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MANIPAL ACUNOVA LTD



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Emerging Market of Eastern Europe, Latin America and India

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Please visit www.acunovalife.com to download our Service Brochures



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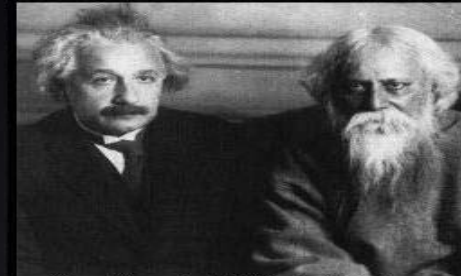
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New Paradigm of drug development

Manipal
ACUNOVA
DISCOVERY • DEVELOPMENT • THERAPEUTICS

“ The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. ”



Albert Einstein & Rabindra Nath Tagore



WORLD MARKET NEEDS

R&D

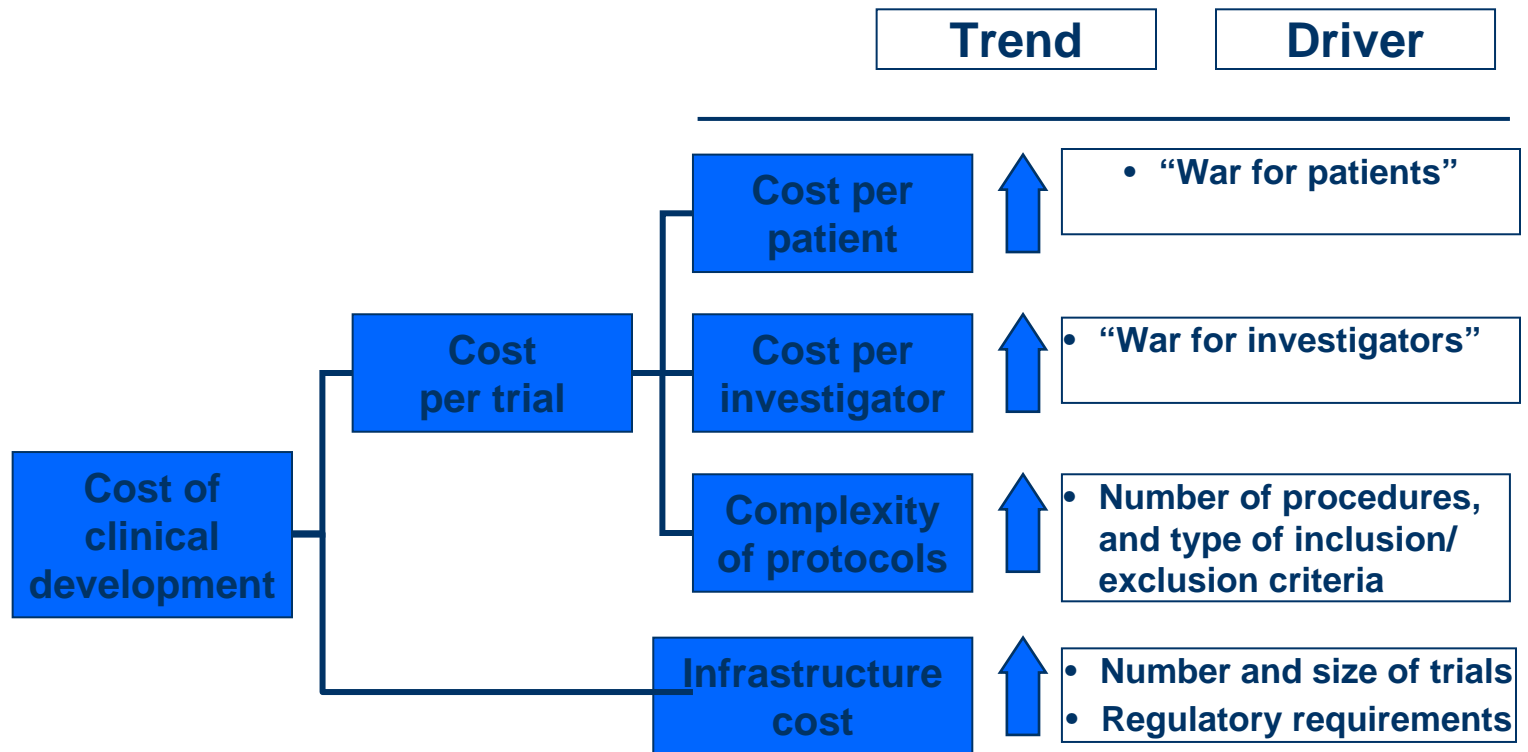
- More and more R&D for new drugs
- Contain R&D Costs
- Blockbuster Drugs - Only 3 of 10 marketed drugs - match/exceed R&D costs
- Increase Products in Pipeline
- Cut Down Discovery & Development Time

MANUFACTURE / MARKETING

- Cost Competitiveness
- Better Penetration



Pharma & Device Industry Challenge



Source McKinsey 2004

**Global trend is unavailability of Patients and PI's!
& High cost**





Drivers of country selection

- Medical
- Regulatory
- Commercial
- Cost
- Speed

Quality, quality, quality

Quality is the Key driver: if a country cannot deliver quality, all other factors are useless



Quality: India Advantage

- **Quality in regulatory guidelines**
 - GCP-ICH is a legal requirement and is not a guideline
 - Streamlined and transparent approval process
 - New guidance has further improved the approval process
 - Minimal time for import license
- **Quality of IRB**
 - constituted according to ICH-GCP
 - Several IRBs like Manipal are accredited by NIH
- **Patient quality**
 - Drug naive patients
 - Heterogeneous, Caucasian patient population
 - Greater compliance for follow-up



Quality: India Advantage

- **Quality of investigators and hospitals**
 - 700000 beds and 220 medical schools
 - English speaking doctors, trained with western curriculum
 - A high % are trained in Europe and the USA
- **Quality of the CROs**
 - Growing number of CROs with ISO certifications and international accreditations
 - Well trained personnel in Indian CROs
 - Acunova has 15 MDs and 19 PhDs
 - Well versed in clinical trials
 - Most of them worked with multinational pharma companies
 - Good data management, IT back bone
 - Have been audited by international regulatory bodies

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Quality: India Advantage

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- Quality of data
 1. High patient compliance
 2. Less missing data
 3. Acceptable to FDA and other regulatory bodies





India vs. US: Cost in Clinical Research



Key Features of a Clinical Trial	US	India
No. of patients across urban life style diseases	Low	V. High
No. of patients across tropical diseases	Low	V. High
Speed of recruiting patients for trial	Low-Med	V. High
Speed of conducting a trial	Medium	V. High
Follow-up rate of patients	Medium	V. High
Pool of qualified doctors and clinicians	V. High	Medium - High
Heterogeneous populations	High	High
Awareness of ICH GCP guidelines	V. High	Low - Medium
Availability of technology to streamline trials	V. High	Low - Medium
Regulatory & Ethical issues	Low	High

Source: E & Y India 2005

Cost Advantage

Activity	US (in USD)	India
Phase I Study	20 million	< 30-40%
Phase II Study	50 million	<30-40% %
Phase III Study	100 million	< 30- 40%

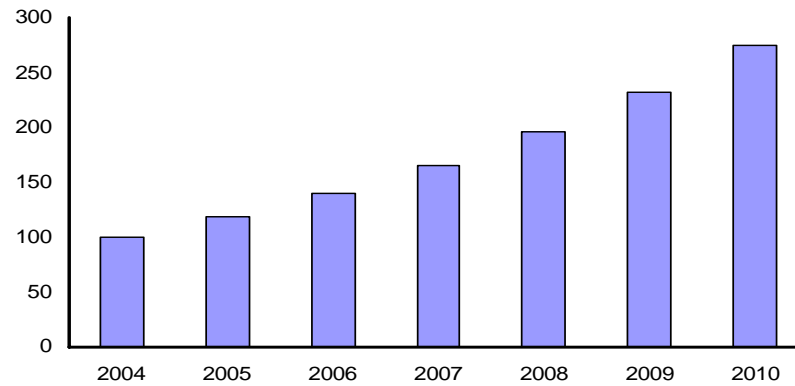
up to 40% saving





Industry Overview

- Clinical trials in India is growing at a 60% annual growth rate
- Crossed USD 100 million in 2004.
- By 2010, the industry will spend USD 300M+ on clinical trials in India.



Estimated Market Size of Clinical Trials in India (USD mn)
Source CenterWatch

- 20 CRO's including Quintiles, Manipal Acunova etc. offer Phase I to IV trials complying with ICH-GCP guidelines.
- With >100 hospitals serving as sites for clinical trials, India is emerging as one of the fastest recruiter of subjects across the world.

Why is India becoming a Hot Destination for Clinical Research?





- Large heterogeneous mix of subjects unlike other countries that have homogeneous population
- Wide spectrum of diseases available
- Quality work at competitive costs – saving up to 30-40% for clinical trials
- US FDA and global regulators have accepted India data
- Global trial in India reduces Indian Market registration time.
- *Rapid Patient enrolment reducing development time*



Regulatory Timelines

Regulatory Agency	Approval	Estimated Time if Done in Tandem	Estimated Length of Time if Done in Parallel
DCGI	Average regulatory approval for study conduct in India	8-12 Weeks	Submitted for parallel approval
IEC/IRB	IEC approval by Various Study Sites	4-6 weeks	Submitted for parallel approval
DCGI	Test License to Import Supplies	2 Weeks	Submitted for parallel approval
Total Time			10-14 weeks
DGFT	Permission to export blood samples	Additional 2-4 Weeks	Study Startup 12-18 weeks Mean experience: 110
GEAC (Referral Bodies)	Approvals for rDNA Products	Additional 12 to 14 Weeks	New DCGI Guideline Offers reduction of time

Regulatory Approvals timelines are comparable/competitive with most countries worldwide





Regulatory – New Directive

- Clinical trial applications would be classified into Category A and Category B
- Category A will include those clinical trials whose protocols are approved by some of the recognised and developed countries (USA, UK, Switzerland, Australia, Canada, Germany, South Africa, Japan, EMEA.)
- For Category A Applications, permission will be granted accepting the approval of protocols by the countries mentioned above and the time frame would be 4 – 6 weeks.
- Applications which are not covered under Category A will fall under category B.
- For Category B, permission will be granted and the approximate time for this is expected to be 10 – 12 weeks

timelines are comparable with most countries worldwide



New drivers to go to India

- Rapidly improving skill sets in drug development and research
 - Universities offering courses in drug development, e.g. Manipal University
- Increasingly well resourced companies for R&D services and partnerships
- Accelerated reverse brain drain
- Increasing capital available for CROs from VC/Indian companies
- Rapidly improving government policies
- CROs developing world class values and standardizations
- Connectivity with remote location: training meeting through audiovisual media
- Strong IT back bone

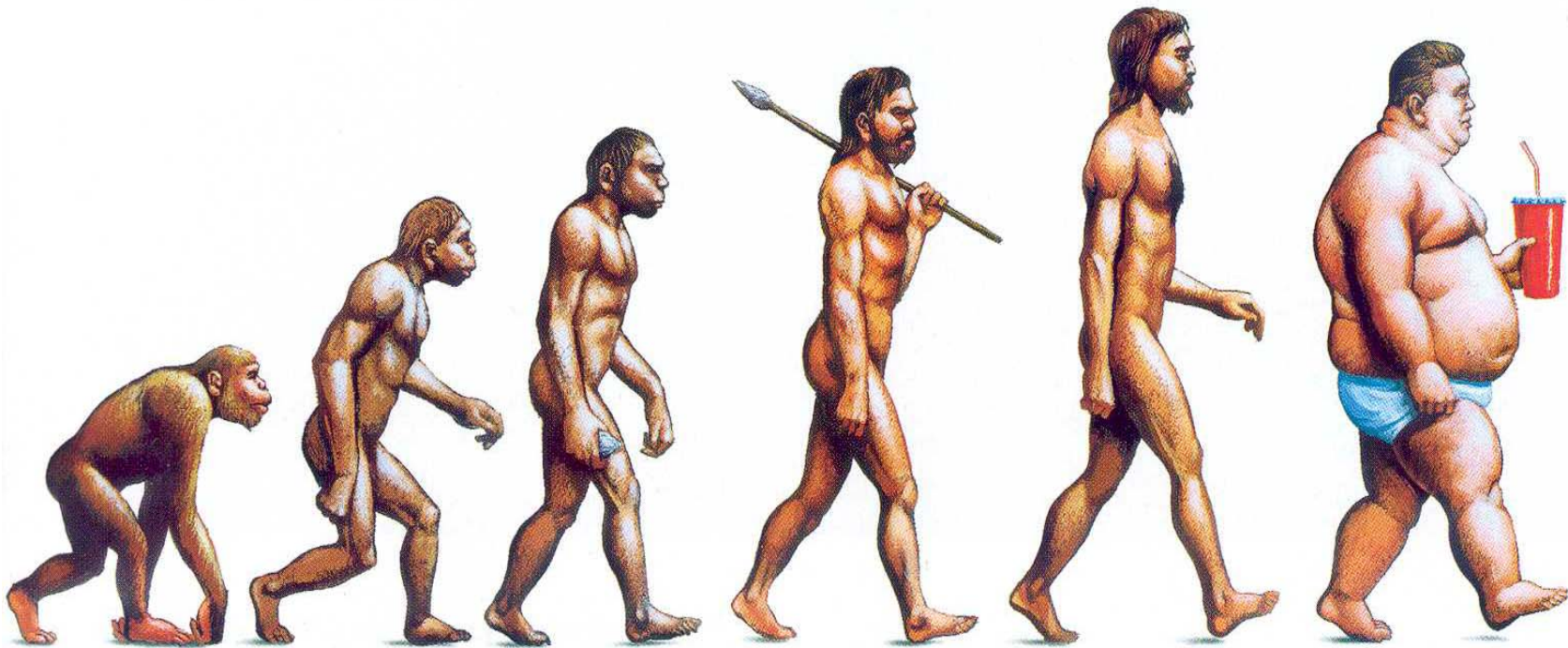
India as partner in clinical research

1. Huge patient pool
2. Diversity of diseases
3. Fast recruitment of patients
4. Motivated investigators
5. Strong Intellectual Capital
6. Increasing Acceptance of IPR
7. Political stability
8. Political will to invest and support drug development
9. Business friendliness: ease of implementation



India the final destination

- Very rapid growth in clinical development facilities and manpower
- 30-40% saving in cost and time without compromising quality





Hospitals In India

- Hospitals >500 beds with qualified physicians attract patient No's
- Corporate Hospitals
 - have sub specialties & excellent technical infrastructure.
 - High paying patients difficult to recruit/retain. PI's are not permanent
- Academic Medical Centers
 - PI's are permanent, keen to publish
 - Patient recruitment & retention good
 - Regulatory rigor and documentation weak
- Select AMC's with research focus are ideal sites
 - Some audited by Pharma MNC's
 - Some participated in Pivotal studies
 - Some audited by FDA
 - Most are single location site, few have technical infrastructure
- Manipal has
 - 11 Teaching hospitals with technical infrastructure and PI's
 - 3 clinical research hubs Pharma/Device industry experts
 - Developing sites for CR is a key goal of Manipal Acunova

***Focus on Auditable sites
whose data is acceptable to FDA***



Value Vs Volume

