Sun Pharma Advanced Research Company Ltd.
Transcript of Management Presentation
3.30 pm, June 13, 2011

Participants:

Mr. Dilip Shanghvi - Chairman & Managing Director

Dr. Rajamannar –Executive Director

Dr. Nitin Dharmadhikari – Solid oral innovative delivery systems

Dr. Subhas Bhowmick –Injectables and other liquid innovative delivery systems

Dr. Yashoraj Zala -- Solid oral innovative delivery systems

Mr. Sudhir Valia – Director

Mr. Kirti Ganorkar –Business Development

Dr. Ajay Khopade-- Injectables and other liquid innovative delivery systems

Dr. C. T. Rao-- New Chemical Entity Development

Dr Shravanti Bhowmick- Clinical Pharmacology

Dr. Atul Raut- Clinical Pharmacology

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Moderator: Ladies and gentlemen, good day and welcome to the SPARC Investor Update on Innovation. As a reminder, for the duration of this conference, all participants' lines will be in the listen-only mode and there will be an opportunity for you to ask questions at the end of today's presentation. Should you need assistance during the conference call, please signal an operator by pressing '*' and then '0' on your touchtone telephone. Please note that this conference is being recorded. At this time, I would like to hand the conference over to Mr. Uday Baldota. Thank you. And over to you, sir.

Uday Baldota: Thank you very much. Good afternoon and a warm welcome to the SPARC Update on Novel Drug Delivery Systems (NDDS) and New Chemical Entity (NCE) project. We hope you have received the detailed presentation that we have sent out half an hour back. This is also available on SPARC's web site. Just as a reminder, this call is being recorded and the replay will be available for the next few days. The call transcript will also be put on SPARC's web site soon. It would be appropriate to mention that the discussion today may include certain forward-looking statements and these must be viewed in conjunction with the risks that SPARC's business risks. During today's call, we will make an effort to answer all the questions that participants ask, but if time does not permit, I request all of you to please send in your questions to either me or Mira. I will now hand over to Mr. Dilip Shanghvi, who will introduce the team.

Dilip Shanghvi: Thank you, Uday, and welcome to the call. Today on the call with me are my colleagues. Let me take a minute to introduce each of them. Dr. Rajamannar is the Head of R&D and he looks after New Chemical Entity Development as well as Drug Delivery System Development. Dr. Nitin Dharmadhikari looks after solid oral innovative delivery systems. Dr. Yashoraj Zala works with Dr. Dharmadhikari. Dr. Subhas Bhowmick looks after innovative delivery systems for all other dosage forms other than solid orals. Dr. Ajay Khopade works with Dr. Bhowmick. Dr. C.T. Rao works with Dr. Rajamannar and looks after New Chemical Entity Development. Kirti Ganorkar heads Business Development, and of course all of you are familiar with Sudhirbhai. I also have my colleagues Dr. Shravanti Bhowmik and Dr. Atul Raut who look after Clinical Development of these products in different markets.

This call is structured in a way that Dr. Rajamannar will initially share with you the broad philosophy of the innovative research of SPARC Limited, thereafter, Dr. Bhowmick, Dr. Khopade, Dr. Dharmadhikari and Dr. Zala will brief participants on various innovative products that are in our current list of development, and afterwards we will respond to your questions related to those products.

As earlier, we are sharing with you a limited number of products, for which we have a clear path available and there is some clarity on their clinical development. These are not necessarily the only products on which we are working. We have projects across many other delivery systems and other new chemical entities that are in earlier stage and we think that they have not reached a level that which we need to share them with you. With this I hand over to Dr. Rajamannar.

Dr. Rajamannar: Thank you, Dilipbhai. Once again, good afternoon to you all. I am Dr. Rajamannar, delighted to participate with my colleagues, as Mr. Shanghvi mentioned, to brief the progress of research activities at Sun Pharma Advanced Research Company Limited. The team has made noteworthy advancement on the projects that are being conducted. In our last meeting we had presented the nascent results of our research findings comprising of in vitro and in vivo data. However, path of success is to overcome hurdles like making a stable NDDS or NCE that meets their desired

attributes, toxicity profiles with wider safety margin, clinical batches under GMP environment, safety in humans followed by efficacy in patient population as well as establishing appropriate therapeutic doses and so on.

On the NDDS front we had a very satisfying performance in meeting our goal; the indigenous first ever Indian pharma patented inhaler is in the hands of KOLs with an imminent launch planned in the Indian market, and with a follow-on study for regulated regions. We are optimistic that the asthmatic population will have an enhanced quality of life with our new device.

Research in developing technologies like Nanoparticles for oncology, GFS and SMM technologies for ophthalmology, and microspheres for ultra soft acting peptide and research in these areas culminated in very promising results which we will be discussing today.

Other milestones to share-- SPARC's ophthalmic product have entered the home market and have received a blissful response from the practitioners and the patients. Our platform technologies like GRS and Wrap Matrix already yielded products and are available in Indian market with growing acceptance from the patient population. Besides, there is already an approved product in US and Europe based on Wrap Matrix platform, reaffirming our belief that it is a globally competitive technology to bring in differentiated generics.
Further, we are also trying to unfold the hidden potential of these technologies to apply from milligram dose to gram dose level with diverse physicochemical parameters of existing molecules to develop and introduce a novel product with augmented therapeutic value.

Currently, our NCE research programs are in different stages. As all of us know, NCE requires a longer timeframe and having a clear understanding at each step is a challenging task. We have initiated first in human studies for our NCEs namely SUN-597, SUN-09 and in case of SUN-1334H an ophthalmic preparation is being studied, which would help the molecule for a rapid entry to the market. Approvals for Sun 44 have been obtained as well, to initiate Phase I studies in India.

It is elating to share with you that the NCEs had safe outcomes in our initial study so far and we are very positive of the future outcomes of the studies that are planned with these NCEs.

As Mr. Shanghvi mentioned, the information that is being shared today is of research areas where we have clarity and also we have projects which are ongoing, at an appropriate time those findings would be shared. My expert colleague Dr. Bhowmick, Dr. Ajay Khopade, Dr. Nitin and his colleague, Dr. Yashoraj Zala and Dr. Rao have details to share this evening. I pass on to Dr. Bhowmick to initiate his presentation.

Subhas Bhowmik: Good Afternoon. Thanks Dr. Rajamannar. Myself, Subhas Bhowmick heading NDDS technology based injectable and topical dosage form development. In NDDS platform technology, our focus is primarily on identifying the limitations of the existing drug product through interaction with KOL and finding the innovative solutions for the same. So the limitations are such that there is a value addition to the product. Such solutions increase patient compliance, making the drug easy to use or administer, and enhance safety or efficacy. So based on this easy use and simplicity concept, we developed a few nanometric technology which are at advanced stages of development. I will update status of the technology.

Next Slide – Dry Powder Inhaler (DPI) is one of the most complex and path-breaking technology and satisfying projects that we have worked on. There are three distinct advantages of our device--high efficiency; the innovation is not only in the various additional features but also in the unique flow path and the composition which makes the device highly efficient. The device also has a PK PD comparable to the GSK device at the selected dose.

Second is the uniform dose delivery. In spite of variable lung conditions that the patient may have, regardless of morning or evening, our device will deliver uniform dose to the lungs. Starhaler, our brand, gives the targeted delivery to the lungs, which is the site of action, and less to the throat where it causes local and systemic side effect when absorbed orally.

And third advantage is that it is easy to use. The device we have developed is easy to use by all patient groups -- children, adults and elderly. This unique and patented combination of a novel efficient device and novel formulation with an optimal resistance and performance delivers more than double of what Seretide or any marketed products delivers in terms of fine particle fraction. And these advantages are game changing and will make an impact on 7 billion world market for inhaler combination therapies through dry powder inhaler.

The advantage of half the dose of LABA has the potential of addressing the safety concern that FDA had, which has prompted them to demand additional long-term safety study of all the approved LABA containing products.

Based on in-vitro and other PK study, we decided to reduce the dose to half, and now we see that Starhaler delivers comparable reprisal dose to the lungs, the particle layers in 5 micron we are talking, and half the dose level for all strengths.

Important thing is that even though we have different combinations, Starhaler delivers consistent dose of Salmeterol from all three strengths. Unlike other marketed products, GSK product, where Salmeterol delivery is not consistent and Fluticasone are not dose propositional. So how do we get the same amount in the lungs as Seretide.

We actually deliver less, less to the oropharyngeal region where it is not required. 15 microgram of LaBA worked as 40 microgram of marketed products. Less than half of the amounts of Fluticasone which will help reduce the local side-effects, like oral candidiasis, hoarseness, and growth suppression in children. Data has shown us that our device and airways and formulation is designed in such a manner that we deliver substantially less amount to the throat and same amount to the lungs but with half of the starting dose.

Our clinical studies conducted have confirmed our hypothesis under studies which were conducted with half of the dose of active, that is 25 Mcg of Salmeterol and 250 Mcg of Fluticasone compared to the marketed strength of 50 and 500 Mcg respectively.
With our device, we have demonstrated comparable clinical efficacy with half the dose and demonstrated statistically and clinically significant improvement from a no treatment baseline in all efficacy parameters in both arms.

The data shown here is average morning PEFR and FEV. The devices are now with KOL for assessment and imminent launch is planned in India in the coming quarter. Work is underway for filing of IND in the US as well, FY12 and pathway for filing in US is the 505(b)(2) route.

Our Depot Injection technology has two distinct advantages over other products, namely a high level of patient compliance and efficacy. There is high drug loading in our technology helps in effectively reducing the dose injection volume which ultimately reduces the pain at the injection side. Our Depot Injection is designed to provide therapeutic effect from day one of the injection and maintain a therapeutic level till the next dose is given which is lacking in other marketed products.

Of the molecules we have developed is a depot injection based on the biodegradable depot technology, is a Somatostatin analogue Octreotide acetate used for the treatment of Acromegaly.

Following the successful completion of a year-long clinical trial in Acromegaly patients, we launched our Octreotide depot injection product in India and now, we plan to file an IND with the US, FY12.

And now my colleague Dr. Ajay will present an update on Nanotechnology and Ophthalmic products.

Dr. Ajay Khopade: Thank you Dr Bhowmick. Good afternoon to all of you. I am Ajay Khopade, I have been associated with Sun Pharma for the last 11 years and I am involved with NDDS research programs along with Dr. Bhowmick, my work involves value addition to the existing products through innovative technologies. Today, I will be updating on some of the platform technologies that have been discussed in the past.

Next Slide please. The first is our Nanotechnology platform. As we have discussed in the past, it is our unique self-dispersing nanoparticle technology. We have also discussed in the past that this technology works for very difficult to solubilize, water insoluble anti-cancer drugs.

I want to share with you that many companies are working on Nanoparticle technologies with anticancer drugs which are very difficult to solubilize. Most of them use a lot of surfactants for solubilization or new material, which are either very toxic in nature or has some inherent properties like hypersensitivity reaction or their toxicities are unknown. In these cases, patient has to be treated with premedications like steroids and antihistamines. Since anti-cancer drug itself is toxic, with this added toxicity of surfactant it limits the dose that is to be administered. The classic example is that of Taxol, the first Paclitaxel product which was approved.. It cannot be given at higher doses than 175mg/m2 and it also has various other administration problems like requirement of special infusion bags, in-line filters which adds to the user compliance and complexity.

Next Slide please. There is a Nanotechnology product in the market, which is ABRAXANE. Now, ABRAXANE is considered to be the current standard of care and about a $650 million product, it solves some of the problems of Taxol. For example, it can be given at higher doses, it does not require any pretreatment with steroids or it does not require special infusion sets, but it has its own limitations. It uses high amount of protein excipient which poses the risk of infection and also the risk of immunogenicity and this is because the protein is not a natural protein, but it is processed, or in other words, it is a cooked protein.

It has improved efficacy compared to Taxol but it has its side-effects called Neuropathy which is greater than Taxol. So one sees that there is a nanotechnology product that solves one problem, but has another one of its own.

Now, we have a nanoparticle technology, it is a platform technology which is scientifically unique in that, we are able to self assemble some difficult to solubilize water insoluble anti-cancer drug without using excipient that are toxic and also without using them in large quantities. We solve almost all the reported problems of first generation Taxol and most of the problems of the second generation ABRAXANE. So what we have is a product with no toxic solvents, no protein, no special infusion sets requirement, no premedication, no hypersensitivity, we are able to give high dose with minimal side-effect and we have improved efficacy as well. We believe that improved efficacy is due to the fact that we are able to deliver more amount of drug to the tumor. So we have a passively targeted Paclitaxel drug product.

We have done one clinical trial, a Phase I clinical study with 36 patients where we observed dose limiting toxicity of 325 mg/m2 and a therapeutic dose of 295 mg/m2. If you see this is actually a very high dose compared to the conventional drug. Dose limiting toxicity is 175 for Taxol, and for ABRAXANE is 260. So we are almost 50% higher than the conventional drug. In this study, we have seen no hypersensitivity reaction and also there was no premedication requirement. And even the common adverse events of Taxol such as neuropathy symptoms were quite significantly less than the marketed drugs that is both Taxol as well as ABRAXANE. While the other neutropenia symptoms was almost same as that of ABRAXANE.

Next Slide please. The objective response rate of PICN was about 85% in Phase I studies compared to that of ABRAXANE which was 22% and Taxol which was 11%. So we see that our PICN is highly efficacious with no disease progression observed in any patients till date. This finding is important because of the less neuropathy symptoms as well as higher response rate which we have observed. And if it is introduced in a bigger trial with more number of patients this will be a huge marketing benefit and that can demand a premium.

And I am happy to share with you the interim results of our larger trials. Next slide. The interim analysis of Phase II trial shows a similar trend of improved response rate compared to the marketed drug, especially ABRAXANE. The Phase II trial has almost completed 65% of the enrolment and we are likely to complete this study this year. And if you see the tumor reduction data, then the reduction of the tumor size is 51% with PICN compared to 39% of ABRAXANE which is again significantly high. So overall, we see that the data continues to be encouraging from Phase I to Phase II. Looking at the fact that ABRAXANE is current standard of care with Paclitaxel and the market size it captures, it also has additional indications that are under short approvals. So we see that if this trend continues, there is a huge opportunity for PICN to command a premium if the data of PICN continues to be reproduced in larger clinical studies. We are excited about these results and looking forward to this study completion.

Dilip Shanghvi: Dr. Ajay, you did not share the overall objective response rate in the interim result, in the Phase II. You only talked of the tumor reduction.

Dr. Ajay Khopade: Going back to Slide No. 17. We have very encouraging Phase II clinical data of objective response rate, which shows that PICN at both doses 295 mg/m2 and 260 mg/m2 is

significantly higher than that of ABRAXANE, which is about 35% and our PICN at 295 is about 60%. So we see that there is a trend of superior efficacy compared to ABRAXANE and this is again when it is expressed in terms of percentage reduction in tumor, as shown in Slide 18, you see that the reduction of the tumor size is about 39% for ABRAXANE compared to 51% or 52% for PICN at 295 mg/m2.

What we see is that our data right from Phase I to Phase II continues to be encouraging and it is consistently greater than ABRAXANE. And if the data continues to be so in the larger clinical trial, then we have a huge opportunity for PICN and it could be compared to ABRAXANE.

We have plans to file this product through 505(b)(2) pathway for US and our IND for this product is already approved with the US FDA and we have finalized the protocol, we are initiating Phase I study for PICN in US in combination with platinum compound,. We have initiated a Phase II study in India, the interim results of which we have discussed, this study has already completed 65% enrolment and all the Indian studies that we have done or proposed are all as per GCP, which will be acceptable to any of the regulatory agencies worldwide.

Next slide. The other project I am going to talk about is Docetaxel Nanodispersion. This technology is also the same as that of PICN technology, it shares a common platform where we have used excipients which is non-toxic and in a very low quantity.

Slide 20. In line with PICN, it also does not require special infusion sets or bags or in-line filters.

The product patent for the RLD, that is Taxotere, has recently expired and before the expiry the product was about $2.5 billion worldwide. And thus development of this nano product of Docetaxel is very important for us. The Docetaxel nanoparticle product is not yet approved in the market. There is only one product which is approved, that is Taxotere. The other products under development are at very preliminary stages or have some problems. This study has completed a preclinical trial.

Slide 21. In the preclinical studies, we see that our Docetaxel nanodispersion injection is about 7.5 times safer than the conventional Docetaxel that is Taxotere. It also has a higher tumor concentration in preclinical models compared to the conventional Docetaxel.
You see in the Slide #21 that overall 30% higher drug concentration is there and the most important initial period which is a kill period during eight hours, we have almost double the concentration than that of conventional Docetaxel, that is Taxotere. So we see that even the preclinical data of this platform is quite similar to the platform of PICN.

Slide 22. After completion of the required preclinical studies for first-in-man trial, we have completed a Phase I clinical study in India in solid tumor patients, in about 29 patients where we have observed a dose limiting toxicity at about 170 mg/m² and the therapeutic dose of 150 mg/m². If you see this data it is actually a very high dose, almost double compared to that of conventional drug. Also, in this study, we have seen no hypersensitivity reaction and there was no premedication requirement. So we see that our DICN is safer than the conventional drug.

Just to give a background about the conventional Docetaxel product. The dose and toxicity with Docetaxel are predictable and linear. So whenever there is an issue with the patients getting high dose, doctors can decide to give a low dose. The maximum dose approved for Taxotere is about 75 mg/m²,

for most of the indications it is approved for, and 100 mg/m² for one of the indications. It is to be gradually reduced to 60 mg/m² if the patient cannot tolerate the dose, and because of the surfactant, Taxotere is highly toxic above 100 mg/m² and the dose linearity also vanishes.

In our trial if you see that we are able to give almost 2.5 times the lowermost dose which is approved for the Taxotere, that is 60 mg and almost the two times that of the regular dose, that is 75 mg/m², and overall, our kinetic response was dose linear and therefore we presume that our drug ,we are able to give at a higher dose and it will have the linear pharmacokinetic profile, and therefore, the lowermost dose which we will be able to give, will hopefully be higher than the conventional Taxotere.

And in the past we have seen that our PICN product has shown a higher response rate and since this technology is very similar to PICN and we are also seeing the encouraging results in our Phase I trials, we are very hopeful that its overall efficacy and safety will be extended to DICN as well.

We have also discussed our Phase I data for Taxotere with international clinicians whose responses were quite encouraging. And we are hopeful to be able to reproduce this in our larger clinical trial and if that happens then we are talking about the market size Taxotere enjoyed before the patent expiry.

We have completed the Phase I study and we expect to have a pre-IND meeting this year and we have plans to start a Phase II clinical study in India in this quarter.

Slide #24 – After these anti-cancer drugs technologies, I am coming to the other technology platform for ophthalmic delivery of drugs. The ophthalmic drugs like prostaglandins are highly insoluble in water, they require a very high concentration of surfactants like BAK, which are very toxic. So the challenge is to solubilize the drug without the use of toxic surfactant and also to stabilize them at a room temperature. The currently marketed product Xalatan uses BAK which is quite toxic to the eye surface and is at stable at only 2 to 8 degrees centigrade.

We have discussed in the past that we have developed a technology called SMM Technology, “Swollen Micelle Microemulsion Technology”. which is a technology that uses a very safe surfactant and is stable at room temperature.

Slide 25 – So the product we have developed on the basis of this technology is Latanoprost ophthalmic solution. It is clear as well as BAK free solution, which is stable at room temperature compared to the marketed product which is to be stored at 2 to 8 degree as I told earlier.

The next slide, we have conducted a clinical trial in about 104 subjects where we have found the efficacy of this product that is the reduction of IOP which is equivalent to that of innovator product, Xalatan and we are not using benzalkonium chloride, so that it is expected that it will be non-toxic to the ocular tissue and to see that we have conducted safety trial in about 25 patients in 40 eyes

Slide 27, where the patients on BAK-containing eye drops were switched to our formulation. And you will see that there are improvements in the ocular surface disease index

Slide 28 – we have already filed an IND which is approved and the Phase III studies are ongoing in US. We have launched this product in India.

The next technology is GFR Technology, which we have discussed in our previous presentation.

On Slide 29 – This technology is a unique technology which uses a mixture of polymer and for this we have also conducted a clinical study in about 100 patients.

Slide 30 –Once a Day administration of our product is comparable to Twice a Day administration of a conventional product. We have launched this product earlier in India.

Slide 31 – There are many glaucoma patients that are not controlled by a single therapy. They are treated with a combination therapy. In such cases, dropping two types of eye drops with different dosing schedule poses a compliance problem to a patient. We have developed a combination product containing Latanoprost and Timolol. The rationale for the development of this topical ocular product is that it lowers the IOP greater than either component alone and it also offers the efficacy similar to the concomitant administration of these two products. And these two objectives are also the requirement for approval.

It is important to note that there are only two products that are approved in US; one is with Dorzolamide and Timolol, and other one is Combigan, which is Brimonidine plus Timolol. It is challenging to get the combination approved. This is mainly because combination products are not able to meet the desired objective. That is to show that IOP lowering efficacy is greater than the either components alone, or IOP efficacy which is similar to the concomitant administration of the component products.

In our product, we had utilized essential elements of both GFR and SMM technologies, which we discussed earlier to make this product. The product is BAK free, it is surfactant-free, and uses GFR technology. We are hopeful that our technology is able to meet these objectives because the technology is such that the drug is directly available on the corneal surface for complete absorption, also because the drug is not solubilized inside, any kind of surfactant. With this unique technology in our Proof of Concept trials our results have been encouraging.

After the completion of proof of concept for the combination product, we are conducting a Phase III trial in India. We are very excited about this product as this would be the first of its kind, a combination product without any kind of solubilizing surfactant. This Phase III clinical trial which is ongoing in India, we will be completing by next year.

Now, with this I will request my colleague Dr. Dharmadhikari to update on the other products.

Dr. Nitin Dharmadhikari: Thanks a lot, Dr. Ajay and good afternoon, ladies and gentlemen. I am Nitin Dharmadhikari, I lead the Solid Oral Development at SPARC. Along with my colleague Dr. Zala, I will take you through the path of progress for solid oral products.
First, we will discuss GRID technology. As you may be aware the GRID technology is for control release of the drugs with narrow absorption window. To formulate controlled release of these drugs, dosage form should be retained in the stomach as to achieve bioavailability as well as controlled release. Last year, we have shared technology details with you.

Now, about an update on the progress of Baclofen GRS, which is based on the GRID technology. Baclofen is a muscle relaxant and is given up to the dose of 80 mg, three to four times a day. It is used in the treatment of spasticity. SPARC has used GRID technology to formulate Baclofen GRS capsule in six strengths. We have conducted 21 clinical and pharmacokinetic studies to optimize the performance of this product. Safety of this product is also proved by performing animal studies as well as human gastroscopy studies.

SPARC has planned a randomized placebo-controlled efficacy study in 300 patients. We submitted a Special Protocol Assessment to the US FDA in the last quarter of 2009-10. The startup activities for this Phase III clinical trial was initiated in Q1 of 2010-2011. But we further decided to wait for an agreement on the SPA by the FDA and hence postponed the study commencement. We are hopeful of reaching SPA agreement soon and expect the first patient in the clinical trial by Q3 of this financial year.

Two more clinical studies including an open label safety study and a pharmacodynamic study have also been planned. Baclofen GRS is approved in India and is marketed under the brand name of Liofen XL. This information we have already shared with you.

If you go to Slide 38, further to this, SPARC also plans to evaluate Baclofen GRS for a new indication that is alcohol dependence in a randomized, double blind, placebo-controlled, multi-centric study. GRID technology, we are also using for few more products and we will update on the progress once we complete proof of concept studies and cross the primary milestone.

With this now I hand over to my colleague, Dr. Yashoraj Zala who will share with you the progress on other solid oral innovative products.

Dr. Yashoraj Zala: Thank you Dr. Dharmadhikari. Good afternoon to everyone once again. My name is Dr. Yashoraj Zala, and I have been working with Dt Dharmadhikari. Besides GRID technology, SPARC also has Wrap Matrix which is a controlled delivery technology based on the pre-defined, selective surface exposure. It offers flexibility and feasibility to design diverse release profiles.

Please refer to Slide 41 and 42 which capture the progress of Wrap Matrix based products. We plan to use the 505(b) (2) regulatory pathway for filing of these products. The active moieties in these products belong to various therapeutic categories and have different physicochemical properties.

One of the molecules, Levetiracetam, which is a high dose,high solubility antiepileptic, we have developed once a day control release tablet of 1500 mg and 1000 mg. Though Levetiracetam has an aqueous solubility of about 1 gm per mil ,we could yet formulate it into a 1500 mg controlled dosage form using Wrap Matrix.

The pharmacokinetic studies have been successfully completed and we plan to file 505(b)(2) in this financial year.

We are also working on a cardiovascular agent formulated as Once a Day product for which we expect to complete pharmacokinetic studies in this financial year. This active moiety also been combined with other beneficial agents. We believe these products will offer superior therapeutic benefit to patients with reduced side-effects.

Next in the pipeline is a skeletal muscle relaxant which has a very short half-life. With the help of Wrap Matrix, we target to provide zero controlled release and formulate as a Once a Day dosage form for patient convenience and reduce side-effects.

There are three other control release Once a Day products including an anti-cancer agent and two CNS agents for which we are exploring the Wrap Matrix platform.

We have reached different development milestone for each of these products. Based on the Wrap Matrix technology, Sun Pharma has filed three ANDA's. We are aware of Venlafaxine ER which is already approved in US and Europe and is being commercially manufactured.

Thus we can say the Wrap Matrix has undergone a stringent review process by agencies that have also been validated at the manufacturing scale two other ANDAs are currently under review.

In addition to products based on the GRID and Wrap Matrix, we are also developing two differentiated solid oral products. I request you to refer to Slide 43. These belong to the therapeutic category of cardio-protective agent, which we intend to file through the 505 (b) (2) routes. For one of the products a pre-IND meeting with US FDA is scheduled to discuss regulatory requirements. We have updated Phase I studies and are progressing towards the completion of Phase II studies.

With this, I request Dr. C.T. Rao to discuss the progress on the NCE front.

Dr. CT Rao: Thank you, Dr. Yashoraj. Good afternoon to all of you. I am Dr. CT Rao from the medical chemistry division at SPARC, Baroda and working on NCE projects. I have pleasure in updating you on the status of our ongoing NCE projects. We have steadily but surely made reasonable progress in all the projects discussed at the last meeting. Besides I shall also be briefly discussing about our new NCE in the area of cancer therapy.

Our current philosophy of NCE program is what we term as "Low risk approach." Let me explain to you what we mean by this. Rather than contemplating on creating blockbuster drugs on untested therapeutic targets which is indeed very risky, the idea is to provide new drugs which address shortcomings in terms of efficacy or side-effects or more, in the existing therapies to the benefit of the patient population. We believe that such an approach wherein the projects have well-established therapeutic targets and biology are more chemistry-oriented, such projects stand greater chance of delivering success in a relatively shorter timeframe. Further, with such an approach, the requirement of resources would also be optimized.

Coming to our NCE program, our first candidate is antihistamine SUN-1334H targeting various allergic disorders such as rhinitis, urticaria, and conjunctivitis. As we have discussed in our earlier meeting, SUN-1334H has been established in preclinical studies as a highly selective, safe, non-sedating, antihistamine with a quick onset of action and suitable for both oral and topical applications.

Slide 46 – As disclosed earlier, an ophthalmic preparation of this molecule is being studied for the treatment of allergic conjunctivitis. The reason being that topical administration will provide a quicker onset of action for alleviating the symptoms of conjunctivitis. Besides, the topical product would

potentially provide a more rapid entry to the market. In preclinical studies, we have seen that SUN-1334H 0.3% ophthalmic solution displayed very good inhibition of allergen as well as histamine-induced conjunctivitis upon once a day dose. This was similar to the leading drug Olopatadine.

Slide 47 – Interestingly, we have found that SUN-1334H also causes mass Cell stabilization, thereby inhibiting degranulation of mass cell and consequent release of inflammatory mediators implicated in allergic conjunctivitis. This anti-inflammatory property of 1334H, we believe, should provide an additional advantage for prophylactic use.

Phase I clinical studies in healthy human volunteers have been completed for SUN-1334H ophthalmic solution using 0.3% and 0.6% in March 2011. A single dosing of up to 0.72 mg of 0.6% as 4 divided doses of 0.1 mg/day did not cause any local or systemic side-effects and was found to be quite safe.

An IND has been submitted to the US FDA in March 2011 and recruitment of patients with allergic conjunctivitis for conducting Phase II trials is currently ongoing in the USA.

As regards oral 1334H, we have mostly completed the non-clinical chronic toxicity studies. Pilot cardiac safety studies currently ongoing and renal safety study in India is under planning.

Next candidate in NCE program is the Soft Topical Steroid, S-597, for the treatment of chronic inflammatory disorder such as rhinitis, asthma, conjunctivitis as well as dermal disorders such as psoriasis and contact dermatitis.

As discussed in the last meeting, this molecule has been designed in a manner that it produces desired efficacy at the site of action but unlike classical steroids does not produce undesirable steroidal system side-effects.

Just to summarize our preclinical results. SUN-597 has shown good potency and selectivity towards human glucocorticoid receptor in invitro binding studies. In animal models of asthma and allergy SUN-597 displays extremely good efficacy, duration of effect and the desired attributes for topical steroid such as low oral bioavailability, and a short systemic plasma half-life. This translates to low liability to systemic side-effect that are seen in other marketed corticosteroids.

In preclinical studies, we have demonstrated in animal models for asthma, SUN-597 shows very good efficacy and does not induce systemic side-effects. Both immunological as well as metabolic, even at a very high doses. SUN-597 has a very high safety margin or therapeutic index by topical route which is several folds greater than the currently marketed topical steroids such as Fluticasone and Ciclesonide. Besides, even by the oral route of administration, SUN-597 does not show systemic side-effects, by virtue of it being both poorly orally bioavailable and metabolically unstable. In animal models for allergic rhinitis, administration of SUN-597 as a nasal formulation shows very good potency and efficacy. That is in Slide #53.

We had initiated in India, Phase I trials in healthy human subjects for assessing the safety of SUN-597 nasal formulation, and we are delighted to share with you that in the Phase I (A) dose escalating studies there were no safety issues whatsoever, even up to a single dose of 3200 mcg. Phase I (B) repeat dose

studies with SUN-597 nasal formulation has now been initiated and these studies are likely to be completed by the end of June itself.

Meanwhile, a non-clinical toxicity study by the inhalation routes have been initiated which we plan to complete by Q3 of FY12 and IND filing by inhalation route is planned by Q4 of FY12.

Slide 56 – In order to expand the scope of SUN-597 for other topical therapeutic applications, we also looked at its efficacy as a dermal cream and an ophthalmic suspension. Topical corticosteroid was commonly prescribed for the treatment of dermal inflammatory conditions such as atopic dermatitis, psoriasis, and vitiligo. However, their prolonged use causes atrophy of the skin as the site of application which manifests a skin thinning and susceptibility to bruising. As assessed in preclinical studies in rats, SUN-597 has shown good topical anti-inflammatory activity in skin inflammatory models. Interestingly, SUN-597 has shown low potential for local side effects in terms of skin atrophy as well as systemic side effects due to absorption to the dermal route such as thymus involution and body weight gain when compared with marketed steroid Fluticasone that you can see in Slide 58.

We plan to complete optimization studies for the dermal formulation by Q2 of FY12 and file IND by Q3 of FY12 for the dermal route of application. We have also tested ophthalmic suspension of SUN-597 in eye inflammation models in animals. Conventional ophthalmic steroids although are in wide use for the treatment of postoperative inflammation and inflammatory conditions of eye such as allergic conjunctivitis can induce ocular side effects such as glaucoma and opportunistic infections of the eye. In preclinical studies, SUN-597 caused reduction of allergen-induced ocular inflammation in guinea pigs, which are superior to loteprednol etabonate which is Lotemax , and similar to prednisolone acetate. In terms of assessment of potential side effects, SUN-597 demonstrated a significantly lower potential for induction of glaucoma in the rat model when compared to the commonly used conventional steroids namely dexamethasone and prednisolone, clearly demonstrating the soft nature of the molecules, that we can see in Slide 61 The intraocular pressure is almost similar to placebo in case of our molecule, whereas if you see the dexamethasone as well as prednisolone data, it clearly shows potential for increasing the intraocular pressure. As regards to SUN-597 ophthalmic suspension, our plan is to complete optimization of the formulation by Q2 FY12 and file IND by Q4 FY12 for the ophthalmic route of application. Based on these studies on SUN-597 so far, we are very optimistic about its performance in clinical studies both in terms of safety and efficacy,y for the various indications by the topical route.

Slide 63-- next let me update you on the prodrug of the muscle relaxant Baclofen namely SUN-07, which has been designed to transport Baclofen into systemic circulation with a higher bioavailability. We had seen in animal studies that by intracolonic administration of SUN-09, there are significantly higher levels of Baclofen when compared to similar administration of Baclofen. Besides for SUN-09, the T-max is reduced, indicates that it is faster absorbing and hence faster onset of action.

Slide 64-- these advantages of pharmacokinetic parameters have manifested in totally superior dose dependent efficacy in animal models. Further SUN-09 did not show any additional safety concerns when compared with Baclofen in preclinical studies.

A Phase I trial was conducted in India, which was a single dose escalating study to assess the safety, tolerability, and pharmacokinetics of SUN-09 in healthy human subjects. No dose limiting toxicity was observed up to the highest dose studied which was equivalent to 30 mg equivalent to Baclofen. The

study revealed that the absorption of SUN-09 was rapid, with dose-related linearity of Baclofen release. Further, saturation of conversion of SUN-09 to Baclofen was not observed, both Baclofen IR tablets and SUN-44 IR tablets, however, displayed similar PK profiles. Based on these observations in order to achieve a once a day release of Baclofen, it is planned to conduct further trials using a slow release formulation of SUN-09 in place of an IR formulation which we have done so far.

The second prodrug SUN-44, which we had previously discussed in the last meeting, it is a pro-drug of gabapentin for the treatment of convulsions and neuropathic pain. This pro-drug has been designed to overcome the problem of segmental absorption of gabapentin. In animal models of epilepsy, SUN-44 demonstrated superior efficacy to gabapentin, reduced latency, and incidence of tonic extensor and increased protection from mortality.

Slide 68, in animal models, SUN-44 showed better reduction in neuropathic pain when compared to gabapentin or gabapentin enacarbil which is from XenoPort. Also the preclinical safety studies did not indicate additional liabilities in terms of safety. Currently, we have received approval for conducting Phase I study for SUN-44 in India and the same is planned to be undertaken in the current financial year.

Slide 70, we are extremely delighted to share with you some of the findings on a new molecule, SUN-K706 in the oncological category, designed for the treatment of chronic myelogenous leukemia or CML, which is a form of blood cancer ,especially targeting patients who are resistant to the current available therapies.

Let me give a brief background of what CML is. CML is a hematological malignancy that is blood cancer, caused by a specific chromosomal aberration or genetic mutation namely the t(9:22) mutation in leukemic cells. This genetic mutation results in what is known as the Philadelphia chromosome that encodes a chimeric protein of 210 KDa. This chimeric protein known as the Bcr-Abl kinase has a spontaneous tyrosine kinase activity in patients with CML and is responsible for the uncontrolled proliferation and survival of the myeloid cells or the WBCs. In leukemia by inhibiting this aberrant Bcr-Abl kinase by a drug molecule, this uncontrolled proliferation of the WBC can be stopped, inhibited, and cause remission from the disease.

There are several drugs which are inhibitors of this aberrant Bcr-Abl kinase which are currently available such as Imatinib or Gleevec, Nilotinib or Tasigna and Dasatinib or Sprycel. There are certain short comings with these drugs namely development of resistance predominantly due to mutations of the Abl domain of the Bcr-Abl kinase. Most importantly, none of these drugs are active on the most resistant mutation, namely the T315I mutation, for which currently there is no approved therapy and for patients having this mutation, the prognosis is extremely poor. Besides, these drugs are known to produce various side effects including cardiac side effects. Thus for CML, there is definitely an unmet need in terms of having safer drugs and drugs that work on patients who are resistance to the current therapies especially for the patients having the T315I mutation.

Slide 72: At SPARC, we have been putting our efforts in developing an NCE which would address the current unmet medical needs in CML as discussed. SUN-K706 has been identified as our NCE candidate which meets desired attributes. In in-vitro kinase assay, SUN-706 significantly inhibited not only the Abl kinase, but also the important mutants of Abl. Most importantly, it displayed extremely good inhibition of

the key resistant mutants namely the T315I mutant kinase. In fact SUN-706 displayed more potent inhibition of T315I than Ponatinib which is the T315I inhibitor currently under clinical development by Ariad Pharma. Further, we have seen that the SUN-K706 displayed highest potency for Abl expressing cells which are also for K562 cells and to the best of our knowledge it is by far, our NCE is the most potent Abl kinase inhibitors known to date in the cell proliferation assay.

If you see the data on Slide 73, our IC50 in this K562 cell line is 0.0075 nM which is extremely potent. In in-vivo mice tumor xenograft model, SUN-K706 showed better inhibition of the Abl kinase bearing tumor when compared to the drug approved in CML clearly demonstrating that it works very well in in-vivo systems also. We are very excited about the molecule and we are also very optimistic about future outcomes on development of K706. We plan to complete the safety and toxicity studies in the Q4 of FY12 and to file IND by Q1 of FY13.

Let me inform you that we are also simultaneously working on other interesting projects on different targets where too we have some exciting results, and at an appropriate time we will definitely be sharing the details with you. Thank you very much.

Uday Baldota: Thank you very much Dr. Rao. Before we start the interactive session, a few guidelines.Participants may identify the person to whom they wish to address the question. Participants who have more than two to three questions may join the queue again.

We will now take questions from all the participants.

Moderator: Thank you sir. Ladies and gentlemen, we will now begin the question and answer session. Any one who wishes to ask a question may press star and one on their touc tone phone. If you wish to remove yourself from the question queue, press star and two. Participants are requested to use only handsets while asking a question.

The first question is from the line of Manoj Garg from Edelweiss. Please go ahead.

Manoj Garg: Good evening to all of you and thanks for providing this much awaited update on SPARC pipeline. My first question is for Dr.Bhowmik. When you are talking about DPI, is it a prefilled device or you can load the doses as per the requirement? Is that device prefilled device-- this contain 25 mcg of salbutamol and 250 mcg of fluticasone?

Subhas Bhowmik: Yes, it is prefilled.

Manoj Garg: The question is that if the patient is on other doses or may be on other medicines apart from salmetrol and fluticasone, what is the alternative, does he need to refer to any other device or other inhaler or how the treatment can be given to that patient?

Dilip Shanghvi: Maybe Dr Atul Raut can respond.

Dr. Atul Raut: Our current device is with salmetrol and fluticasone only. So if the APIs are different with the different devices, so it will be at the discretion of the physician. If this salmetrol and fluticasone is better for that patient, he can very easily switch from that instrument to our device, and as proven in

the literature and our clinical studies, the salmetrol and Fluticasone, they are the most widely accepted LABAs as well as ICS. So I do not think there should be any problem with switching.

Kirti Ganorkar: There are number of clinical studies that demonstrated how one should switch from one steroid and LABA combination to another steroid and LABA combination. There are very well set protocols.

Manoj Garg: Question two, to Dr. Ajay, Particularly when you are talking about or comparing the safety profile of Paclitaxel injection, you are comparing the doses of 260 mg/m² and when we are talking about the efficacy in terms of the size of reduction of the tumor, we are comparing at a dose of 295 mg/m². So the question here is that if we need to give the higher doses to get a better reduction in the tumor, does it also lead to higher side effects?

Dilip Shanghvi: Maybe Dr. Shravanti can respond**.**

Dr. Shravanti Bhowmick: The maximum tolerated dose is 295 mg/m² and the dose has been safely given to patient with cancer. We have not seen a higher incidence of side effects till date at this dose in the ongoing study.

Manoj Garg: Fair enough. That's all from my side. I will jump into the queue and may return later on.

Moderator: Thank you. The next question is from the line of Kuntal Shah from Axis Capital Management. Please go ahead.

Kuntal Shah: My question is to Mr. Shanghvi-- what are the NDA filing timeline for the Phase III products for USA such as latanoprost drops, Baclofen GRS and anti-allergy eyedrops for conjunctivitis, and what is the source of funding for the same, and secondly can latanoprost be marketed by Merck in Germany, Eastern Europe, Northern Europe, Asia Pacific including Japan since Santen has not given any license to Merck for Tafluprost in these markets?

Dilip Shanghvi: I think my colleagues gave details about the timeline for filing the products and it is also part of the presentation.

Kuntal Shah:I just wanted to know what was the capital required for the filing and the source of funding the same?

Dilip Shanghvi: The capital required for filing will not be significant. Capital will be required for completing the clinical studies. For some of the studies we have an idea about the size of the study and the number of patients required. For some of the studies, we are still yet to finalize the number of patients and to that extent, we do not understand the cost involved with the study. We are currently giving an update on the current status of the product. I think at some point in time, we will also give update related to the financial requirement.

Kuntal Shah: And sir your views on the marketing by Merck?

Dilip Shanghvi: I think that is the decision which Merck needs to make. So they will need to decide whether they want to market the product, because it is difficult for me to respond on their behalf.

Kuntal Shah: I understand. Thank you.

Moderator: Thank you. The next question is from the line of Jeevan Patwa from India Strategy Opportunities Fund. Please go ahead.

Jeevan Patwa: Only two questions. One is I wanted to understand why the clinical trial data for Baclofen GRS is not getting reflected on the clinical trials government site. Is it because the sample size has to be increased or something and the second question is since you have already launched Baclofen GRS in India, how much is the current run rate in India. What is the current revenue from that Baclofen GRS in India?

Kirti Ganorkar: This is Kirti Ganorkar. I will answer the first question. Baclofen GRS why it is not listed on ClinicalTrials.gov. Already explained in our presentation, slide no 37--Currently we are in negotiation with the US FDA. We want to do an agreement on the SPA that is special protocol assessment. So there are two ways to do it like either we bid for protocol assessment and the agreement with FDA or we can start trial by taking some risks, so as we say we will not take the risk and we will have agreement with the FDA before initiating the trial. I think it will take may be a couple of months for us to have this trial up on ClinicalTrials.gov. We are closely in negotiation with FDA on special protocol assessment.

Jeevan Patwa: Sure. Second question what is the total revenue from Baclofen GRS in India?

Dilip Shanghvi: I actually do not have the exact information, but what we have seen is, that after introduction of Baclofen GRS in India, we used to be number one or number two for Baclofen. We now clearly are the undisputed number one and not only our GRS product has done well, but even our existing product, the immediate-release Baclofen has also done well.

Jeevan Patwa: And what would be the Indian market size then?

Dilip Shanghvi: I think it is around 40 crores.

Moderator: Thank you. The next question is from the line of Ketan Gandhi from Gandhi Securities. Please go ahead.

Ketan Gandhi: Sir what is the likely timeline of launch for PICN in India, emerging markets and developed markets?

Dilip Shanghvi: Maybe Kirti can give you some approximate idea.

Kirti Ganorkar: See PICN currently we are into Phase II, Phase III studies in India which is likely to get completed by next financial year. So the India launch would be approximately somewhere in the year 2013, and we are also in discussion with various regulatory agencies from the emerging markets, as to what additional clinical studies would be required. That part is still not clear and as shown in our presentation, we have already filed an IND in US and US will also need one more Phase III clinical study

comparing PICN with Abraxame and that would take somewhere from 18 to 24 months. So it is difficult for us to give timeline for the US IND filing.

Ketan Gandhi: Sir which other cancers will PICN target besides breast cancer, like pancreatic cancer and other cancers?

Kirti Ganorkar: First our focus is metastatic breast cancer, but at the same time we have shown in the presentation we are also doing the study in combination with carboplatin. So once that study is completed, we will also evaluate option of other indications.

Ketan Gandhi: Ok, sir. Thank you.

Moderator: Thank you. The next question is from the line of Sameer Baisiwala from Morgan Stanley. Please go ahead.

Sameer Baisiwala: Hi. Good evening. About Keppra XR, I think we are going to file 505(b)(2) this in the third quarter fiscal 12. Two questions on this. One, did we launch this product in the domestic market, in the India market, and second what will be the approval timelines?

Kirti Ganorkar: In India, we have not launched the products. Lower strength like 500 and 750, we have already launched in Indian market and I think you are asking the US timelines. So once we filed the 505(b)(2) NDA usually the review time is 10 months and if there are no queries, then we can expect the approval within 10 months after filing.

Sameer Baisiwala: And just to be sure-- you have launched it in India, or you have not launched in India?

Nitin Dharmadhikari: The lower strengths, we have launched in India, 500 and 750 mg we have launched in India, but we have not launched 1000 mg and 1500 mg in India.

Sameer Baisiwala: And when did you launch the lower strength and what has been the response?

Dilip Shanghvi: Sameer I think we do not have an immediate idea, but I think we are the leader in Levetiracetam in India both for immediate release and slow release product and we have a significant market share and we expect this to become actually a very large product going forward even in India.

Sameer Baisiwala: And just to be sure the 505(b)(2) that we planned to file this fiscal is for all the four strengths simultaneously?

Nitin Dharmadhikari: Only the higher strengths which we are talking about,1000 mg and 1500 mg, that will be filed as 505(b)(2).

Sameer Baisiwala: And just on Baclofen GRS, I remember the last time at the analyst meet you mentioned the prescription switch had been to GRS form about 25%, where does this number stand right now and what is the price differential between the immediate release and GRS?

Dilip Shanghvi: Your question is related to India?

Sameer Baisiwala: That is right, Baclofen GRS.

Dilip Shanghvi: I understand. I actually do not have immediate response. but I mean all the delivery system based products that we have launched, all of them are doing quite well in India, but Uday will give you exact numbers.

Sameer Baisiwala: Just one final question from my side. It looks like there are two ANDAs which are pending FDA approval based on Wrap technology, is it something like Effexor XR where this tab versus cap, so therefore what we launched was the first time ever formulation in the US, or is it something that already exists over there?

Dilip Shanghvi: Sameer, I think these products will be switchable products. So they will be AB-rated products.

Sameer Baisiwala: But would this be first-time formulations?

Dilip Shanghvi: No, they are generic products. Only thing, we have used the Wrap technology to make a difficult-to-formulate product.

Sameer Baisiwala: Ok, got you. Thank you.

Moderator: Thank you. The next question is from the line of Prashant Patel from E value quest. Please go ahead.

Prashant Patel: Good evening sir. My question pertains to two of our products namely timolol eye drops and dry powder inhaler. I would like to know besides India, which are the other target markets for these products and what could be the respective timeline?

Kirti Ganorkar: You are talking of Timolol OD. We have launched in India and we are also looking at other emerging markets including markets like China where there is a huge potential for this type of products. Also some Latin American markets like Brazil and Mexico and for DPI, currently we have begun pre launch activity in India. The product would be launched in India in the next few months and the future plan is to take to US and European markets as well as the emerging markets.

Moderator: Mr Patel, you have any more questions?

Prashant Patel: No, thank you.

Moderator: Thank you. The next question is from the line of Krishna Prasad from JM Financial. Please go ahead.

Krishna Prasad: Hi. Thanks for taking my question, Just a couple if I may. On your development of docetaxel and latanoprost where you already have existing generics in the market, what would be your strategy in terms of establishing your formulation?

Kirti Ganorkar: I think these are two very different programs, just like latanoprost and DICN. DICN we cannot compare with the generic DICN which is available on the market because we are likely to have substantial clinical benefits in DICN. So comparing DICN with Taxotere and Taxotere generic availability may not be appropriate.

If you can look at Paclitaxel and Abraxane, Paclitaxel is already a generic product and there are many generics available, totaling less than $100 million in value, but Abraxane is almost about $400 million. So depending on what clinical outcome you get, the markets can be very different.

Your next question was on Latanoprost. Yes for latanoprost there is already a generic in US, and we have a product which is specific BAK-free formulation and which is targeted to a specific patient population, those who were having dry eyes and problem with long-term use of BAK, so that would be a subset of the total market.

Krishna Prasad: Just another question on your DPI program, just wanted to understand what the update on the European side, I mean is there anything that you are doing in the European market?

Kirti Ganorkar: On DPI, we are planning to have a meeting with EMEA to understand what is the requirement for clinical development. So currently we are at that stage only.

Krishna Prasad: Ok. Thank you.

Moderator: Thank you. The next question is from the line of Manish Jain from Axis Holdings, please go ahead.

Manish Jain: Just two clarifications. One is on latanoprost, you targeting study completion in third quarter of 2012 or is it financial year 2012?

Kirti Ganorkar: Will be financial year 2012.

Manish Jain: And the second clarification was that in May last year on dry powder inhaler, we had completed the clinical development on around 113 patients. Since then and now, I see the same patient data. What is the key reason for delay in DPI launch in India?

Kirti Ganorkar: Manish, the way I look at it, there is no delay in the launch of the product, but we have gone in a very different way, like we did prelaunch activity before going with a full launch to doctors and the main reason for this, this is the first time device we are bringing to the market and we will like to understand all the attributes of the devices whether that would be acceptable to doctors, whether it would be acceptable to patients, how patients will handle this kind of a device, what would be their perception and there are so many other things for a device which we need to understand before we do a full launch, and that is why we took time.

Dilip Shanghvi: See Manish if your question is, that why there is a longer gestation period before the product is launched. I think these are complex products and you have to understand that, and we are also understanding and sometimes underestimating the complexity, possibly overestimating our ability

to solve problems, and at least one reassuring thing is that when I am talking to Cambridge Consultants who have worked with almost all inhalation product devices in the world and who have worked with all the companies, they tell us that we have brought this product to the market in 5 plus years, typically it takes more than 10 years for this kind of product to come to market. So in a way that is compared to other people, we have brought the product to market much faster; however, it takes a long delay. Just to give you an example, let us say that if we have a problem with one of the component in the mould, then it will take three months for the mould modification and to be available.

Manish Jain: Fair enough. Thanks, I'll join the queue.

Moderator: Thank you. The next question is from the line of Manoj Garg from Edelweiss, please go ahead.

Manoj Garg: Thanks for taking my question again. Now since we have a couple of products which we have already launched in India, just wanted to understand that have any of the products been identified by the JV to be launched in the emerging market from the existing launches?

Dilip Shanghvi: No, not yet. I think there is no product that we have launched yet which has been identified by the JV.

Manoj Garg: Ok. Second thing, now couple of products are moving from the early clinical stage of development to late stage of development, what could be the recurring R&D expenditure probably which we are looking for, going forward?

Dilip Shanghvi: Your question is about the R&D expenditures this year. We expect R&D expense this year of SPARC overall cost of operation to go up may be by around 30-35% because we have more products in clinical development.

Manoj Garg: Ok, and do we see the incremental cost will be self-funded or self-sustainable now?

Dilip Shanghvi: I think in the past also, I have indicated that at some point if it is necessary we might have to raise the additional money. So as on today, we feel that we will be funding the development internally and we have access to money. However if it becomes necessary, then rather than diluting and licensing out products at a earlier stage than what we think is in the best interest of the product, we will raise more money.

Manoj Garg: Thanks. That's all from my side.

Moderator: Thank you. The next question is from the line of Sameer Desai, an individual investor, please go ahead.

Sameer Desai: What is the targeted investment in R&D in clinical trials for the next three years, and how this amount is going to be funded, and you mentioned about equity, you mentioned about fund raising, will that be equity dilution or some rights issue or some placement or something of that kind?

Dilip Shanghvi: I think till we decide about the fund rising, to give you a response to how the fund raising will be done will not be proper. The idea would be to fund as much the R&D without compromising with timelines as much as possible from current resources. However if it becomes essential, then we will raise additional money. The question is to how much investment will be required for the next three years is also a function of how successful we will be with each of the phase I or phase II study that we are currently working on. If hypothetically each of this study produces positive result and goes on to the next level of study, then the requirement will be much higher than what we are spending today. If there is a negative outcome in any of the study then to that extent, the study cost will be reduced. So I am unable to give you a specific answer.

Sameer Desai: I see. One more question. What is the progress on Merck Sun JV since the announcement two months back and how does the Merck Sun JV help SPARC?

Dilip Shanghvi: Uday can give you an update.

Uday Baldota: I think if you go back to the announcement that we had made in April when we announced the JV, what we had indicated is that this JV will focus on bringing differentiated complex products to the emerging markets and some of these products will also be based on technology from SPARC. So once the JV gets formed, and once the JV decides as to which product it wishes to invest into as far as development is concerned, it will decide at that point in time which technologies it will access from SPARC. Whatever technology it accesses, SPARC will get a compensation for use of those technologies.

Sameer Desai: Ok. One question I would like to address to Mr. Shanghvi. What is the vision and target for SPARC in the next few years?

Dilip Shanghvi: we'd want SPARC to bring innovative and differentiated new products to the market and create value for all the stakeholders, and also to some extent, establish that it should be possible to work on and bring differentiated and very innovative product which produce meaningful patient benefit at relatively low cost.

Sameer Desai: Ok. Any other, like in terms of value, how valuable will the company be in the next...?

Dilip Shanghvi: I think it is difficult for me to tell you how valuable the company will be. However, we continue to invest all our energy and resources to see that we create value for the shareholders and for all the stakeholders. Also bring differentiated products to market which produce benefit for the patients.

Sameer Desai: Ok.Thank you.

Moderator: Thank you. The next question is a followup from the line of Jeevan Patwa from India Strategy Opportunity Fund. Please go ahead.

Jeevan Patwa: One question on the Merck JV joint venture, just a follow on to what Sameer has asked. Suppose as per your announcement, if some technologies have been selected for the joint venture has been transferred to the joint venture and SPARC will be getting some milestone payments plus one-time upfront payment. How will the economics work? So how do you evaluate your technology

which will get transferred, how would you value the technology because since SPARC would be working on it may be for last 7 years, 6 years. So how does that valuation work out?

Uday Baldota: I think couple of things just to clarify. We said that SPARC will get compensation. We actually have not given how that compensation will come, whether there will be upfront, milestone, royalty all of that. I think the financial terms of the JV are not disclosed. In terms of valuation, I think there are techniques available by which you can evaluate the value of a technology and standard methodologies would be used in assessing the value so that SPARC can get appropriate compensation.

Jeevan Patwa: Ok, thank you

Moderator: Thank you. The next question is from the line of Ajay Tyagi from Press Trust of India. Please go ahead.

Ajay Tyagi: Sir you would be launching the inhaler in India in next 2 months and are planning to launch it in China and in the emerging markets. What market size do you estimate in India and in China and emerging markets—this is to Mr. Shanghvi.

Dilip Shanghvi: Maybe Kirti can answer.

Kirti Ganorkar: India's biggest product is coming from Cipla, directly competing product and then there are Glaxo products and the Sun products. So the total market is close to about 100 crores for this type of product which are multi-dosed products, and for China and other emerging markets, I will ask Uday to reply to you, we do not have specific details with us at the moment.

Ajay Tyagi: Thank you. Thank you very much.

Moderator: Thank you. The next question is a followup from the line of Manish Jain from Axis Holdings. Please go ahead.

Manish Jain: Essentially I just wanted to know on 1334H ophthalmic. When we are targeting the US market, we are essentially comparing it to. Olopatadine-- So what will be our differentiating factor and what will be the reimbursement strategy here?

Kirti Ganorkar: You are talking of 1334 H ophthalmic, right?

Manish Jain: Yes.

Kirti Ganorkar: Currently we are initiating a phase II study where 1334H Ophthalmic would be compared with placebo and once we have the data available, which we hope that will be available by next year, we will come to know two things whether this product works once a day or twice a day, and how fast the product is working. Based on these two early indications from phase II study, then only we can really compare with Olopatadine, what we have shown you in the comparison with olopatadine on the preclinical studies. So clinical comparison can be done once we have some efficacy data from this phase II study which we are doing in the US.

Manish Jain: And what will be the sample size of patients for phase III final study?

Kirti Ganorkar: Right now, we are focusing on phase II only. So depending on the outcome of phase II, we will design phase III study. The sample size would not be too large.

Moderator: Thank you. The next question is a followup from the line of Amish Kanani from JM Financial. Please go ahead.

Amish Kanani: I'm from the PMS group of JM.Mr. Dilip Shanghvi my question is, we have seen in the past R&D operations being separated by various companies including Ranbaxy and Piramals of the world, where you know the moment the deal had happened the decisions of having a separate R&D center was reversed in a few quarters' time, if I may put it in that way. My question to you in this context is, one: you are now one of the very few listed separate R&D operations in India, whether separate R&D unit in your context makes sense still, and whether that is hampering the expanding of these operations if any, although it was very heartening to note that you said you will not be monetizing any of the programs for the lack of funding and stuff like that. So your general observations of your operation vis-à-vis the peer group and in that context, where have we reached in terms of resources, in terms of number of scientists and stuff like that?

Dilip Shanghvi: I think it is difficult for me to respond about what other people in the industry are doing. Our view is that the rationale because of which we decided to separate the innovative R&D holds as valid today as it was when we decided to separate it. So the idea was not to reduce the R&D cost in Sun and increase profitability at Sun Pharma. The idea was to focus on innovative products and also start becoming accountable for the outcome of the studies and the products that we are developing.

If you see 4 years back, there was hardly any focus on innovative R&D, when we were making any presentation related to Sun Pharma, because the key investors that we had investing in Sun Pharma were basically looking at growth, stability and cash flow. Now that we have a separate set of shareholders, there is an accountability and pressure on both the scientists as well as the management, to see that these products make progress and we become accountable to ensure that these products that we are discussing with investors, they are brought to market in the timelines that we are indicating. So I think now if you look at some of the products that we have in development, and as our scientists have indicated that we have many other interesting projects which have not reached a stage that we can share it with you. We are very excited about these products and when they come to market, what kind of upside potential that they can create. So I do not think we have any plan to bring this as a part of Sun back again.

Amish Kanani: Sir my question was the standalone operation is not an issue in terms of resource availability right?

Dilip Shanghvi: No, that is not a constraint.

Amish Kanani: Correct. And where are we in terms of headcount and other number of scientists?

Dilip Shanghvi: I don't have exact numbers, may be Uday can update you about the exact number because it is a dynamic number. It keeps on becoming bigger month after month.

Amish Kanani: Ok, thanks a lot.

Moderator: Thank you. The next question is a follow on from the line of Manish Jain from Axis Holdings, please go ahead.

Manish Jain: Yes, essentially just wanted a clarification on slide 43, where we have products using other novel technologies. There is not much stated that the phase II studies are being conducted where, and you have mentioned that you are already doing pre NDA meetings with the US FDA. Can you just give some more details on that?

Dilip Shanghvi: I think Manish the reason the details would not have been given is possibly because we are in the process of finalizing the patents. So we will not be able to give you more information beyond what is already given. Because once we disclose the product, then we have a risk with obtaining patent.

Manish Jain: Fair enough thank you.

Moderator: Thank you. The next question is from the line of Saniel Chandravat from Morgan Stanley, please go ahead.

Sameer: This is Sameer here**.** This is just to understand the entry barrier for the other emerging markets. If suppose you have launched a product here in India and you need to take it to a Latin American country, Brazil or Russia or to South Africa, how much work do you need to do in terms of clinical trials and what is the time lag between say India launch where it is fully tested, to take it to these other emerging markets?

Dilip Shanghvi: Kirti will answer.

Kirti Ganorkar: Based on our experience in last one year, we have talked to couple of regulatory agencies through a consultant and what we felt is that when we are saying emerging market, means it is not one market, there are many markets and each regulatory agencies have its own requirement. Just to give an example like China has its own requirement and they want clinical studies done to be done on Chinese patients. That is very different from other markets like Brazil and Mexico, where studies done in US and Europe are acceptable. So currently we are trying to understand what each program, whether we can have a common study or at least two-three studies which can satisfy all the emerging markets and China definitely needs some additional work and some markets need additional phase II study with their own population and some markets typically accept any study coming from European countries or US or sometimes even from India. The requirement varies from market to market, and also depends on the product and its complexity and whether such products are already being registered in that market or not. Like Abraxane may not be there in all the emerging markets. So their requirement is very different than where the Abraxane is already available.

Sameer: Ok. So just to understand this, a lot of countries may be accepting US and European trials, aside of some exceptions. So is it fair to say that the launch after India to other emerging markets would in a lot of cases be coinciding with the US launch?

Dilip Shanghvi: No also I think Sameer, we need to decide sometimes and as we learn to do this better going forward, we might actually initiate studies in more than India together. So that if we decide not to launch that product in the US, then we might parallely do clinical studies in these markets. So I think this is a process by which we will also learn, and as we learn, I think we will improve our performance.

Sameer: Ok. And just one final question, it is about your economics in the US market. If I am not wrong, say Baclofen which is IR form, the current market size is about $28 million may be take $30 million, and the Asian markets might have been $300 million. So how should we think about economics when you launch the product in US?

Dilip Shanghvi: We've done some market analysis, maybe Kirti can update you.

Kirti Ganorkar: Yes I think Sameer, I think the way you are looking at market $24 or 25 million in the generic market, already the Baclofen IR product is already genericized, but if you look at the number of units like there are 500 million units of Baclofen being used, then all the strengths combined together, and even when we come with Baclofen GRS which is taken once-a-day versus three to four times, we are looking at substantial premium over the generic prices, and this is the most preferred product for spasticity and there are no other new products under development in spasticity. So we believe that this will remain as the main therapy for spasticity even in coming years and in terms of kg or number of units, the market is quite large and substantial even if we take small percentage of this market share.

Sameer: So given the fact that it is 3 or 4 times a day to once a day, the pricing itself can automatically be 3x-4x to begin with, then the premium, so we are looking at 5-10 times the pricing per pill is the way we should think about the addressable market?

Dilip Shanghvi: I think you should basically look at per day cost of treatment and also let's say that if you look at Tizanidine when it was branded, then what kind of cost per day in terms of treatment it was having, it can give you an idea as to what kind of pricing is feasible.

Sameer: Ok. Thank you so much.

Moderator: Thank you. The next question is from the line of Krishna Prasad from JM Financial, please go ahead.

Krishna Prasad: Thanks for taking my question. My question relates to this nano paclitaxel product that you've talked about, and now if you look at the slide 18, where you have presented data for 260 mg and 295 mg. On comparison to the 260 mg, your 295 mg shows a higher reduction in tumor size, however if I see the data for 260 mg, then its actually lower than what Abraxane has shown. Is there something that you'd want to highlight here?

.**Dilip Shanghvi:** Dr. Shravanti Bhowmick can answer this

Shravanti Bhowmik: The reduction in tumor size, if you look at the mean percentage reduction is 46.3 and there is a standard deviation of 22.4 and with ABRAXANE, it is 47.4 and the standard deviation is 24.4. So there is no statistically significance difference between the two.

Krishna Prasad: Ok. And on the 295 you actually show a statistical significance..

Shravanti Bhowmik: Well at the moment the numbers of patients for whom we have the data is not really enough to draw any kind of statistical conclusion, but the numbers and the standard deviation that we have seen, lead us to believe that there is no difference at this point between the ABRAXANE and PICN groups and definitely PICN at 295 looks better, but unless we complete the study and we get the data for more patient we cannot say that it is statistically significant.

Krishna Prasad: Right and have you decided on the dose, whether it is 295 or 260 or?

Shravanti Bhowmik: We are working with both the doses at the moment. We will wait for the study to be completed before we draw any conclusion.

Krishna Prasad: Right. Also in the previous slide, on slide 17 we are talking about objective response rate, are you seeing the similar trend in complete response as well?

Shravanti Bhowmik: If you go to the next slide, you will see that the number of patients you have seen complete responses with PICN 295 is higher than we've seen with 260 or with ABRAXANE at 260. So it does not look like both are going together, but we will wait for more results to come in.

Kirti Ganorkar: What we are saying clearly is the complete response with 295 is slightly to be different than 260 compared to ABRAXANE, which may ultimately give us a physical outcome which is like overall survival rate, which we expect to be better. Though these studies are not designed for that purpose.

Krishna Prasad: So sir the next study which you would eventually conduct would actually be powered for os and?

Kirti Ganorkar: Yes, that is right.

Krishna Prasad: Thank you.

Moderator: Thank you. As we have no further questions, I would like to hand the floor back to the management and Mr. Baldota for closing comments, please go ahead.

Uday Baldota: Thank you everybody for joining with us on this call today. If you have any questions and answers, we will be very happy to help you.

Moderator: Thank you. Ladies and gentlemen on behalf of SPARC Ltd. that concludes this conference call. Thank you for joining us and you may now disconnect your line.