low cost supply is critical for commodity generics players, forcing many players to evaluate higher value generic sectors, thus generating new competitors to brand pharma products. In all the mature markets like US, UK and Germany the generic market is mature and is experiencing high price competition. This fact is reflected by the volume of prescriptions which is estimated around 55% to 60% as compared to the volume of sales which is estimated around 15% to 20% of total sales. However in less mature markets like France, Spain, Italy and Portugal since the current generic market share is low the opportunity for better growth exists. In the US the use of paragraph IV patent challenges to gain lucrative market exclusivity period is very crucial to gain the 'first to market' new generic drug advantage at very profitable prices. However continuous launch of such molecules is also very crucial as newer players enter at the end of the exclusivity period.

Evolving Approaches of Domestic Majors

Since the emerging markets are considered very profitable many of the pharma majors have been adopting different approaches. Recently there has been a spate of mergers and deals that has created lot of interest in the market. These deals and mergers have served the independent needs of each of the partners be it gaining a solid foothold in to Indian pharma market or gaining an assured place in the CRAM space. The Abbott – Piramal deal which helped Abbott to gain the no.1 position with around 7% market share is a fine example of such a deal. Many other MNCs are viewing the emerging market with lots of interest

and many a promoter families are keen to divest their holdings. As there are a lot of meetings going on around in India between MNCs and Indian family stake holders there are likely hood of many more deals happening. Since contract manufacturing is a big market worldwide estimated to be around 18 to 20 Billion USD, many Indian companies view these deals as a good vehicle to gain share in that space. Biogenerics will be another area of interest as has been seen in the deal between Biocon which is focused in Biogenerics in particular and Mylan.

Another approach that has gained momentum recently is getting in the space of branded generics as also in to the rural generics market. This approach has been found to be popular both with the domestic majors as well as the

MNCs. This trend was initiated by Cipla and since has been perfected by many of the domestic majors. With many regional companies and smaller state level enterprises gaining acceptance in the practitioners chamber owing to the price advantage they offered, bigger organizations suffered growth momentum. This has now been addressed with creation of rural field force, with lower employment costs and wider range of generic products that addresses the need for economy. The lower cost of production, economizing distribution costs and reaching higher volumes of field productivity has ensured that this model will be sustained in the days to come and will be one of the business drivers for the industry.

Reference available on request

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Sales Force Productivity in Animal Healthcare

- R.K. Arora



India boasts of having one of the world's largest cattle population, with 530 million Livestock, 10 million Pets (companion animal and 500 million poultry population. Yet, the Animal Healthcare Market size in India is a mere Rs 2000 crores, which indicates a monthly healthcare expense of merely Rs 2 per animal! Thus there is tremendous opportunity to improve the sales productivity in the Animal Healthcare segment. This article explores ways and means to achieve the same.

Indian Animal Health industry started shaping up in the seventies, when major human health MNCs and national players set up Animal Health Divisions, which later moved out of the shadows of their parent companies to establish their independent identity and developed to become separate profit centres. It led to availability of a large number of me-too therapies, including anti-infectives, anti-parasitics, corticosteroids, tonics, hormones, anti-coccidials, probiotics, enzymes, growth promoters and nutritional feed supplements.

As a result, the animal health business in India registered a rise from less-than ₹ 100 million (1970) to over ₹ 10,000 million (by 2000) and close to 20,000 million (by 2010). The Animal Health Market turned from monopolistic to competitive. Large field force deployment (exceeding 100) by major stakeholders became the need of the hour; the former producing nearly 70% of the sales. Presently the market comprises of over 200 players, including MNCs, national and regional level companies, which employ a 30000 strong selling force. However, the per-man annual average of under ₹ 0.7 million scarcely projects viability of a growing industry. This makes productivity of sales-force a key area for attention. With a ₹ 50,000 yield per man per month, there is indeed great scope to improve the productivity of the field force in the Animal Healthcare sector.

Any strategy for enhancing sales force productivity must address the caliber of the sales staff, revamp of product-line and the marketing support to the sales teams.

Sales-Force Recruitment and Retention.

A technically sound and motivated sales force is an asset to any organization. Selection of candidates with the right socio-economic background and leaning can prove crucial for their

degree of application and longevity of association with the organization. Freshly qualified para-veterinarians with rural orientation may provide an ideal mix of targeted features for animal health market. Candidates with other professional qualifications, even from rural areas, may not stick to the job and would prefer to move to their respective comfort zones.

A balanced provision of reasonable salary and productivity-linked incentives would serve to give not only financial stability to the sales persons, but also provide the organization the much-needed safety-catch to control the overburden of fixed expenses, in particular, during lean seasons. Incentive schemes for the sales force certainly grant the impetus and energy for high performance.

Training and Development.

Training of sales force is a continued process, which tends to add on-job value to the trainees at any stage by addressing training needs and optimising their personal and selling skills.

Induction training of sales force is one of the most important areas, which cannot be neglected. It is a challenging task involving grooming of newly joined sales persons, most of which may be first-time employees. It can be dealt under three heads-Technical Training, Product Training and Selling Skills.

Technical training should comprise of animal body structure, physiology & diseases of product-related systems, farm management and nutrition as main components.

Product training should include pharmacology of drug ingredients related to the therapeutic groups dealt by the company, in addition to exhaustive discussion on individual products and their application.

Training on selling skills, which include communication abilities, work

ethos and attitudinal aspects have a direct bearing on customer-dealing abilities and performance of the field staff.

New product training is intended to provide exhaustive study of the product, its positioning, technical superiority of molecule/composition over existing products, cost-benefit ratio, sales strategy and competitive advantages. It is desirable to include clinical trial reports and performance data in the training manual to infuse confidence in the sales force, which can go a long way to translate into new product performance.

Refresher training sessions are planned for diagnostic studies and focused discussions on low-selling products and low-performing territories. The exercise should be held on regular basis, with a strict post-training vigil, to have the desired, perceptible variance in performance.

Rejuvenation of Product-Line.

New products, addressing market needs and adding new generation and innovative products (read new ammunition) to the product-line helps to galvanize and energize the sales force. Besides firing up the sales-persons, it attracts new customers and helps to project the company as a dynamic organization.

Animal health sector in India has not seen many new molecules in last four decades. Nor have many new molecules grossed high volumes. In any case, with a business volume far less than a front-ranking human pharma company, animal healthcare does not have much space for technical innovation or R & D work. It would therefore be both convenient and remunerative to launch the products low on regulatory requirements, viz. antiparasitics, tonics, nutritionals, production enhancers, bio-security products.

While some ageing brands may be rejuvenated by revamping the product composition (Product potentiation),

attributing a new or unique feature to an existing product (Product differentiation) may help to give fresh lease of life to a few dying generic-brands.

Novel deliveries. New generation products like Enzyme-protected nutritionals (fats, proteins) and sustained-release oral forms (vitamins, minerals, antiparasitics) for dairy animals, poultry and canines are the much sought-after technology products.

Many such products may receive high patronage of prescribers and users since they could act as therapeutic as well as prophylactic preparations. Such formulations would prove volume sellers because of convenience of administration and the length of activity offered and would then account for higher healthcare expenditure on prophylactic products.

Marketing Support.

In addition to providing product literatures and other sales promotion tools, there is a growing need to supplement the efforts of sales force with the newer marketing approaches, like increasing market visibility, reaching out to the end-customers and provide technical services at the farmers' door-step. Such mass promotion activities can prove highly remunerative and quicken the pace of establishing newly launched products, in addition to popularizing existing brands.

In this context, a number of mass contact activities may be cited –

Danglers and product displays. Colourful, pictorial hangers and danglers, besides product display campaigns at retail outlets may prove eye-catching and could provide ready opportunity to enlist support of a large number of end-users.

Mailers. Periodic colourful mailers sent to selected, prominent customers may cover new product information and serve as reminder of established brands. Direct communication to customers paves way for feed-back mechanism. It promotes personal bonding with key patrons and helps to keep the sales force on alert.

Farmers' meetings. Village-level farmers' meetings offer wonderful avenue to exhibit animation/video films presenting information on grass-root usage of farm-care products and their benefits to the users. The opportunity can also be used for presenting opinion of specialists and progressive farmers and allowing their interaction with the local farmers. Video recording of product-usage demonstrations and grass-root trials of key brands can also be presented at such rural meetings.

Clinical camps. Healthcare, deworming and infertility camps can be organized at strategic locations in coordination with the local animal husbandry authorities. Product displays and mass contact with local farmers help to create long-term equation of the area with the mass usage products.

Seminars. A mass contact forum to disseminate technical and new product information is an effective image building exercise for the organization.

Technical seminars are organized to discuss a pre-selected technical subject of common contemporary interest, where an authority or a panel of specialists on

the subject is invited to address a selected group of interested audience.

New product seminars are strategically planned as a new product launch activity, to gauge market acceptability and enlist support of key opinion-makers and customers of the area. New product seminars present a platform for thorough discussion and interaction on technical and marketing aspects of the product.

Participation in national and international expositions. Participation in expos is an expensive mass contact, educational and image building activity aimed at contacting a cross-section of national and international companies, paving way for forging mutually beneficial alliance.

In Tandem, Ever.

All developmental and marketing activities, in nut-shell, will act in tandem to provide fresh marketing ammunition, motivate and generate positive energy in the sales force to translate technical and marketing enthusiasm into enhanced sales productivity. Changing animal health scenario beckons us to select and make the right moves to catch-up with the needs of animal farming fraternity.

Reference available on request

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Personalised Medicines and Pharmacogenomics

– Mala Raj



After the Human Genome Project, scientific community and researchers have forayed deeper into the area of understanding the genetic basis of health and ill-health and substantiated that no two individuals can be identical in their response to illness and their treatment. This has given rise to the interesting concept of, ‘Pharmacogenomics & Personalised Medicines’— the revolutionary concept that diagnosis and treatment can be tailored to ones’ unique genetic code. This article explores various facets of this emerging area of research and analyses the opportunities and hurdles of the same.

For a moment, let's move on from 2012 to 2050 and have a look at the routine pre-employment medical check-up scenario

- Candidate: (Walks in, looks at the computer screen in the empty Medical Dept.)
Good morning Doctor.
- Computer: Good morning. Insert your 'Genome diskette or Memory Stick or USB drive' and Click on 'Submit'
- Candidate: Done
- Computer: Now relax and enjoy your coffee

After 5 minutes....

Computer: "Congratulations. You have been declared 'Fit for Employment'.... BUT...

1. You need to meet our Physician today to begin medication and corrective diet, as your genetic mapping indicates propensity to diabetes by age 40
2. In the near future, meet a trichologist or an andrologist for hair loss/alopecia due to male pattern baldness. Unless you act soon, when you have hair on your head, it is quite likely that you will lose 80% of this hair in another 10 years
3. Hepatic metabolism is expected to also slow down after age 50 due to mutation in CYP cytochrome; Keep your Drs informed of this, prior to receiving any medicine prescription
4. Risk of small cell lung carcinoma supercedes other cancer forms. Hence, cut down smoking immediately
5. Employer is not responsible for any health liabilities unless you agree to pay a medical risk insurance premium of Rs 20 lakhs per annum considering the above.

Welcome to ABC Healthcare & Pharma. Best wishes for a productive & long-lasting association with you."

Coming back to the Present

There is no doubt that the future is headed towards what is imagined above!

The path of Medical progress has always been in tune with the depth of our understanding of the human body in both – status of health and of disease. One of the major accomplishments of Medical science in the last decade was the completion of the 'Human Genome Project' in 2003, a 13 year project coordinated by the US Dept. of Energy and the National Institutes of Health aimed at gaining information regarding the structure, organization and characteristics of human DNA. The knowledge gained from the Human Genome Project has helped the Medical community immensely on various fronts. This has led to the evolution of newer branches of medical sciences such as Genomics, Proteomics, Pharmacogenomics, etc.

Revelations of our Genes

Genetic mapping has given a new outlook to the oft repeated phrase, "No two individuals' are exactly alike." Satisfactory explanations are seldom found for the wide variation in diseases afflicting persons consuming similar diet, having similar lifestyle and living under identical environmental situations. Likewise, while treating patients too, Doctors experience a very wide variation in response to a particular medication by individual patients. Medicine for most, yet poison for some, has been a common experience as even the safest drug can trigger a serious side effect in susceptible individuals. The underlying explanation for these unresolved issues is getting clearer after the Human Genome Project and the Knowledge about the effects of DNA variations among individuals has lead Scientists and Researchers to find revolutionary new ways to diagnose, treat, and also prevent the thousands of disorders that affect mankind. This has lead to birth of **Pharmacogenomics or personalised medicine.**

Pharmacogenetics / Pharmacogenomics / Personalised Medicines

Pharmacogenetics is a new scientific discipline arising from the confluence of genetics, biochemistry and pharmacology which focuses on drug response as a function of genetic differences among individuals. Amalgamating Pharmacogenetics with Genomics has given rise to Pharmacogenomics which further expands the scope of this science to understanding disease risk, predictive medicine and truly 'Personalised Therapy'.

'Personalised Medicine' has been defined in simple terms as 'the delivery of the right drug to the right patient at the right dose and at the right time.' Though of course, the United States Congress defines personalized medicine as "the application of genomic and molecular

data to better target the delivery of health care, facilitate the discovery and clinical testing of new products, and help determine a person's predisposition to a particular disease or condition," and the US National Cancer Institute's defines personalised medicine as 'A form of medicine that uses information about a person's genes, proteins, and environment to prevent, diagnose, and treat disease.'

Personalised Medicine Vs Traditional Medicine

The basic difference lies in the therapy approach. While in traditional medicine the focus is on a 'Single drug for a broad patient population', that in personalized medicine is 'differential therapy for small sub-populations for best clinical response.' A brief comparison is given in Table 2 below:

Criteria	Traditional Medicine	Personalised Medicine
Diagnosis	Disease diagnosis by Symptoms Eg. Hypertension due to varied causes	Disease diagnosis and prognosis by underlying mechanisms Eg. Breast Cancer due to HER2 Gene & Oncotype Diagnosis
Treatment	General Uniform Disease Treatment Guidelines Eg. Non-Hodgkin's Lymphoma – Many cancers of Immune system	Customised Treatment Guidelines based on Disease Heterogeneity Eg. Subclass of B-cell and T-cell – Use of Rituximab if CD-20 positive
Dosing	One size fits all dosing due to Patient Uniformity Eg. Oral Warfarin Anticoagulation Standard dose 5 mg / day	Genetic-guided dosing due to Patient Variability Eg. Genotypes defined by 2C9 and VKORC1 – 0.5 to 6 mg / day

Applications of Personalised Medicines

1. Selection of the Right Medicine
2. Selection of the Right Dosage
3. Diagnostic Screening Test
4. Risk Profiling
5. Screening to Prevent Adverse Drug Reactions
6. Oncological vaccination
7. Gene Therapy

1. Selection of the Right Medicine

In certain conditions, such as in cancer patients, it is becoming increasingly important to have the patient undergo Genetic Testing before choosing the right

medication. Many of the oncological medicines are targeted and will not work if the target is not in place. As is well known, cancer drugs are quite expensive, have to be given for around 6 months of chemotherapy & have serious side effects. It can so happen that after having spent around ₹ 2-3 lakhs, the Doctor and the patient may find that the medicine did not work on the intended target! Such expensive and trauma can be avoided with appropriate testing, which costs just around ₹ 10,000.

While the US FDA website list over 100 drugs with biomarkers in drug labels, there are about 28 genomic biomarkers

that are reported as valid biomarkers. Of these, testing of four biomarkers has been made mandatory by the US FDA before prescribing an associated drug. European Medicines Agency (EMA) has indicated that about 11 drugs require biomarker testing before prescribing. For example, Cetuximab, a very expensive drug, works only in 60 percent of colon cancer patients who have the wild type K-RAS gene and Gefitinib works if a patient has a mutation in the Epidermal Growth Factor Receptor (EGFR) gene. Additionally, Pharma companies are working on human variation maps (SNPs) generated in the HGP so as to find the DNA sequences underlying such common diseases as cardiovascular disease, diabetes, arthritis, and cancers. These genes and SNPs can provide focused targets for the development of effective new therapies.

2. Selection of the Right Dosage

The example of Warfarin dosing based on the polymorphisms to the CYP2C9 enzyme, which is the primary route of metabolism for warfarin is well known. Warfarin is an anti-coagulant that is commonly used to prevent blood clots and embolism. However, warfarin dosing is complicated by the fact that it interacts with many commonly used medications and certain genetic variations, SNPs, also affect warfarin sensitivity and metabolism. Genetic testing can tell us whether a patient is likely to be an ultra-rapid metabolizer of warfarin (and need larger doses) or a poor metabolizer (and need lower doses). Studies have shown that about 7% of the Caucasian population are poor metabolizers and at increased risk of bleeding from over coagulation and 1% are ultra-rapid metabolizers. Identifying the patient type will help in administering the right dose and also minimize risk of adverse reactions due to drug overdosing.

3. Diagnostic Screening Test

The case of the HairDX Genetic Test to predict the risk for hair loss or thinning is a well known example of Diagnostic Screening Test.

The HairDX Genetic Test for male pattern hair loss, done by a simple saliva swab test from the mouth, reports the presence or absence of a specific variation in the androgen receptor gene. A positive test result means that a man has the high risk genetic variation and such men have a 60% chance of going bald by the age of 40 while men who test negative have an 85% chance of not going bald by the age of 40. By the time hair loss or thinning is noticeable, almost 50% of the hair could be gone. The HairDX Genetic test, which is US FDA approved plays an important role in preserving existing hair, which is possible with suitable interventions rather than trying to re-grow lost hair, a rather challenging task.

4. Risk Profiling

In continuation with the above application, world-over a lot of research is being undertaken to identify specific SNPs that can predict the risk of various diseases. A number of genes have been pinpointed and associated with breast cancer, muscle disease, deafness, and blindness. By sequencing a patient's genome, it becomes possible to measure the risk that a person develops a disease in the future. For example, in cardiology, by measuring the concentration of C-Reactive protein in the blood, it becomes possible to predict the risk of a likely stroke or cardiac failure in the future.⁵ Screening to Prevent Adverse Drug

5. Screening to Prevent Adverse Drug Reaction

Every year millions of patients lose their life due to fatal adverse drug reactions. Infact in the United States of America, it is estimated that of the 3.1 billion prescriptions that are issued every year, approximately 2.1 million result in an adverse reaction, of whom atleast 1 million end up in hospitals and around 1 lakh patients eventually die due to adverse drug reactions (the 5th leading cause of death in the USA). By being able to recognize patients at risk of drug toxicity through patient genotyping prior to therapy, it is possible to save lives,

save the physical and mental agony of a treatment gone wrong and also save a lot of expenses entailed in ICU admission, etc.

6. Oncological Vaccination

Oncological vaccination is another form of personalized medicine whereby the patient's immune system is "trained" to destroy tumor cells. This result is obtained by re-injecting a sample of a patient's own cells after an external treatment. The treated cells are designed to stimulate the patient's immune system specifically against tumor cells.

7. Gene Therapy

Gene therapy aims at changing the genome of a patient, in order to remove the mutation at the origin of a disease. Gene therapy received a significant push after the human genome project. Scientists have recognised exact alterations in the DNA sequences that play causative roles in an array of common diseases that include type 1 and type 2 diabetes, bipolar disorder, schizophrenia, inflammatory bowel disease, glaucoma, and rheumatoid arthritis. Clinical trials and research have also expanded to incorporate cardiovascular, neurological, and pulmonary disorders, cancer, infectious diseases such as AIDS, and monogenic disorders like haemophilia and cystic fibrosis. More than 1,000 gene therapy clinical trials have been completed, or are ongoing or been approved worldwide. Gene therapy is considered as treatment for common diseases, as well as cystic fibrosis, Severe Combined Immunodeficiency (SCID), haemophilia, muscular dystrophies, and so on.

Among the first few successful examples, we have Glybera (alipogene tiparvovec) from Amsterdam Molecular Therapeutics. Glybera has 'orphan drug' status in the EU and US. Glybera has been developed for the treatment of lipoprotein lipase deficiency (LPLD), a very rare inherited condition that is associated with increased levels of fat in the blood. LPLD is caused by alterations in the gene that codes for a protein called lipoprotein lipase (LPL). Glybera introduces a normal, healthy

LPL gene into the body so that it can make functional LPL protein.

Market opportunities for Personalised Medicine

Personalised medicine aims at improving efficiency of administered medications, decreasing incidence of side effects and also savings in terms of not only money but also time as there is no more waste of resources and time on trying out treatment options that do not work. As the total cost of sequencing the entire genome of a person goes down every year, it will soon be possible for everyone to obtain his own genome sequence, and therefore his risk profile for a number of diseases.

The market for personalized medicine in the United States is already \$232 billion, and it is projected to grow 11 percent annually, according to a report published by PricewaterhouseCoopers (in 2009). This market is expected to double in size by 2012 to over \$ 450 billion.

The core diagnostic and therapeutic segment of the market—comprised primarily of pharmaceutical, medical device and diagnostics companies—is estimated at \$24 billion, and is expected to grow by 10% annually, reaching \$42 billion by 2015. The personalized medical care portion of the market—including telemedicine, health information technology, and disease management services offered by traditional health and technology companies—is estimated at \$4–12 billion and could grow tenfold to over \$100 billion by 2015. And the related nutrition and wellness market—including retail, complementary and alternative medicine offered by consumer products, food and beverage, leisure and retail companies—is estimated at \$196 billion and projected to grow by 7% annually to over \$290 billion by 2015.

The companies who made the initial inroads in this market are the ones with both drug development expertise and diagnostic development expertise. Pharma giants active in this field include **Roche, GlaxoSmithKline, Astra Zeneca, Bayer, Pfizer, Novartis, Bristol-Myers Squibb**. Other leading

firms in the Personalised Medicines arena include **Genentech, ImClone Systems, Genzyme, AppliedBiosystems, GenProbe, Agilent Technologies** and others.

The implementation of personalized medication requires a coming together of various factors that have an important bearing on it, viz.,

- Innovative Research
- Right technology and tools
- Support of a sound healthcare information technology
- Alliances with mutual beneficial partners such as Pharma–Biotech or Pharma–Diagnostic companies or Pharma–Genetic companies
- Industry – Academic Institutes’ co-operative tie-ups
- Education of Healthcare professionals
- Easy access of diagnostic facilities at centres close to patients
- Affordability of genetic testing
- Regulatory controls
- Ethical & Genetic Privacy issues
- Readiness of Legal bodies with suitable framework
- Regulatory controls
- Ethical & Genetic Privacy issues
- Readiness of Legal bodies with suitable framework

The Indian Scenario

India too has witnessed some investments in Pharmacogenomics and personalized medicines. Indian scientists in both the industry and in public research institutions are undertaking pharmacogenomic research. Some of the early players include Avesthagen, OncQuest Laboratories, Acton Biotech, TCG Life Sciences, Advinus Therapeutics and Jubilant Biosys. Some of the tests offered include pharmacogenomics tests, to identify effective treatment for chemotherapy patients who can benefit from anti-cancer drugs like Cetuximab, Gefitinib, 5 Fluorouracil, Capecitabine, Tamoxifen, Cisplatin and Oxaliplatin, etc. Pharmacogenetic Tests for identifying patients at risk for irinotecan toxicity,

Reference available on request

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warfarin dosing, clopidogrel dosing are also available. Hair DX to predict male pattern baldness is among the more sought after tests.

Further, the Department of Biotechnology, CSIR, CDRI, Tata memorial hospital are in various cancer research and other personalized medicine projects.

Some of the key impediments in the Indian scenario are the huge costs involved in research, which runs into millions of dollars. Further the tests are not yet within the range of the average middle-class patient group, as each of these tests costs around Rs 10,000 upwards on an average. Awareness among the medical practitioners is also only slowly growing. Significant investment much also be incurred in educating not only the Doctors but also the patients on the basis of molecular biology, the significance of these tests and their importance. Further, the diversity in the Indian population can also be a source as impediment as more and more sub-populations can be identified, thus making the research more complex. Lastly, we also need framework and guidelines in place on the ethical issues, economic issues and legal issues. Our regulatory framework is also not fully geared up to international standards.

In conclusion, we can say, the future will definitely see more involvement of all stakeholders in the promising arena of Personalised Medicines. There are skeptics who argue that SNPS are weak predictors of common complex diseases and there aren't enough compelling reasons for a patient to undergo genetic mapping. However, since time immemorial, mankind has always been apprehensive / curious / anxious to know what lies ahead. And if science can reveal glimpses of the same at affordable costs and offer interventions that will benefit mankind, then surely the same will be accepted well. As the famous song goes, 'Que Sera Sera, Whatever will be, will be....BUT NOW....The Future is Our's to See, Que Sera Sera.'



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