The Pulse

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One year later, here we are. Reformed.

Between the most substantial comprehensive health reform legislation since The New Deal, an alphabet soup of new agencies and legislation including PPACA, HITECH, ARRA and ONC, healthcare companies that have restructured and recapitalized after a severe recession, and investors with a renewed appetite to fuel them, America is salivating at the opportunities to usher in a new era of healthcare. And opportunity, dear readers, is what this year's *Pulse* is all about.

We kick off the publication with discussions from the leading voices on a topic that so many people care about so much: wellness. Dr. Terkpeluk of the Cleveland Clinic, with their revolutionary "no smokers allowed" policy, Brent Pawlecki of Pitney Bowes, a leader in employee health, and Ralph Muller of UPHS show us how they are tackling everyone's most primal urge to fall victim to temptation. Temptation to smoke, eat what we want, and lead the sedentary lifestyles that always seems so, well, tempting. And how will we promote wellness? The answer is complex, but many of our interviewees in the publication's next section believe technology will be part of the answer. HHS Chief Technology Officer Todd Park talks about new innovation driven by a data liberacion of health care data! Speaking of data, we then profile several innovative technology start-ups and discuss the increased role of social networks in healthcare. But opportunities to innovate are not only happening in the new markets pioneered by young entrepreneurs. Our last two sections on Insurance and Pharma tell us how storied companies like Cigna and Pfizer are going to lead in the new reformed era of healthcare. We close with an interview of Bill Weldon, CEO of Johnson and Johnson, on how his organization is adapting to a changing landscape followed by a feature article from our sponsor, Oliver Wyman, on pharma's ability to brave a chaotic new world.

Thank you to the generous support of June Kinney and the Health Care Management program at Wharton, and our sponsors, Becton Dickinson and Company, Booz and Company, and Oliver Wyman.

Sincerely,

The Editorial Team
Jay Desai | **Elizabeth Kiernan** | **Lindsay Rand** | **Marina Zeltzer**

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Healing the Hospital

Implementing a Wellness Program at the Cleveland Clinic

By Jonathan Pearlstein, WG'12

In 2005, the Cleveland Clinic banned smoking at all its facilities. In 2006 they went one step further, instituting a policy that prohibited hiring smokers. Dr. Terpeluk, manager of the Clinic's employee health program, discusses his experiences around implementing a wellness strategy.

Pulse: ***A smoking ban is obviously very controversial. How did you manage relations with your employees who already smoked?***
Dr. Terpeluk: We decided not to go after current smokers. For example, we didn't say, 'Either don't smoke or you'll lose your job.' Instead, we offered smoking cessation for our employees who smoke. And we did it for the community too. We had a large initiative to reduce smoking. We actually reduced smoking in Cuyahoga County in the Cleveland area from 35 percent to 20 percent.

Pulse: ***How do you enforce a policy that forbids hiring smokers? What prevents job applicants from lying about their smoking habits?***
Dr. Terpeluk: We built into our current pre-employment drug testing a cotinine test. Cotinine is a metabolite of nicotine, which measures whether or not you have nicotine in your body. If it comes up positive, we don't hire you. We rescind your offer for 90 days and you can reapply if the job is still available. On average we hire 5,000 people a year at the Cleveland Clinic, so over the past three years we've hired 15,000 people, none of whom smoke.

Pulse: ***Was there a business case behind the no-smoking policy?***
Dr. Terpeluk: There's data out there that says a smoker could cost an extra $100,000 to $5 million in a lifetime. Smokers make up about 20% of the population, so if you hire 5,000 people a year, that's 1,000 people who would be smokers. The cost burden can be anywhere between $5 to $20 billion for an employer of our size.

Pulse: ***What advice would you give to other organizations that are considering implementing a smoking ban?***
Dr. Terpeluk: I would tell them to do it because it'll begin the cultural transformation. If they're not as zealous as we are about the cultural change, they should look at the trends on healthcare costs. You will not be able to afford your healthcare and pay your workers, which means you will be out of business. Also, don't forget wellness is supposed to be a good thing. So don't take a draconian approach. Take a realistic approach. Let your staff know that leadership is going to try to do this is the best possible way.

Pulse: ***Are there any types of organizations that could not successfully execute a smoking ban? Are there some industries where the political costs are just too high?***
Dr. Terpeluk: No, I think that smoking is a proven cost driver for everything. Cancer, cardiovascular disease, and more. And everyone knows that it's well documented. We have made a cultural shift in our country already. It's been banned in restaurants, in public places in lots of cities. A ban sets the tone; it's no nonsense: "We're not going to tolerate this anymore."

Pulse: ***Since the smoking ban, what other wellness programs has the Cleveland Clinic initiated?***
Dr. Terpeluk: We have focused a lot on weight loss. We offer all of our employees free Weight Watchers and subsidized access to Curves fitness centers. We currently have 8,000 people in Weight Watchers or Curves, and we've lost over 150,000 pounds collectively.

Pulse: ***Employer-sponsored weight loss programs are increasingly common across the country, but***

often suffer from low enrollment. How did you achieve such high penetration rates?

Dr. Terpeluk: What we have done is medicalized obesity and used the relationship between the physician and the patient to push employees into the program. And then we've used incentives in the health plan to pull them in. We call it the push / pull strategy.

Our first key innovation was to put obesity in a disease management program driven by physicians. One problem with obesity is that it's not considered a chronic illness; it's in the "fitness" space. That's why our physicians get actively involved. They'll actually prescribe a lifestyle change like Weight Watchers or Curves.

Second, we created financial incentives attached to the premium within our health plan. All staff can avoid a 9 percent premium increase if they visit their doctor for a health screening. And if they are diagnosed with a chronic disease, they must join a disease management program to receive the premium rebate. The program has been a huge success. We increased participation in disease management by 400%, from 1,200 to 7,000 people. And having done that over two years ago, we now are starting to see a return on investment where we have actually bent the cost curve. We think this year we're going to save $10 million on our $200 million health benefit spend, just by reducing these costs.

Pulse: ***That seems like a great way to encourage staff to begin a new weight management program. But how do you create incentives for them to actually stick with it?***

Dr. Terpeluk: If a staff person meets the goals of the disease management program, they are "locked in" to a premium rate for two years. So there would be no increase for two years, instead of just one. Our employees now know realize that "Geez if I go to the doctor, he tells me to lose weight and I lose the weight, I can save a lot of money."

Pulse: ***Do you have any programs in place for employees who are already healthy? How do you encourage them to keep it up?***

Dr. Terpeluk: We actually require people who are healthy—in order avoid a premium increase—to participate in a program where they track their footsteps and report them back to us. It's called Shape Up the Nation, and it is a software program and social network. So we know they're actually doing something to keep themselves healthy.

Pulse: ***Compared to other industries, would you say healthcare organizations have an advantage in promoting wellness? Does wellness fit more naturally within the industry's culture?***

Dr. Terpeluk: Of course we have the cover of being a healthcare organization because you're supposed to be healthy, and that's our model. However, other employers have strong motivation too. The trends are that healthcare costs will outstrip wages for the next twenty-five years. So other companies know, "If we don't do something we can't stay in business."

Pulse: ***For companies that don't have wellness programs in place yet, where should they begin?***

Dr. Terpeluk: The first step is that leadership has to say, "Wellness is significant, wellness is important. We need to get together and figure out how to do this as a company." The next step is to form little healthcare committees to get people talking about it. You've gotta build that kind of hand-to-hand combat in your organization to communicate the process. That has to happen, and it happened at our place, but it starts with leadership. And then you can move to the big things, but you can't go to the big things without the little things first.

Biography:

Paul Terpeluk, DO, has a unique combination of business acumen, life experience and advanced education that uniquely qualifies him to take a leadership role in developing and implementing a medical center-based comprehensive occupational health program. Dr. Terpeluk is a graduate of LaSalle University and the Philadelphia College of Osteopathic Medicine. He is board-certified in occupational medicine by the American Board of Preventive Medicine, in addiction medicine by the American Society of Addiction Medicine and in industrial hygiene by the American Board of Industrial Hygiene. He holds a Master's Degree in public health from Johns Hopkins University and a Master's Degree in pastoral counseling from LaSalle University. He is the former Medical Director/CEO of the Occupational Health Program at the University of Michigan Medical Center. Over the past two years, he has been Medical Director of Occupational Health Services at the Cleveland Clinic.

Track Record of Success

Long Term ROI from Wellness Initiatives

By Elizabeth Kiernan, WG'12

Pitney Bowes has been ahead of the curve as an employer focused on wellness and prevention. Given the current healthcare reform environment and the increasing rates of preventable chronic diseases in America, the Pulse sat down with Dr. Brent Pawlecki to discuss Pitney Bowes' success in lowering costs through wellness and prevention measures.

Pulse: ***There's a lot of debate going around regarding whether or not wellness initiatives are successful, both from a clinical and financial perspective. Having implemented and continued to commit to employee wellness how do you convince detractors that these programs are successful?***

Dr. Pawlecki: On the financial side, I would say that the challenge with speaking with people who are decision makers in the finance area is that they want to show an ROI on absolutely every single program that we do. I would say that I can't necessarily tell you the ROI on any specific program, but I can tell you that by creating a 'culture of health' at our organization, we've been able to achieve our ultimate return on investment, which is that our healthcare costs and premiums have been running at about 2/3 the cost of the companies that we benchmark against. We've demonstrated that consistently since about the year 2000, and that to me is the ultimate ROI. Any one program is simply a tool that helps to build into that 'culture of health'. So again, while I can't point to any one tool that we use, ultimately we are able to achieve success by using them collectively. You'll see studies where people argue 'oh this works, or this doesn't work, or this is a waste of time' but I can't tell you that's the case because ultimately you reach people at different times with different tools. The same person may react to something, when they may not react to something else, depending on where they are in their emotional engagement and their thought process at the time.

Pulse: ***With your experience motivating employees over the years, could you provide an example of how a person might respond differently to messaging at different points in time?***

Dr. Pawlecki: In some ways you have to connect with people on a wellness basis, that's basically the general health information. You provide the information and create that 'backbeat drum' that tells them this is important for their own health and wellbeing, and they also get a sense that this is important

to the company as well. We create that awareness through signage, and location. And you can see that awareness when people talk about health behaviors. That's something that we built overtime though our focus on health.
Then when someone has a specific health question, or a specific health issue that is happening to them or their families, that's when they really start to engage. For example, you may know that you need to stop smoking but when you get your 3rd case of bronchitis and the nurse practitioner tells you that you wouldn't get bronchitis if you stopped smoking, that might be the time that creates the teachable moment for you. All the messaging we presented before might not have an impact until that moment, but at that moment, it is worthwhile. When they are ready to be engaged, we really try and loop them into the different programs through the health plans and the disease management programs and the other resources we have in our platform.

Pulse: ***Can you segment the population by how engaged they are or what kind of tools they might need?***
Dr. Pawlecki: We have a special challenge in our work place which is that about half of our population is low paid, and primarily works at other employer worksites. They work in groups of anywhere from 1 to 150 at each site and it's very difficult for us to reach those folks. We have a particular communication challenge, but I would say across the board, for people working with health information, and that includes us, no one has really dealt well with engagement.
In contrast, companies encouraging people to engage in bad health behaviors are very good at engaging people and tapping to them emotionally to encourage unhealthy behaviors. For example the soft drink industry, the cigarette industry and others, really know how to connect with people from a marketing perspective and we haven't done that on the 'well behaviors' yet.
I think now there's an awakening in the health promotion world that we need to start touching people emotionally when they need it. Quite honestly, we aren't doing it that well yet, but we are looking for tools and ways to make that happen. In the wellness world, everyone thought that if you just give people the information they need and make it available, people will just do the right thing. However, time and again we've shown that hasn't necessarily happened.

Pulse: ***What kinds of attempts have the 'wellness world' made at trying to more emotionally target people and communicate health messages?***
Dr. Pawlecki: Well Canada did it first by trying to scare people with cigarettes, but I think fear only works to a certain extent. It's the warm and fuzzy feelings, the way they feel about Christmas and Coca-Cola for example—we really need to tap into that. For example a wellness approach might be "can I dance at my daughter's wedding because I'm in better health, can I play with my grandkids? Can I even have kids?" These are the kinds of emotions we need to be bringing up in people and we haven't done a good job of putting it all together.

Pulse: ***What else do we need to do, not just as employers but as a society, to improve wellness in this country?***
Dr. Pawlecki: One helpful tactic we've found is to make the healthy choice the default option. For example, in our cafeteria, you now get carrots and celery instead of potato chips with your lunch. You can still get the potato chips, but we're trying to make it hard not to be healthy. As a society, we can do this on a grander scale, for example anything

Biography:

Dr. Pawlecki serves as the Corporate Medical Director, overseeing all health related issues and services of the organization, including the Pitney Bowes' award-winning corporate clinics and wellness programs, and the Absence Management Department and Workers Compensation. In addition, he serves as the corporate medical consultant and as Chief HIPAA Privacy Officer. Dr. Pawlecki works closely with the Environmental Health and Safety team, as well as the Health Care Strategy Group and the Crisis Management Team to direct corporate health and productivity for the global organization. Currently, he is heading the efforts of Pitney Bowes and the National Business Group on Health on End of Life planning, and recently published an article in Health Affairs entitled, "End of Life: A Workplace Issue".

from making it easier to get flu shots to making it easier to walk in cities. In New York, people walk to the store because it is both possible and convenient.

In the suburbs, the same people will drive the same distance to the store because the suburbs are more oriented towards driving. Many people think that public scale implementation would be expensive, but some of the measures that we have implemented have been fairly low cost. We have a program called "Count your way to Health" that is focused around a few simple numbers. Communicating these ideas doesn't cost much to implement. Even small companies and mom and pop shops can make a difference by encouraging healthy behaviors along this path.

On a broader level, we can get the government to stop subsidizing corn, beef, artificial sweetener, tobacco farming, etc. I'm not sure we're ready as a society or have the political will to do that, but it would help start making healthy options the default choice.

Count Your Way to Health Program

- **0** No tobacco use
- **1** Floss once per day
- **5** Eat five fruits and vegetables
- **20** Maintain a BMI below 25
- **100** 100% seat belt compliance

The Future of Hospital Systems

An interview with Ralph Muller, CEO of the University of Pennsylvania Health System

By Lindsay Rand, WG'12

An important topic in the discussion of health care reform is the effect of current legislation on the American hospital. As the leader of one of the top academic medical centers in the country, Ralph Muller took some time to let us in on what health care reform means for academic medicine, what the University of Pennsylvania Health System is doing to stay ahead of the curve, and what keeps the CEO of one of the nation's best hospitals up at night.

Pulse: ***To begin our discussion, I wonder if you could speak to the primary challenges that the University of Pennsylvania Health System is facing now that the PPACA has passed.***

Ralph Muller: Although the Reform Act was passed last year, most of it does not take effect for three or four years. Some smaller changes have started to take place; for example, organizations that are self-insured like we are here at HUP [the Hospital of the University of Pennsylvania] now cover the children of our employees up to age 26, whereas it used to be 23. But those kinds of changes are very modest in the overall scale of things. So I think it's fair to say very little has changed so far. Therefore, a lot of the activity that is happening, both at our health system and nationally, is based on estimates of what will occur as opposed to what has already occurred.

And obviously, there are significant legal and regulatory challenges that are being mounted in the courts and in Congress. So there may be changes to the current legislation that impact when and whether future provisions are implemented.

Pulse: ***What measures, if any, has the health system been working on in preparation for the changes outlined in the reform legislation?***

Ralph Muller: A variety of payment reforms outlined in the bill will kick off in 2012 and 2013. For example, hospitals will no longer be paid if our rate of readmission is above a certain benchmark. Some of these ideas have existed in the policy community for a while. Because of that, and because of the experience of the team here, UPHS anticipated that some of this type of payment reform would eventually arrive. As a result, we as a health system have made efforts to work some of the anticipated changes outlined in the legislation into our workflows already. Two such efforts were to reduce hospital acquired infection rates and to reduce the number of preventable readmissions made at the Hospitals. We've already had a lot of success in this area, and are well-positioned to respond to the proposals in the Reform Act.

Pulse: ***In addition to working on reducing infections and unnecessary readmissions, has the health system made any preemptive steps towards an Accountable Care Organization (ACO) type model?***

Ralph Muller: In spite of the number of consulting firms in the healthcare arena coming forth with proposals to help doctors and hospitals get ready for the "ACO world," I remain skeptical about how fast American medicine can go in that direction.

I think that, far more pressing for management than crafting a comprehensive ACO model, is preparing for efforts to pay for services with a "bundle of payments." Medicare currently pays hospitals based on what's called a DRG, or diagnostic-related group, basis. In the future, insurers may combine the physician fees, which are currently separate from the hospital fees, into a single "bundled" payment. Because UPHS

physicians are employed as part of the University's faculty practice plan, we have the mechanisms in place to divide such payments appropriately. Many hospitals that are not as contractually integrated will be challenged to develop the funds distribution mechanisms that may be necessary in the near future.

Pulse: ***Has the health care reform legislation or the current economic climate changed your negotiations with insurers at all?***

Ralph Muller: It is too early to tell how reform will impact those conversations but there has definitely been an effect resulting from the economic downturn. Historically, insurance premiums have moved somewhat in concert with the economy, based on the willingness and ability of employers to pay the premiums that insurance companies are quoting in the marketplace. We anticipate that insurers, since many employers are not willing to pay as much because of the economy, will then pass on to us, e.g., the doctors and hospitals, lower payments than we have agreed on in the past. This kind of cycle has existed for almost 30 or 40 years, so it's not totally unexpected. It's just something we have to face and does not distract from our primary goal of providing the best care in the region.

Pulse: ***Other than its effect on insurance premiums, has the volatility of the economy affected HUP in other ways?***

Ralph Muller: About a year and a half ago we took a hard look at how the macroeconomic issues resulting from the housing and financial market meltdowns were going to impact UPHS on a micro level. We expected less turnover, somewhat lower demand, and poorer investment performance. As a result, we froze hiring for about a year and are still dampening our hiring expectations for the course of the next couple years so we can work in advance to keep costs stable. If we will receive less payment from the insurers because of the economic climate, then we have to keep our costs under control and that has been an ongoing focus here.

Our largest hospital, HUP, is in the lowest comparative quartile in operating costs compared to other major teaching hospitals around the country. We are not the at the lowest percentile, largely because the cost of hiring doctors and nurses is more expensive in Pennsylvania than it is in, say, North Dakota or Colorado and because we serve a large share of people who are economically disadvantaged, and are therefore more needy of health care, in our area. In fact, one of the main challenges of being a safety-net hospital for many people is that there are typically higher hospital costs and utilization where there is more poverty. That is a fact we cannot avoid and so we focus on running very efficiently while meeting the needs of our community.

Pulse: ***So managing hiring, as you said, is a prophylactic way to deal with fluctuations in the economy. But many people are concerned that expanded access to care under the health reform legislation brings with it an upward pressure on staffing in hospitals. Do you feel the threat of a physician or nursing shortage here at Penn?***

> ***A physician shortage, even if you could turn it around tomorrow, would take quite a while to be met.***

Ralph Muller: We worry about both. While there is currently a shortage of primary care physicians (and the trend of fewer medical school graduates going to primary care is not reversing), there is also an impending shortage of specialty physicians. For all physicians, it takes about ten years to go through medical school, residency, and then into practice. Therefore, a physician shortage, even if it could be turned around tomorrow in the medical schools, would take more than a decade to be resolved. This shortage of physicians means that some areas will need to rely more on nurses, physician assistants, and other forms of substitutes for physicians. Compounding the problem, of course, is that there is also a dearth of nurses and assistants. The University of Pennsylvania has made some effort over the last three or four years to bring more nurses into primary care, but there are still not nearly enough to meet demand.

Another trend which arises from this shortage is that existing specialists may need to take on more primary-care-type responsibilities than they had in the past - if only because there aren't enough primary care physicians around. So, for example, cardiologists and gastroenterologists and endocrinologists, who often take care of a hypertensive or diabetic population, may have to take more responsibility for coordinating the care of their patients. They won't be primary care physicians per se, but they will take

on primary care functions, simply because their patients cannot go anyplace else and they are the point person for their patient's care. This can work in some cases, but it does not eliminate the need for more primary care and nursing support.

Pulse: ***Does the presence of both a top medical school and school of nursing here at the University of Pennsylvania help the hospital avoid the shortage at all?***

Ralph Muller: We're fortunate here at Penn because we have both a very strong medical school and nursing program. As a result we are able to hire many of the graduates from our training programs as fellows or into residencies here at the University Hospital. So we do have an advantage that non-teaching hospitals lack because there are new people every year who want to go into medicine or nursing who are being trained right here. That said we, like other medical schools in our position, do not have enough primary care physicians to fill all of our needs. Unfortunately, this trend is not likely to reverse any time soon, so we do have an eye on that problem. It's not quite a national-level crisis yet, but it's getting close.

Pulse: ***In a different vein, I've heard you say before is that you view the hospital as one of the most complex human organizations in existence. I was wondering if you could explain how that notion is true here at Penn.***

Ralph Muller: UPHS has a whole array of doctors, nurses, pharmacists, social workers, imaging techs, therapists of all kinds – physical, occupational, speech, etc. - scores of professionals in one organization. In addition, we offer a complete range of clinical programs, from the most complex brain surgery to gunshot wound victims in the emergency room. We are open around the clock 365 days a year. Our staff is at the bedside at 2 a.m. as well as at 2 p.m. In total, over 15,000 people work to make sure everything in this system is working. We have an entire maintenance staff who covers everything from elevators to plumbing to electricians who specialize in the kind of equipment we have in our operating rooms. And we're not just providing medical care. We accommodate thousands of cars per day, feed patients and their families, transport people across the system. It just goes on and on in terms of the range of services that we provide, all working in concert to enable the provision of excellent clinical care, research, and teaching.

Pulse: ***As the leader of the one of the top academic medical centers in the country, what keeps you up at night?***

Ralph Muller: Very few things anymore (laughs). With so many things going on under one roof, we will think about what we might need to do about ACOs, spend time working on what to do about having enough nurses to meet the needs of the patients, reason through how you make sure the doctors are appropriately compensated, etc. all in one day. One of the delights of my job is that on any day I'm dealing with such a range of issues. And while there will always be mistakes, you learn after a while how not to make the big ones. And you learn , when you inevitably do make a mistake, to stop it fast. It is as important to stop your failures as it is to feed and fuel your successes. So part of what you learn after a while is that you're never allowed to focus on only one thing. It is a challenge, but you just have to figure out how to charge ahead and keep working.

Biography:

Ralph Muller is Chief Executive Officer of the University of Pennsylvania Health System – a $3.3 billion enterprise that includes three owned and two joint venture hospitals, a faculty practice plan, a primary-care provider network, multispecialty satellite facilities, home care, hospice care, and long-term care. Prior to joining UPHS, he was, from 1985 to 2001, the President and CEO of the University of Chicago Hospitals and Health System. In 2001-2002, he was a Visiting Fellow at the Kings Fund in London, U.K.

Adapting to a Changing Landscape:

Interview with Bill Weldon, CEO of Johnson & Johnson

by Jill Vanak

Johnson & Johnson, a global pharmaceutical, medical devices, and consumer packaged goods manufacturer is a leader in an industry marked by economic decline and instability. Johnson & Johnson's global management strategy is designed to enable the acquisition, assessment, and development of pivotal leadership talent across 250 operating companies in 57 countries while building a diverse pipeline of high performing products. Bill Weldon, CEO, discusses projected trends for the pharmaceutical industry and Johnson & Johnson's role in the emerging marketplace.

Pulse: ***In addition to other "Big Pharma" companies, you specifically have touted the passage of the Patient Protection and Affordable Care Act (PPACA) and invested heavily in the effort. You write editorials to national publications touting the use of comparative effectiveness studies, a large portion of the PPACA. What are your thoughts on these studies and what will this do for the pharmaceutical industry?***

Bill Weldon: Comparative effectiveness studies are important for a number of reasons. The most important reason is that they serve to supply good information to healthcare providers, enabling them to make informed choices regarding how they treat patients. Another essential component of comparative effectiveness studies is increased consumer awareness. For patients to be informed as to what opportunities and medications are available or choices they may have to be able to discuss on an informed basis with the healthcare provider is an innovative key. Comparative effectiveness studies need to be used in the appropriate way, in that good information is communicated to healthcare providers and to our patients to make informed choices and to allow "best care" to be provided. The studies can also be used in ways that I think can be very disadvantageous, for example, if they were used only to cut costs based on patient care. To look at comparative effectiveness and subsequently create closed formularies and not give the healthcare provider the choice is

> ***Health care reform is necessary, but the legislation did not address all the needs of health care reform.***

disadvantageous. To give the healthcare provider the information they need to make the appropriate choice for their patients is the key component in implementing these studies.

Pulse: ***What is your feeling regarding healthcare reform? How will this affect not only Johnson & Johnson, but the Pharmaceutical industry as a whole?***

Bill Weldon: Healthcare reform is necessary, but the legislation did not address all the needs of healthcare reform. What is really needed is access, which I think was addressed, but it fell short of addressing the cost issue and some of the other issues surrounding healthcare. What we know is there are a large number of people who do not have healthcare, and these people need it. I think that healthcare reform has gone a ways towards addressing that issue, even though those people won't be coming into the system until 2013.

Pulse: ***Specifically, which components of healthcare reform do you feel were not adequately addressed?***

Bill Weldon: I think reform was looked at too much in a "vacuum" of this as a one-time event. We have unemployment in this country. We have deficit problems. We have all kinds of issues that need to be addressed, and I do not think the legislation went far enough to address these concerns. As a pertinent example, tort reform, the whole area around administrative expenses, fraud, and abuse within the system were not addressed to the level that they should have been. Those are areas that can be addressed from a financial basis without adversely impacting the patient and access. If there are ways to chip around the edges and impose additional reductions on products and things like that or physician feels that will ultimately effect the treatment of patients, whereas, some of these other cost reduction implementations can offer literally tens to hundreds of billions of dollars over this ten-year period in reductions in cost that really do not adversely impact patient care at all. So I think they missed a big piece of it, which I think is going to have to go back and be readdressed as we go along. But healthcare reform was needed. What we had was not fully satisfying the needs of all the patients so I think it's a step in a positive direction, but it's definitely not the end point that needs to be reached.

Pulse: ***Your company operates with over 250 subsidiary companies in 57 countries with products actively sold in over 175 markets. How do you successfully manage such a decentralized organization in regards to your three markets of consumer goods, medical devices, and pharmaceuticals? How do you accomplish all this?***

Bill Weldon: Decentralization is a component of the magic or the beauty around J&J that's made it so successful. Decentralization allows the people who know the businesses best to run them. We have three people who run our businesses. Out three business segments consist of our consumer business, our medical device and diagnostics business, and our pharmaceutical business. Cumulatively the business segments as "stand alone" components comprise the largest sectors in the market. Our medical device and diagnostics business is the largest one in the world. To achieve this level of success, it is imperative that the people who run those segments of the business know them well.

Pulse: ***Decentralization is a large component of Johnson & Johnson's business philosophy and credo. Why has this been a successful strategy within your company, while others have failed in this strategy?***

Bill Weldon: In the decentralized management philosophy we have men and women all over the world who run the businesses, the operating companies, those 250 companies that you talked about who know the business. They know the products, they know the geography that they're working in and they know what the needs of the people are. So they're really touching everybody

> ***Comparative effectiveness studies need to be used in the appropriate way.***

that is important to those products or that therapeutic area they're working in. And I think that is what has made decentralization so successful at J&J. You have men and women running the businesses, and by that I'm talking about at the operating company level or at the highest level who understand the business, know the geography, know the products, know the patients' needs and are able to touch the patients. So we know what's going on in healthcare any place in the world in any area. What makes it work is our credo. It is really the blueprint which everybody around the world lives and works by. It is not a document that just sits on the wall. It is something that we practice.

Pulse: ***What challenges do you foresee within the next 5 years to the pharmaceutical industry as a whole?***

Bill Weldon: We are dealing with some of the most interesting times and maybe the most challenging times as an industry that we have ever dealt with. Right now, we see demographics. People are getting older. We see advances in technology that are going faster than lightening. We see new advances to improve and to help people in many different areas. I think the challenge for the industry is to stay ahead of the technology, to continue to innovate. And then the challenge on the other side is going to be in the whole area of costs and how to contain them. I think the challenge is going to be the demographics and the technologies which contribute to cost increases, and then the ability of governments and others to pay for it. There has to be a very delicate balance we all have to work for in that area.

Pulse: ***What trends do you foresee in regards to your efforts with increased globalization at Johnson & Johnson?***

Bill Weldon: At J&J, we work under a credo that was put together close to 70 years ago now, which addresses our four primary responsibilities. The responsibilities are first to the patients, patient care and to the people who use our products, second, to our employees, third to the communities in which we live and work, and fourth to our shareholders, the people that have invested in us, ensuring them a fair return.

The first tenet of our credo really ties into what this industry is all about, and that is innovation.

We need to make sure that we are addressing innovation and continue to innovate to bring better products to patients to improve their health, whether that is in the emerging markets or whether it is in the developed marketplace. Innovation can be looked at many ways. One way is to look at the ultimate of what we all try and get to, and that's a cure for cancer or a cure for diabetes or metabolic disease, some of these types of things. But on the way, we need to look at how we innovate to make peoples' lives better. And that may mean different needs in different parts of the world. And I think we have a responsibility to ensure that people have access to these products wherever they may exist.

Biography:

Mr. Weldon joined Johnson & Johnson in 1971, and served in several sales, marketing and international management positions before becoming President of Ethicon Endo-Surgery in 1992 and Company Group Chairman of Ethicon Endo-Surgery in 1995. He was appointed to the Executive Committee and named Worldwide Chairman, Pharmaceuticals Group, in 1998. Mr. Weldon is a member of The Business Council and the Sullivan Alliance to Transform America's Health Profession. He is a Trustee of Quinnipiac University and serves on the Liberty Science Center Chairman's Advisory Council. Mr. Weldon also serves as Chairman of the CEO Roundtable on Cancer. Having started his career at the Company in 1971 and been promoted to positions of increasing responsibility across business segments, culminating with his appointment as Chairman/CEO in 2002, Mr. Weldon brings vast knowledge of the Company's business, structure, history and culture to the Board and the Chairman position. Mr. Weldon continues to be one of the longest-tenured and most well-respected CEOs in the health care industry.

Data Leading to Innovation

An interview with Todd Park, CTO of the Department of Health and Human Services

By Jonathan Pearlstein, WG '12

In 2009, President Obama issued an "open government" order, directing all federal agencies to become more transparent, participatory, and collaborative. Todd Park, Chief Technology Officer of the Department of Health and Human Services (HHS), discusses his department's efforts make health care data more accessible to innovators as well as the American public.

Pulse: ***You often use the rallying cry, "Data Liberacion!" to describe your initiatives to make health care data more widely available. Do you actually believe data transparency requires a sort of revolution?***

Todd Park: I do think Data Liberacion has a set of transforming implications and requires a significant change in the underlying paradigm of how data is managed and governed. It's a big shift for the government and for private institutions to liberate data and allow the American public to benefit from it. Now, interestingly, the government has actually run this thing before and done it brilliantly. If you think about GPS, if you think about financial data, if you think about weather data, these are all data streams that were part of the government and they actually have engendered massive ecosystems of innovation, and products and services built on this data that generate huge social and economic value. And so the inspiration behind HHS's Data Liberacion campaign is to do the same thing with health data, obviously rigorously guarding privacy and confidentiality, but freeing up access to all kinds of data that allows the public to derive significant benefit from.

Pulse: ***What do you mean by "ecosystems of innovation"? What do they look like in practice?***

Todd Park: In early 2010, we launched the Community Health Data Initiative. It's all about liberating community health and health care data. So just like the National Oceanic and Atmospheric Administration (NOAA) releases weather data and then the Weather Channel, weather.com, and weather apps entrepreneurs, turn it into useful applications for the American people, we want to release a ton of free, machine-readable, super-accessible community health data, to have innovators turn it into an array of super-cool applications that will benefit the public.

Here's how it's worked so far: on March 11, 2010 we invited 45 innovators to brainstorm about 20 different classes of applications. And we then said at the end

of this meeting, "We're going to publish a webpage within a week that has all these data sets accessible in downloadable form for free, and we challenge you to go out and build the apps that you just articulated."

In less than 90 days, using the data we put out on our Community Health Data Initiative webpage, they built 20-plus new or improved applications that used our data to do spectacularly awesome things. It's not like they're just PowerPoint demos; they're actual apps. They're available to the public as we speak.

So at the end of the day, the whole point, the real deliverable of this Data Liberacion campaign is not data, it's not a specific set of applications. It's an ecosystem. It's a living, breathing, continually growing and evolving ecosystem of data suppliers, data application builders and data application users that create social and economic value.

Pulse: ***Could you provide an example of a promising application that uses data from the Community Health Data Initiative?***

Todd Park: First let me say that the applications that will ultimately be successful, the kinds of things that people invent with our data, we can't even begin to imagine. So I'm not able to predict which of the applications of our data will actually be the breakthrough application, but here's a hypothesis about how the data can be transformed.

One is "Network of Care for Healthy Communities," a long name, but basically a turbo-charged community health dashboard. It's a joint venture of three entities: a company called Trilogy, the Healthy Communities Institute at Berkeley, and the National Association of Counties. They created this software-as-a-service offering where any city, county, or community can deploy a community health dashboard that shows, in layperson's terms, performance on key health indicators, and compares your performance with others. It was initially deployed in Sonoma County on June 2, 2010, but it's now being deployed in over a dozen counties and some states across the country.

I actually interviewed the public health director of Arizona, and asked him, "At a time of incredible fiscal strain, why are you lobbying for this tool?" And he said, "Well, I've got a very strong business case. Each of my county health directors has a board that consists of business owners and ranchers who aren't public health experts. I use this Web site to explain to them the importance of investing in public health."

Biography:

Todd Park joined the Department of Health and Human Services as Chief Technology Officer in August 2009. In this role, he is responsible for helping HHS leadership harness the power of data, technology, and innovation to improve the health and welfare of the nation. Mr. Park co-founded Athenahealth, Inc. in 1997 and co-led its development over the following decade into one of the most innovative, socially-oriented, and successful health information technology companies in the industry. Prior to Athenahealth, he served as a management consultant with Booz Allen & Hamilton, focusing on health care strategy, technology, and operations. Mr. Park has also served in a volunteer capacity as a Senior Fellow at the Center for American Progress, where he focused on health information technology and health reform policy, and as senior health care advisor to Ashoka, a leading global incubator of social entrepreneurs, where he helped start a venture to bring affordable telehealth, drugs, diagnostics, and clean water to rural India. Mr. Park graduated magna cum laude and Phi Beta Kappa from Harvard College with an A.B. in economics.

At the end of the day, the whole point, the real deliverable of this Data Liberacion campaign is not data, it's not a specific set of applications.

"I was recruited to be a change agent."

Pulse: ***What are the main challenges to making health care data more readily available?***

Todd Park: Interestingly enough, it's not HHS's willingness to release the data. One might think, "Oh, there are people at HHS who are just digging their heels and they really don't want to liberate the data." Well, I could testify that people across HHS are really enthusiastic about sharing HHS data. They just needed leadership to make it happen, which is what we've done.

The biggest challenge is actually marketing. If all you do is publish data, but nobody knows about it, then it's not going to do any good. A huge portion of the data that we put out on our Community Health Data Initiative webpage had already been publicly available for years. But none of these innovators had any idea that they existed. So what we've found is that it's incredibly important to not just release data, but to market that data energetically and aggressively to the innovators, so they can figure out what to do with it in terms of applications, products and services that are useful for the American public.

Pulse: ***Having come from the startup world, how do you bring a culture of innovation to the federal government?***

Todd Park: I was recruited to be a change agent. I was recruited specifically because I was an entrepreneur. When I initially was contacted, I said, "Are you sure you want me? Because I have no government experience whatsoever." And they said, "Exactly." They said the CTO job was created by HHS as a change agent job. So I don't actually have the operation responsibilities or functions of HHS. And the actual experience has been entrepreneurial, because what I'm doing is I am creating and leading virtual startups within the federal government.

Pulse: ***What keeps you up at night?***

Todd Park: Lots of things keep me up at night! I'm an entrepreneur, so I naturally get paranoid. But, honestly, I think the biggest challenge is that there are so many opportunities to do good things. HHS is just a phenomenal hub of possibilities in terms of actions one could take to facilitate the improvement of health.

Connecting for Better Health

By James Rhodes, WG'12

Is health care information set to go virtual? As many as eight in ten internet users have looked online for health information[1]. Online physician-patient communication may increase with the adoption of electronic medical records; physicians with electronic medical records are three times more likely to routinely communicate with patients via email compared to those with paper-based records[2]. Nearly 40% of physicians report communicating online with patients[3], 60% of physicians are interested in using mobile technology to communicate with patients, and 57% say they are interested in using wireless technology to monitor patients outside the hospital[4]. In light of these trends, The Pulse takes a look into online communication and the use of social networks in health care.

You've Got A Prescription!

Virtual communication in health care can take many forms, including patient-to-patient, physician-to-physician, and patient-to-physician. Recent trends point to an increase in one-on-one, patient-to-physician online communication through virtual visits and emails. This growth is due in large part to a recent reduction in technology, payment and legal barriers.

- Creative technology firms like ZixCorp have established sophisticated encryption tools to keep health data private; some integrated networks have incorporated physician-patient emails into their own protected networks.
- Insurers like Cigna, Aetna and others are now reimbursing for digital visits, albeit for lower fees than in-person consultations, while salaried physicians are more likely to be using emails to communicate with patients.
- Several state medical boards have now established guidelines of what physicians can and cannot do as part of virtual consultations. The American Medical Association has adopted a new policy, entitled "Professionalism in the Use of Social Media", to guide physicians maintaining an online presence.

While one-on-one dialogue between patients and their individual physicians is growing, communication using social networks in health care is largely within constituents – patient-to-patient (e.g., PatientsLikeMe) or physician-to-physician (e.g., Sermo) – rather than between them. Physicians struggle with "friend" requests from patients on Facebook, and clinicians have run into compliance issues due to Facebook and Twitter postings about difficult patients. While some physicians have taken to blogs or tweets that patients and others can respond to, there's a great deal of legal uncertainty surrounding these interactions.

> ***"If you aren't taking social networking and social media platforms into account in your thinking, you will have an incomplete map of the future."***

Social Networks are not HIPAA Compliant...

Many of the challenges that have faced digital visits and emails now stand in the way of using social network technology for enhanced patient-physician interaction:

- Social Networks are Not HIPAA Compliant: Social networks such as Facebook and MySpace are public, and their value is tied to the public sharing of information, which poses significant privacy risks.
- Clinicians are Not Reimbursed: Physicians don't get paid to use social networks to communicate with patients.
- Guidelines are Non-Existent: despite recent efforts, guidelines on how patients and clinicians would interact in clinician-patient social networks are unclear, and liability is still a concern. It's also unclear how these communications would relate to the medical record.

Providers are Getting in the Game

Hospitals are in position to facilitate efficient, physician-to-patient, "many-to-many" communication that can make social networks incredibly powerful. Health systems across the country are quickly embracing social media and social networks, as more than 700 hospitals in the U.S. have a social media presence[5].

"If you aren't taking social networking and social media platforms into account in your thinking, you will have an incomplete map of the future," says Lee Aase, Director of the Mayo Clinic Center for Social Media. "The investment is generally pretty small to get engaged, and these are revolutionary tools for communication that have strong beneficial potential for improving engagement and delivery of information, as well as the ability to listen to key stakeholders." The Mayo Clinic launched its first podcast in 2005 and has since fully embraced the power of social media. The organization provides an example of how providers can facilitate efficient, meaningful communication between patients and physicians using social networks and social media tools. "We have an opportunity to provide in-depth content that will never get on the evening news," says Mr. Aase. "The ability to give that targeted

information to self-selected patients and caregiver populations is really important and valuable, and it's free."

When the Mayo Clinic decided to pursue a social media strategy, it needed to clarify a number of issues. How would it use social networks and social media? How would they handle comments? What if someone says something bad? "We had to work through some issues and say, 'No, we are not going to individually diagnose and treat people through the internet,'" says Mr. Aase. "We are going to provide general information that will be valuable to a particular patient subset; as we get requests for more specific information, we can triage them, and if they want to be among the patients that come here each year, they could do that." Defining clear boundaries ensured that the organization would take a measured, deliberate approach. Addressing clinician time constraints was a critical step in establishing a successful program. The organization made specific choices about how it would use social media that addressed these concerns. Mr. Aase says, "We tried to make it easy. We decided we weren't going to blog because we did not want to hassle physicians to write for us. But by using $150 HD video cameras, we can just talk with them and capture their perspective about myelofibrosis, for instance...and they just talk like they would with a patient. We're not asking them to invest a lot of time. They are doing what they do normally, but instead of doing it with one patient, they are doing it in general terms for many potential patients and consumers."

> ***"Social influence matters, and it matters a lot!"***

In the spirit of social networking, the Mayo Clinic launched the Social Media Health Network in October 2010 to collaborate across health systems around social network strategies, disseminate best practices and foster innovative approaches to using social media and networks in health care. "It is such a rapidly evolving field. If we can learn from each other, we can accelerate the growth and adaptation of the tools for the health environment," says Mr. Aase. As more providers use social media and social networks, collaboration across health systems can ensure that the mediums are used effectively and that valuable patient-to-physician communication takes place.

Harnessing the Power of Network Effects

Recent research in the area of network science has begun to show not just how information moves through social networks, but also how social influence can impact health outcomes. Recent studies have found that one's chance of becoming obese increases by 57% if the person has a friend who became obese, and that one's chance of becoming obese is not only linked to the weight gain of one's friends, but also to the weight gain of friends of friends[6]. Other research suggests that direct and even indirect social reinforcement can increase positive health behaviors. The implication is that if health care providers and officials can target "nodes of influence" within communities, they can more effectively improve outcomes and reduce the prevalence of the flu, sexually transmitted diseases or other conditions.

MedNetworks is at the forefront of applying social networking analytics. The company is finding that a deep understanding of social networks can be used to improve efficiency and outcomes in a variety of health care sectors. "Social influence matters, and it matters a lot," says Dr. Larry Miller, CEO of MedNetworks. "If you can harness it, you are harnessing one of the most powerful forces that affect all of us, so why not do it." The company helps pharmaceutical companies and health care delivery companies understand how they can use social network technology to target nodes of influence in their physician or patient populations when designing promotions or wellness programs, with the goal of using resources more effectively and improving outcomes in patient populations. Pharmaceutical companies are faced with decisions of how to target their drug promotions to physicians effectively – in a sense, which physicians to target to get the most 'bang for their buck'. While pharmaceutical companies often focus on high-prescribing physicians, the more influential doctors are not always straightforward to find. "You don't necessarily need to call only high prescribing physicians. If you look at influence patterns in physician social networks, most of the high influencers are not high prescribers," says Dr. Miller. "So if you call only high prescribers, you miss a substantial number of physicians that have influence in the community and are likely to spread the message within the community." In other words, looking at only individual characteristics misses the important factor of social influence. "Just because I'm an initiator and more likely to start a medication, that says nothing about whether I'm going to be in the center of the network or the periphery of the network, in a highly influential position

or non-influential position. Those two things turn out not to be correlated at all, so you need to understand both. Social influence is among the most important factors, and may be the most important factor, in brand decisions by physicians." Dr. Miller adds, "For every community in the U.S. and for every therapeutic area, we can map physician networks, look at influence patterns, and help with more efficient targeting."

As employers, health plans and providers continue to invest in preventive health and wellness programs, MedNetworks believes that considering both individual and social influence factors can lead to more effective program spending. "For a number of health behaviors, if you use network effects you will be more efficient and more effective," says Dr. Miller. "Take smoking cessation, which is critical… there's good evidence that using social networking effects, looking at clusters of smokers and focusing resources based on influence patterns within those clusters can promote efficiency. You don't necessarily have to throw your resources at everybody, and also, perhaps even more importantly, you promote sustainability. If you can get people to stop together, they're likely to stay stopped. If you get one individual to stop, they'll often start again." Efficiently targeting patients of influence may also help sustain better quality outcomes. Dr. Miller adds, "If you use this approach, you'll get greater effects on the population for the same intervention, and you'll get greater sustained effects, and that's really hard to achieve."

Given the pace of change in the social media and social networking space, it's impossible to predict what's coming next, what's going to be important, and how these tools will be used even in the short term. But given the variety of established players and entrepreneurs using social networks and media in ever more creative ways, the health care industry is poised to continue to be at the forefront of this new and evolving space.

[1] Pew Internet and American Life Project

[2] Center for Health System Change

[3] Manhattan Research

[4] PriceWaterhouseCoopers

[5] Deloitte Center for Health Solutions

[6] "The Spread of Obesity in Large Social Networks Over 32 Years," Christakis and Fowler, New England Journal of Medicine, July 2007

Biographies:

Mr. Lee Aase is the Director of the Mayo Clinic Center for Social Media, a first-of-its-kind social media center focused on health care. The Mayo Clinic is a leader among health care providers in adopting social media tools, which began with podcasting in 2005. Prior to joining Mayo Clinic in 2000, Mr. Aase spent more than a decade in political and government communications at the local, state and federal level.

Dr. Larry Miller is President and CEO of MedNetworks, a company that applies unique technology to map, analyze and activate social networks across a broad range of health care constituencies. In addition to founding PharMetrics, ImpactRx and Optio Research, he played key roles in companies such as HPR and Avicenna Systems. Dr. Miller is also a physician and clinical pharmacologist.

Start-Up Spotlight

By James Rhodes, WG'12

There was nowhere to run, nowhere to hide – the downturn hit fast and hard, and health care start-ups around the country were forced to adapt to an incredibly challenging environment. In 2009, venture firms invested $7.7 billion into health care start-ups, down from over $10 billion in 2007, according to VentureSource, a market tracker. The median amount invested in a health care round of venture financing was $5.9 million in 2009, down from over $10 million in 2007. While health care start-ups fared better than their peers in the technology sector, investors became more cautious with their money and many new ventures were forced to turn their attention from growth to cash flow.

As the economy recovered through 2010, the Pulse team interviewed four start-ups to understand how they made it through the recession, the challenges they face today, and their optimism for the future. The start-ups surveyed represent various funding stages and health care sectors, providing a diverse perspective on the climate for health care start-ups today. These companies included: Infrascan, a medical device company manufacturing a hand-held imaging device used to detect hematoma; MyBuddyCheck, which provides a telephone-based personalized care management system for seniors; Neurophage, a pharmaceutical company focusing on neurodegenerative diseases; and Rx-Text, which offers a web-based system that uses text messages to facilitate communication with patients.

Be Nimble, Be Quick

The economic downturn showed that customers and funding can dry up virtually overnight. While flexibility and adaptability are hallmarks of many successful start-ups, these were especially important enablers to surviving the recession and positioning the companies for the future.

When Infrascan encountered two significant challenges – a stalled F.D.A. submission and a dwindling funding environment – it had to dramatically adjust its business strategy. The company shifted its attention to international markets that it had not prioritized before, and it even added engineering consulting work to provide short-term revenue streams to stay afloat. "From the very beginning, we built Infrascan as a small and nimble company," says Baruch Ben Dor, CEO of Infrascan. "We kept our core small…outsourcing non-core activities such as manufacturing. Since we didn't have a large burn rate, it wasn't hard to survive." The founders bootstrapped the company to stay afloat, but initial sales and then international sales provided a foundation for growth. "Entering international markets was a reaction to our situation. Our business plan always focused on the U.S. market, which we felt would be the largest. But international countries became the main market." As Infrascan's F.D.A. approval lagged, the device received CE mark approval in the European Union, making international markets an obvious alternative. Flexibility ultimately led the company to a new focus for sales growth that it hopes will sustain the company in the future. "We still hope to develop something in the U.S., but getting F.D.A. approval is not critical for us at the moment."

MyBuddyCheck first took a Direct-to-Consumer marketing approach to grow its customer base. By shifting from a direct

> ***"For start-ups in this environment, it really helps to have your vendor pay your start-up costs."***
> ***-Dr. Sarah Russell***

> ***"These investors understand the long cycles of the industry, are very experienced and connected, and don't have the time pressure that a lot of venture capital firms have – so they can wait," - Jonathan Solomon***

sales model to seniors and their families to one where the company formed partnerships with nursing homes, hospitals and other providers, MyBuddyCheck found new customers with unmet needs. Additionally, given the opportunity to work internationally, the company partnered with two hospitals in Nigeria to demonstrate a proof of concept, and plans to expand to NGOs, companies and other facilities in the region. "That's the real strength of our platform," says Gerald Green, CEO of MyBuddyCheck. "While we are targeting the local area, our platform can work anywhere instantly." Far from its primary target customer base in the United States, international markets that creatively use basic mobile devices may provide an interesting revenue base to compliment U.S. sales.

Choose the Right Investors

Other start-ups show that choosing the right investment partners can drive both initial momentum and long-term success. Rx-Text's first customer was Merck & Co., the $27 billion pharmaceutical company. Merck saw potential in RxText's technology, so much so that it was willing to pay the cost of piloting a simple version of the product that would meet its needs without taking an ownership stake. "For start-ups in this environment, it really helps to have your vendor pay your start-up costs," says Dr. Sarah Russell, founder of RxText. "Customers want you to demonstrate evidence of your technology before they use it. Yet, the cost, time and commitment associated with a pilot are not insignificant. It takes a tremendous amount of brainpower and people on board." The right investor or customer can prevent start-ups from a "death by pilot", where the costs of piloting a technology prevent a helpful solution from getting to market, a cause of tension between customers and ventures that has been playing out in the mobile health space.

Neurophage founders were fortunate to find a group of non-traditional investors with pharmaceutical industry experience, outside of the venture capital and angel community. "These investors understand the long cycles of the industry, are very experienced and connected, and don't have the time pressure that a lot of venture capital firms have – so they can wait," says Jonathan Solomon, Neurophage's CEO. Mr. Solomon also cautions against holding on to equity to the extent that it prevents bringing in the right experts and partners to move the company forward. "If the company is successful, there's a lot to share. Many start-ups are so tight in terms of equity that they aren't bringing in the right expertise, they aren't paying for it... You have to find the right partner." Once Neurophage decided to bring on two key experts, the company was able to quickly overcome significant challenges and produce provocative data that has attracted new potential investors.

Simple, Yet Elegant

RxText's initial vision was to help patients manage their chronic diseases; the cell phone would become a toolkit for asthma, diabetes and other chronic disease patients to self-manage their health. Merck's vision, to send text appointment reminders to patients, was much less sophisticated. While the end result was different than what RxText initially intended, RxText has been able to demonstrate effectiveness while exploring a new customer base that needs a simple solution. "We are finding that pharmaceutical companies are a great target, they are

very receptive," says Dr. Russell. "They are coming in with very complicated things, and we come in with a very simple value proposition, a very elegant one, which is to provide text messaging in a web-based format that can also be integrated into the electronic medical record (EMR), but it's only around text-messaging."

Challenges and Optimism

In many ways the odds are still stacked against today's health care entrepreneur. Investors are slowly returning to the market; regulatory complexities and unknowns abound; investors and constituents continually raise the bar to justify investments and product approvals. This article alluded to Infrascan's challenges with F.D.A. approval, an issue familiar to device and pharmaceutical start-ups as clinical trial standards and costs continue to increase. These regulatory complexities affect growth both domestically and internationally. Start-ups like MyBuddyCheck are faced with a "chicken-and-egg" situation: demonstrating a proof-of-concept or building out a sales staff requires cash, yet investors are still somewhat hesitant to invest in an unproven concept. Others like Neurophage and RxText are drawing earlier interest from pharmaceutical companies; while this is certainly a positive, they may have to produce new data or adjust their pitch and strategy to appeal to a new set of constituents.

However, there is more optimism than a year ago. "The awakening of international markets and our new contracts is an indication of the need for our product in the market," says of Dr. Baruch of Infrascan. "There is a real need for the solution that we were able to develop, and for our company that's the main thing." Mr. Solomon of Neurophage adds, "Over the last year, we've had a lot of new data that's changed the playing field…The combination of that and having the confidence of our initial investors is very reassuring."

That optimism comes with a dose of reality, and a reminder that innovation, differentiation, value and confidence remain important keys to success. "Start-ups die a thousand deaths," says Dr. Russell of RxText. "I want to be sure that if I'm going after something, I'm clear that it adds value, that there's demand for it, and that I can differentiate myself, without being foolhardy." "It's hard to think long-term, but you've got to build the company, have confidence, and in the end there's always a way," says Mr. Solomon of Neurophage. "The basic principles will carry you through."

rx text	Web-based system that uses text messaging to facilitate communications with patients, providers and their staff can set up text message reminders to be sent to any patient on any day, at any time. Currently working with Merck to improve patient appointment attendance.
Buddy Check network	Telephone-based care management system for seniors and their families. Contacts seniors and, if a problem is identified, triages the call to a list of primary contacts to notify them of potential issues, in addition to sending reminder text messages. Trial currently underway with Bayada Nursing.
INFRASCAN HANDHELD BRAIN DIAGNOSTICS	Developed a hand-held imaging device using near infrared technologies for the detection of hematoma. International sales have tripled in the last year and the company has received contracts from the U.S. Marines and Navy.
NeuroPhage PHARMACEUTICALS	Developing a breakthrough protein disaggregation platform for treatment of neurodegenerative diseases. Raised initial $12 million in funding and currently raising another $15 million.

Ex-CHANGING Insurance:

An Expert's Thoughts on Health Insurance Exchanges

By Cody Dashiell Earp, WG'12

There has been much speculation surrounding the impact of insurance exchanges on the health care industry. After 40 years of studying health insurance, Professor Mark Pauly has seen it all. He shares with us more realistic expectations for 2014.

Pulse: ***You recently published a book, "Health Reform without Side Effects," which explores the individual health insurance market, and the pros and cons of different reform strategies. Can you describe some of the benefits and side effects of health insurance exchanges?***

Mark Pauly: In the individual market there is enormous variation in premiums charged for what appear to be very similar policies. It is just a very untidy market. Our research suggests that if individuals are willing to put enough effort into a search they can probably find a pretty good deal. On the other hand there is some evidence that a lot of people do not put in that effort. In the current environment, an insurer can charge whatever they want for a policy. It is easy to set a high price in the hopes that a few foolish people will fall in the trap you have constructed for them. One solution to that is potentially making more information available to those people so they can be better shoppers. In the current environment it is not hopeless. There are websites like *ehealthinsurance.com*, where you can search reasonably well, but there is always room for improvement and room for helping people search better. I'm hoping the exchanges will do that.

Pulse: ***What about the exchanges that already exist on the state level?***

Mark Pauly: The two extremes for what the exchanges might look like are Utah and California. Utah is like the stock exchange. They tell you what the prices are for different things and then it's up to you to tell them what you want. The alternative in California is much more paternalistic; the "we are running the exchange and are going to decide what plans we think are good for you" approach. Massachusetts so far has taken a fairly conservative approach to how they are doing the exchanges although the great bulk of what happened in Massachusetts has been at the Medicaid level, not at the exchange level.

Pulse: ***What is the danger of this sort of paternalism?***

Mark Pauly: It is the usual problem when you have a product of variable quality and buyers are not informed. If there is minimal regulation and you are not a very aggressive or lucky shopper you may get taken advantage of. On the other hand, regulations that control quality may mean that if you are an aggressive shopper and you want a particular product, regulators

may not let you have it because they decided it wasn't a good quality product. My belief is that consumers do have quite variable preferences about what they want their health insurance to be like. There are some people who want insurance where they assume a lot of cost sharing and it puts a lot of burden on them for managing their own care, and then there are others who want insurance that is hassle free and they are willing to pay for that.

The formal structure of the legislation is the platinum-gold-silver-bronze way of stylizing the different policies and giving people some choice but also some categorization. The problem is, once you say there are certain flavors that are pretty good for most people then you want to say there shouldn't be anything else. Not to get too misty-eyed about it, but I think the main reason to tolerate variation is not just because there are people out there who want things that no one else wants but also because nobody knows what is good insurance and so the more you standardize it the more you stifle innovation. When you talk about innovation among insurers you kind of have to suppress a smile because they haven't been real pioneers, but there are exceptions, and we can always hope.

> ***It is not the magic of exchanges, it is the magic of subsidies.***

> ***I think the main reason to tolerate variation is not just because there are people out there who want things that no one else wants but also because nobody knows what is good insurance and so the more you standardize it the more you stifle innovation.***

Pulse: ***The Congressional Budget Office estimates that there will be 32 million more Americans with health insurance by 2019, half of whom will buy their insurance through an exchange. What will that do for the insurance marketplace?***

Mark Pauly: The reason why that will happen is not because insurance will become a much more attractive product that you can buy at a reasonable price. The primary reason that will get those 16 million people who are uninsured to become insured is that there is going to be a big subsidy. I allow myself to be optimistic enough to imagine that the current procedures for underwriting exist because the people who are showing up to buy insurance are much more likely to be high risk than low risk. If the people who are showing up are there because they are subsidized not because they are high risk, they are just ordinary people getting a big push toward insurance, you don't have to screen nearly as carefully and that will benefit everybody. So, it could be great, but the main point to make here is that the reason why the exchanges might work well for that population is not because of the exchange idea but because subsidized insurance sold from a lunch truck would sell well and be cheap to administer. It is not the magic of exchanges, it is the magic of subsidies.

Pulse: ***But there will still be a population that will choose not to use the subsidy. Presumably these individuals are healthier, aren't they?***

Mark Pauly: You would think that, but at least what we know so far suggests that that is not really right. They do tend to be healthier than average, but they are not just young healthy immortal people. They are people that just do not understand the idea of insurance. When you look at their behavior they do not buy other kinds of insurance and they are maxed out on their credit cards. There will be people like that, and the purpose of the mandate is to prevent that from happening, for their own good. But the mandate is pretty toothless at least at low-income levels. The Congressional Budget Office estimates that there will be red-blooded Americans who trust the Lord more than they trust insurance companies or just think "bad things never happen to me." I think it is a big improvement to cut the number of uninsured by close to 2/3, but it is not universal.

Pulse: ***What impact will this influx of insured patients have on hospitals and providers?***

Mark Pauly: On the one hand there will be people who will be coming in with insurance cards that used to come in as charity care, and then there will be people who didn't come in because they didn't have insurance cards and didn't want charity care. So that is good for hospitals. On the other hand almost everybody is predicting that the payment rates to hospitals are going to get tighter and tighter. I think it is going to be really dramatic how much Medicare pays relative to cost. It will certainly be reasonable to assume that these companies and the exchanges are going to tighten the screws as far as they can on cost. There will be a lot more people coming in, but there will also be a lot less money coming in. If there was an FDA of cost containment nothing could be labeled as safe and effective. So it is a challenge for people running health delivery systems.

Pulse: ***What about the pharmaceutical and medical device industries? Do they stand to benefit?***

Mark Pauly: In the short run they do. People without insurance will usually not put off going to the hospital because they broke their leg. But they will put off going to the doctor to get their blood pressure medicine. In the short run the model for these businesses is one where they have high fixed costs and low marginal costs so there will be a bunch of money coming in. In the long run, and you can cue the theme music from jaws if you'd like, I think the insurers public or private are not going to pay much for those things either. It could end up like Medicare part D. The research suggests that the PBMs that run Medicare part D were pretty tough bargainers and the only real source of extra money for pharmaceutical companies was taking people who were formerly in Medicaid, which paid really poorly, and moving them into the PBMs, which still paid on a frugal basis, but better than Medicaid. I'd be really worried if I was a drug company about the people who are going to go on Medicaid under health care reform. Taxpayers want the Medicaid plans to be super stingy, and they are.

Pulse: ***In this market, will insurance companies be competing more on price than on quality?***

Mark Pauly: I think they may not be the right dimensions of quality but they definitely do compete on the basis of quality. In all the studies we have had on people choosing among insurance options, they want to know: "Can I go to any doctor I want? Will I be able to get an appointment? Will you hassle me? Will you hassle my doctor?" Those things still matter to an awful lot of people across insurers. Certainly the price matters. Most of us get our insurance through our jobs and we know that the sensitivity of people to the price they have to pay is fairly high, but that was always true. I do not think that is any more true now. But there is also a high degree of sensitivity to some degrees of quality that some consumers really care about. With all of this report card technical health quality stuff, consumers just do not care. They didn't care about EDIS and they don't care about PHC-4. Maybe we can convert consumers into little epidemiologists someday, but until that happens, we'll just have to see what the future holds.

Biography:

Mark V. Pauly is Bendheim Professor in the Department of Health Care Management, Professor of Health Care Management, Insurance and Risk Management, and Business and Public Policy at The Wharton School, Co-Director of the Roy and Diana Vagelos Life Sciences and Management Program, and Professor of Economics in the School of Arts and Sciences at the University of Pennsylvania. A former commissioner on the Physician Payment Review Commission, Dr. Pauly has served on the advisory committee to the Agency for Health Care Research and Quality, and on the Medicare Technical Advisory Panel. He currently serves on the National Advisory Council for the National Institutes of Health National Center for Research Resources, the National Academy of Sciences' Committee to Study the Veterinary Workforce, and the NAS Committee on the Biomedical Workforce. He has been a consultant to the Congressional Budget Office, the Office of the Secretary of the U.S. Department of Health and Human Services (which supported some of his work on individual health insurance), and health trade associations. Dr. Pauly is a co-editor-in-chief of the *International Journal of Health Care Finance and Economics* and an associate editor of the *Journal of Risk and Uncertainty.*

Going Abroad:

An Interview with CIGNA's James O'Brien

By Cody Dashiell-Earp, WG'12

The international demand for health insurance is growing, and many US-based insurance firms are stepping in to fill the void. James O'Brien gives us an insider's perspective on Cigna's innovative global strategy.

Pulse: ***Cigna is a leader in developing the international insurance market. Can you describe your global strategy?***

James O'Brien: CIGNA International is part of CIGNA (www.cigna.com), a global health service and related insurance company dedicated to helping people improve their health, well-being and sense of security. Outside the U.S. CIGNA delivers access to superior quality health care and related financial protection programs to employers, affinity groups and individuals. CIGNA actively sells in 27 countries and jurisdictions and serves expatriates virtually everywhere in the world. With a global workforce of over 11,000 employees CIGNA International has produced consistently strong financial results with revenues of US $2 billion and earnings of US $189 million (2009 figures) through four focused lines of business.

The first business line is CIGNA International Expatriate Benefits (CIEB - www.cignaexpats.com) which provides global coverage to group employers ranging from large multi-national corporations to non-governmental organizations (NGOs) for their employees working on long- and short-term assignment overseas. Products include medical, dental and vision coverage as well as emergency medical evacuation services and are supported by the world's largest global network of providers and 24/7 multi-lingual customer service support. With our recent acquisition of Vanbreda International (www.vanbreda-international.com) based in Belgium, CIGNA is now the world's # 1 provider of expatriate benefits. The second business is our Health, Life and Accident (HL&A) business which targets individual customers and is headquartered out of our Hong Kong offices. HL&A offers CIGNA customers a wide range of easy to access, simple, affordable short-term, risk-based products ranging from term and variable life and accident insurance to fixed-benefit and indemnity health insurance. These products are primarily distributed via outbound telemarketing to affinity partner customer lists as well as internet-direct and most recently direct response television (DRTV). A shining example of this business would be our LINA Korea subsidiary (www.lina.co.kr). The third is our Group Healthcare Business available in both the U.K. (www.cigna.co.uk) and Spain (www.cigna.es) which provide private medical, dental and vision coverage under a similar employer-based model as our domestic U.S. health care business.

Fourth is CIGNA's Individual Private Medical Insurance (Individual PMI) business which I am responsible for. As the name suggests, this business provides individual private medical coverage on both a local and global level. At the local level, the product line offers a compliment or alternative to the various government social insurance schemes and includes different levels of inpatient hospitalization and outpatient surgery indemnity coverage as well as dental plans distributed through a wide range of consumer direct and partner-driven channels. A good example of this business on a local level would be our Spain operations (www.cignasalud.es). At the global level, CIGNA Global Health Options leverages CIGNA's strong U.S. domestic and international network of high quality providers combined with the highest levels of customer service to ensure our clients receive the best possible care anytime and anyplace in the world. The global Individual PMI products address the needs of globally mobile high net worth individuals and are distributed online (www.cignaglobal.com).

In summary, CIGNA is the only US-headquartered health service company with a global franchise.

The businesses we are in today have been operating in the international arena for over 30 years and we are leaders in the channels and markets in which we chose to compete including direct distribution of our insurance products and group expatriate benefits.

Pulse: ***Is this strategy applicable to emerging markets in general?***

James O'Brien: The combination of businesses, product and channel strategies are applicable in a number of different developed and developing countries. On the health insurance side, you will see variation depending on each individual country as to what works best. Some of that is driven by what the existing health insurance scheme – often government health insurance scheme – is in that country. So depending on whether you are selling a plan to supplement the government plan or a full replacement type product for folks who want to opt out of the government-run program, there are different dynamics. There is also a third category which are those countries which have a privately driven national health system, as in the U.S.

Pulse: ***What have been some of the surprising challenges of working in the international insurance market?***

James O'Brien: For me coming from the U.S. domestic business, I think the wide variation in terms of government schemes is very interesting. For example, Hong Kong's health care system is facing the challenges of a rapidly ageing population and rising medical costs similar to the U.S. and the government recognizes that there is an imminent need to ensure its sustainable development in order to provide the public with adequate protection. In an effort to do so, the Hong Kong government is pursuing a staged approach to ease the pressure on the public health care system by encouraging more people to use private health care on a sustained basis. They have actually put out a paper looking for public response, as far as what to do with the situation (www.myhealthmychoice.gov.hk/en). So in some ways, it is similar to what the United States may face in the not so distant future once we have expanded social services to the point where they are potentially financially unsustainable, at which point our government may have to go back to the drawing board.

The other component of it is individual desire to have health care and health insurance. You know, the Chinese market currently is a very cash-based market, so the concept of health insurance is a little bit earlier in its stage of development. And so the question is how it will evolve in that market. Will it evolve along the same lines as, say, a U.S. model or perhaps more like the social welfare states of Europe? It can be very unpredictable. You see one country, and you see one country. That's about all you can say.

Pulse: ***Who do you see as your competitors in this marketplace?***

James O'Brien: It depends again on the customer segment, but at the expatriate level, Cigna's recent acquisition of Vanbreda has vaulted us to the # 1 expatriate benefits provider worldwide. Our major competitors in that particular segment are Bupa, AGB and Allianz among others. In terms of HL&A you see competition coming from a number of life and non-life insurance companies. It really depends on which segment you are looking at as to who the players are.

Pulse***: Pulse: How closely are you working with local governments?***

James O'Brien: Extremely closely. Not unlike the U.S., most countries have very highly regulated federal government systems and even in state provinces, as you'll see in China, the regulations are individually based. Because there is such heavy regulation you really need to partner with the government and keep them apprised of everything that you plan to do. Securing domestic licenses to do business is a necessary first step in terms of delivering products into a market and that is one of CIGNA's competitive advantages. We have licenses to do business in 27 countries and jurisdictions, far more than any of our competitors. An example of how tightly defined regulations can be, the Korean Financial Supervisory Service (FSS) actually defines exactly what an Individual Private Medical Insurance benefit plan should look like down to specific covered services and benefit limits. So really there's very little opportunity for product differentiation in the basic benefit design of the plan. Competitive differentiation is pursued either by selling rider policies, delivering value-added health services, strong operational excellence in fulfillment of benefits or via other approaches where you can provide added value.

Pulse: ***How is Cigna partnering with the provider side, particularly in places like China where there hasn't historically been an insurance product that people have been using?***

James O'Brien: China is an interesting example because, again, it is a cash-based model. In most cases, the providers are unfamiliar with the types of reimbursement approaches that health insurance requires. So there is a learning process. I think it is easiest with those hospitals that have experience working with expatriate patients or who employ foreign trained doctors, but if you get outside some of the major metro areas, it can be more challenging. There is definitely an expectation of cash up front, and the reimbursement goes to the individual after the fact rather than

directly to the provider. The Chinese government is going to great lengths to encourage greater partnership between payers and providers to facilitate the development of their health care system but it will inevitably take time develop. In addition to our extremely strong and long-standing joint-venture partnership with China Merchant's Bank (CMB - www.cmbchina.com), we have good partnerships with network management companies in China such as Quality Healthcare (www.qhms.com) who help handle provider relations on our behalf. Across the globe, CIGNA provides a significant advantage today through fully integrated, strategic contractual alliances with local insurers or health care administrators. Through electronic data transmissions, our CIGNALinks partners have eligibility and benefit plan information instantly available, which simplifies the administration of health care in the host country.

Pulse: ***There is evidence to suggest that there is demand for health insurance products even in very low-income segments of the population. Is there potential for Cigna in the low-income segment?***

James O'Brien: The opportunity in terms of population is definitely there. The question is does that population have the disposable income to afford to invest in a type of health insurance product. Also, do they have the educational awareness and risk management skills to value those types of products? I think there is an educational component and there is an ability-to-pay component that are barriers to penetrating that market. It is something we continually look into and continue to try to drive down market to see if we can achieve greater overall volumes.

Pulse: ***Cigna offers health insurance in 27 different countries. Where would you say that business is growing the most?***

James O'Brien: It depends on whether you are using percentage or total volume. Our Korean market is our largest market and continues to grow year-over-year revenues in double digits. On a percentage basis, I think the China market is one of our strongest and has continued to exceed very aggressive growth goals in recent years, but we also have a number of smaller markets that we've recently invested in that are growing at even higher rates than that. So it depends on how you define it.

Pulse: ***Will you take lessons from your international individual health care insurance practices and bring them back into the U.S.?***

James O'Brien: Our international business shares best practices with our U.S. domestic individual business on a regular basis. It is a great way to understand the impact of potential variations in regulations and to think about the best way to navigate those different environments. So it is a great opportunity for us as we really develop our domestic U.S. individual strategy to have a better idea of what works and what doesn't outside the U.S. so we can be more successful here.

Pulse: ***As somebody who's involved in the international insurance market, does Health Reform in the U.S. influence what you're doing at your company?***

James O'Brien: Yes. A large portion of Cigna's overall enterprise is as you know centered on the U.S. domestic market, in terms of our competitive positioning in that market related to Health Care.

Biography:

Jim O'Brien is Director of Operations for CIGNA International's Individual Private Medical Insurance (Individual PMI) business. In this capacity, Jim is responsible for product development, distribution strategy and capability development supporting Individual PMI product launches and ongoing management across multiple countries including China, Korea, Spain and Great Britain. Prior to this role, Jim held positions of increasing responsibility in the Network Strategy and Product Development areas of CIGNA's U.S. domestic healthcare business. Before joining CIGNA, Jim worked for Hospital Corporation of America (HCA) and market research firm International Data Corporation (IDC). Jim holds a B.A. from Boston College and a M.B.A. from Duke University. He currently resides in Yardley, PA.

The Next Pharma Super Power?

The Future of the Indian Pharmaceutical Industry

By Arun Roy, WG'12

Indian pharmaceutical companies are emerging on the world stage. Dilip Shanghvi, Founder and Chairman of Sun Pharma, discusses the future of the Indian life sciences industry.

Pulse: ***When, if ever, will emerging markets compare to the developed markets as a source of pharma revenues?***

Dilip Shanghvi: Even though emerging markets such as India will have the potential to continue to grow at double-digit rates, it will take many years for these markets to come anywhere close to the US or Europe in terms of size. Remember that India's average per capita drug consumption is around $10 (based on a population of 1.2 billion and a market size of $12 billion), whereas in the US it is in the thousands. China may be a little different; some projections show China becoming the second biggest pharmaceutical market in the near future. The Chinese government is spending a lot of money with a view to providing universal healthcare coverage. The government is also spending on creating infrastructure such as new hospitals. In India, these roles have historically been mostly filled by non-profits and the private sector.
If economic progress and employment generation continues at current growth rates, if access to education continues and if internationalization of Indian companies continues, significant progress will be conceptually possible in the pharmaceutical sector.

Pulse: ***What are your thoughts on efforts to provide micro health insurance to segments of the population?***

Dilip Shanghvi: There are many initiatives by both the government and the private sector to improve the availability of quality pharmaceutical products at affordable costs to a larger population in rural India. But this cannot by itself solve the entire problem. We also have to consider infrastructure, ability to pay for medication and other issues. For example, at the lowest level an insurance premium still has to be paid, which could be challenging for the poorest segments of society.

Pulse: ***What kinds of products are Sun and other similar Indian companies developing for Indian diseases and contexts?***

Dilip Shanghvi: Our product range is targeted at chronic conditions and aging related diseases. However, I think we might be a different kind of business with a very different product mix relative to the rest of the Indian industry. Most of the other Indian companies will have a fairly large portfolio of acute care products. We started off selling psychiatric products and then graduated to neurology and other specialties. Chronic therapies were a business that we found we could do better in than acute care products.

Pulse: ***How innovative are Indian pharmaceutical companies today? In the West, they are seen largely as producers of generic products. When can India recreate a life sciences innovation ecosystem such as San Francisco or Boston with all of the components, including startups, institutions, scientists, entrepreneurs and financiers?***

Dilip Shanghvi: In a way, the characterization that Indian companies have been successful in regulated markets using generic products is valid. However, I also see almost all Indian companies creating the capability to manage innovation within their organizations– with differing degrees of success.
All of the major Indian companies – such as Sun, Glenmark, Ranbaxy, Wockhardt, even Cipla – have differentiated products in various stages of development. For example, we are developing a dry powder inhaler for treatment of COPD. The device is far more efficient than current

products – it can deliver more than twice the amount of drug to the lung. Thus, it can work at significantly lower dosages, so that the patient doesn't have to be given extra amounts of steroids. It will be marketed in India and internationally, including in developed markets. Another example is an anti-cancer product delivery technology we have which can deliver a significantly higher amount of drug to the tumor tissue compared to the healthy tissue. Both of these were developed in-house using all relevant international standards both for documentation and for systems.

All of this said, keep in mind that the Indian pharmaceutical industry cannot do everything. For example, we currently do not have the kind of basic science capability, financial resources and ability to make very long-term investments that would be required to research a new biological pathway in order to treat a disease. Will India – government and private sector combined – ever have this level of financial wherewithal? It all depends. Regarding your question about a life sciences ecosystem, I'm sure that at some point this will happen. But currently, none of the components you described is fully there, it is a work in progress.

Pulse: ***Do Indian pharmaceutical companies enjoy any unique competitive advantages? For example, lower labor costs in India?***

Dilip Shanghvi: There is really no need for Western companies to operate from a position of disadvantage when it comes to labor costs. There is nothing preventing Western companies from setting up research facilities in India and accessing the same low-cost resources in India. This already happened in software – IBM is now the largest employer in India – and in fact is already happening in pharmaceuticals.

When we compare the big Western companies and Indian companies, I do see a relationship between innovation and size, entrepreneurial culture and ability to respond to changes faster. Indian pharmaceutical companies will continue to grow their business and become more international. Their success to date and their future success is a function of the inherent capabilities of these companies, such as their ability to learn new things and their ability to take risks.

The resource constraints faced by Indian companies might also be considered the source of competitive advantage. The cost of pharmaceutical products in India is much lower than international prices and yet Indian companies have found ways to make money at those prices.

If I consider Sun, we started from a very small base and always competed with very large companies. Consequently, we had to find ways to do more with less. The focus on costs, on doing things fast, ability to anticipate changes, ability to learn and ability to work with complex technology has become part of our organizational culture. That then became a kind of competitive advantage, an advantage that we try to use now in our research activities too.

Will India – government and private sector combined – ever have this level of financial wherewithal? It all depends.

Biography:

Dilip Shanghvi, 55, is Chairman and Managing Director of Sun Pharmaceutical Industries Ltd. (Market capitalisation $ 11.1 billion, annualised revenues of $ 1.4 billion). Sun Pharma is the fastest growing, most profitable and highest valued pharmaceutical company in India. Sun Pharma has leadership in 11 speciality therapy areas within India, has 65% of sales coming from international markets and invested over $ 425 million in R&D. Sun Pharma, as a start up, had first year sales of $ 0.02 million in 1983. Mr Shanghvi is also the chairman of Taro Pharmaceutical Industries Ltd. in which Sun Pharma recently acquired a 66% ownership.

He is also Chairman and Managing Director of Sun Pharmaceutical Advanced Research Company Ltd. (SPARC, market capitalisation over $ 430 million); an international pharmaceutical company engaged in research and development of drugs and delivery systems. SPARC, inherited the innovative business from Sun Pharma and is the first pure R&D Company to be listed on Indian stock exchanges. He also owns, in his individual capacity, several private investment companies that invest in emerging technology areas.

Selling for Success

By Arun Roy, WG'12

It is widely believed that the pharmaceutical sales model is in dire need of an overhaul. Scott Evangelista, lead partner at Deloitte, discusses his vision for the future of pharmaceutical sales and marketing.

Pulse: ***You recently wrote an article where you recommended that pharmaceutical companies 'blow up' their traditional sales forces. Can you explain what this means and the reasoning behind this extreme option?***

Scott Evangelista: Fundamentally, sending sales reps in large volumes to talk to physicians is no longer effective in influencing prescribing behavior. My contention is that the pharmaceutical industry needs to move away from its 'push' history. The current sales force model is not addressing what physicians need, what patients need and perhaps what payers need. This is certainly true for an established drug with no new clinical information coming out. Even for a new drug that meets an unmet clinical need, physicians will only want one-time, targeted education about the drug. Consequently, my belief is that the number of sales reps we need going forward will be a small fraction of what we've had in the past.

Furthermore, market power is being concentrated in the boards that make decisions about prescriptions and broader treatment protocols. That's been true on the payer side and it's increasingly true on the provider side as a result of increasing consolidation. So, the location of influence in the market is now a much smaller audience which also doesn't want the traditional information. For example, while samples may have a role, this particular decision maker is much more interested in real-world critical data.

All of these dynamics lead me to believe that we need to fundamentally change the model. I need to talk to different people about different things, with different data… and I need to talk to fewer people about fewer drugs.

The status quo cannot remain.

Pulse: ***Given what we've discussed, what do you see as the role of this much leaner sales force?***

Scott Evangelista: There will be an important temporal sales force role at product launch. Let's play out the scenario. Drug Company X develops a new product with true clinical benefit. The payers and perhaps even some of the providers have been involved with designing the protocols and both agree that this is a great drug and want to use it.

> ***Fundamentally, sending sales reps in large volumes to talk to physicians is no longer effective in influencing prescribing behavior.***

> ***Prove your drug has a meaningful contribution to make; then you won't have problems selling your drugs.***

Now Drug Company X wants to educate the network physicians about the new product and will have reps out in the field having meaningful conversations with physicians for a period of time. Importantly, both payers and providers will be supportive. The decision-making board at a large provider, for example, is supportive because it has already made the decision to use the drug and bought in to its clinical benefits. The actual length of this period of time is probably somewhat dependent on the incidence, prevalence and other idiosyncrasies of a particular disease.

There may be other periods of time when conversations are needed again with high volumes of physicians – such as the emergence of new patient data or the completion of a landmark study – but by and large, it won't be necessary to repeat this process.

Pulse: ***What you're describing for the commercial organization overall seems to be a far cry from today's reality. Given that, what can realistically be done to drive change over the near future? Everybody recognizes the need for radical change, but the reality is that few individual executives are willing to put their careers at risk.***

Scott Evangelista: Unfortunately, on average it is true that today's reality is a far cry from what is needed. Frankly, I think commercial leaders are risking their careers by not doing something. It is very much the 'boiled frog syndrome': the heat is turning up, the water is getting warmer, but it feels like I can probably take it for another year.

What is needed is an integrated relationship with key payer and provider customers and a robust account-based selling infrastructure to support the same. To build this capability, commercial organizations need to redefine career paths and compensation models, redefine and retool training, and fundamentally transform CRM capabilities. Regarding the latter, what is needed is a repository for the ongoing conversation with this customer. On top of all this, significantly greater collaboration is needed with these key payer and provider accounts, both before and after drug launch.

This is one way for pharmaceutical companies to start understanding what is valued by these large customers. For example, most payers are currently very worried about Medical Loss Ratio (MLR), so let's put our therapy in a context that is meaningful to this customer. Perhaps our therapy can keep patients out of the hospital, save $50,000 per person and thereby improve the payer's MLR. This is far more useful to a payer than, for example, showing statistical difference from placebo.

Pulse: ***You spoke about redefining commercial career paths, can you elaborate?***

Scott Evangelista: Today, an individual starts out as a sales rep, gets promoted to sales manager, then district manager and then regional manager. Specialty roles are available at the senior levels, but people essentially work their way up. Some people do rotations in marketing and then work their way up to product manager.

A different account-based path is needed in the future. Individuals will start with small accounts and are promoted to larger accounts, performance warranting. This account management structure will be one of increasing responsibility via increasing size and importance of accounts. Then, individuals may step out to baskets of accounts or geographies to deal with other kinds of issues. Compared to the past, these roles will require more care regarding investment decisions. For example, if we run a study with a particular group, can that study be leveraged into other accounts and what will the return be? They may not directly have Profit and Loss responsibility, but the roles will simulate that responsibility closely.

I know of one large company with a particularly strong approach. This company is tying a healthy part of Research and Development professionals' bonus compensation to reimbursement rather than approval. This will finally encourage the R&D people to have meaningful conversations with the Sales and Marketing people regarding the latter's insights into the needs of various customer groups. Consequently, this should help align the whole company, even beyond the commercial organization, toward a focus on unmet clinical need.

Pulse: ***In another 'thought experiment' article you made the even more radical suggestion of a non-captive sales rep model. This refers to reps who are focused***

on one therapeutic area, but are independent of any one pharma company. Can you elaborate on potential benefits to stakeholders such as patients or physicians? How would you pitch this idea to the current administration?

Scott Evangelista: Imagine a world with a set of intermediaries that are so deeply invested in a therapy area that there's nothing they don't know. They have across the board knowledge of all interventions for a disease, not just limited to drugs. They are the "be-all, end-all" pharmacologic expert when it comes to your disease.

Imagine what a great consultant these individuals would be to physicians. They are unbiased because they are not incentivized to push specific products. Intuitively, this is better for patients and physicians and would provide the most rational, logical interface to get the right products into the right hands every time. If this intermediary is going to own a particular disease area, he has an incentive to continuously evaluate data and treatment protocols. He can truly be a specialist.

Importantly, this model could also combat payer predispositions. Payers have a built-in incentive to pick the cheapest drug. In the absence of perfect data, they will do so. But the patient does not want that, and the physician and employer may not want that either. The physician wants to make sure his patients are getting exactly the best combination of drug therapy available, if drug therapy is warranted. If it's the $1,000 version versus the $50 version, so be it, if it guarantees the best outcome.

This is a terrific model for the pharmaceutical company that has the best product because what they pay for sales will be directly commensurate with actual sales. In reality, this is probably impossible – unless the government steps in and no longer allows sales reps. Pharmaceutical companies would be able to contract with these third party intermediaries, but government policy would force fair play.

Pulse: ***So what you're really describing is a more pure form of competition?***

Scott Evangelista: Well, it's competing on the technology, on the data that surrounds that technology and on the cost-benefit of that technology. We would have these therapeutically specialized people who essentially brokered all products, thereby becoming a valuable and unbiased repository of information for physicians.

Pulse: ***So how can we modify this framework and apply it to today's reality? Are there any companies that are already operating in the way that you described?***

Scott Evangelista: Let's take Novo Nordisk as an illustrative example. Novo is heavily invested in diabetes and has a wide range of relevant products. They invest in the disease area, not just the product area. They participate in all the organizations and are truly advancing the cause of diabetes treatment. They have everything to gain from doing so because they have such a broad portfolio of products within diabetes.

Contrast this with a company that has only one diabetes product and several products in other areas. Arguably, this company is not nearly as valuable in any one therapy area as Novo is in diabetes. So, over the next five to ten years, we will see companies focusing more carefully on their core therapeutic areas from the research, business development and organizational standpoints.

Pulse: ***A short answer for how pharma companies can fundamentally change how they sell products?***

Scott Evangelista: Focus on scientific unmet need and build robust data sets in collaboration with your customers to prove your drug has a meaningful contribution to make; then you won't have problems selling your drugs.

Biography:

Scott is a Principal in Deloitte's Life Sciences Consulting Practice. Scott has more than 20 years of experience consulting exclusively to the life sciences industry and he leads Deloitte's commercialization practice. Scott focuses on, and has worked for, numerous clients across a broad spectrum of commercial operations, providing strategic consulting, business development support, and management guidance. He has significant expertise in product development, licensing and M&A, product strategy and positioning and clinical trial planning.

Driving Success in the 'Pharmerging' Markets

By Arun Roy, WG'12

Western life sciences behemoths are moving into the 'Pharmerging' markets in a big way. Jean-Michel Halfon, discusses the rewards, challenges and recent history of these markets.

Pulse: ***When will the growth in emerging markets contribute significantly to the growth of big pharmaceutical companies such as Pfizer? How will this play into an emerging market strategy?***

Jean-Michel Halfon: At the highest level, growth in the emerging markets is already contributing to the growth of companies such as Pfizer. Growth is already at 15 percent per year or so and will continue over the next few years. Some markets, such as Turkey or Mexico, are under pressure of either high levels of generic competition and/or pressure from governments who are trying to gain greater control over healthcare costs. Still, compare the BRIC countries and Mexico and Turkey with the top six developed countries and clearly there is a significant difference in their GDP growth and the opportunities we are presented with.

Now, we cannot really speak of an "emerging market strategy" as the strategy varies from country to country. This is something that Pfizer has been focusing heavily on over the past two years. We began with an overall vision and moved to specific plans for each country.

Pulse: ***What are the key components of growth in these markets?***

Jean-Michel Halfon: For Pfizer, you have very different complements of this growth. The vaccine business is, for example, very different from the pharmaceutical business. Our vaccine business has mostly been the result of partnerships with governments and national immunization programs, such as the major partnership with GAVI (formerly The Global Alliance for Vaccines and Immunization) on the low income countries. One of our latest successes in this area has been Prevenar 13 for prevention of invasive pneumococcal disease. So vaccines are a very institutional part of the business, where it is the work that we are doing with governments, institutions, ministers of health and intellectual bodies that is driving growth.

In the past two years we have become a leading specialty care company in emerging markets, mostly but not uniquely due to the acquisition of Wyeth. This includes products such as Enbrel or Torisel. This segment is managed by different commercial leaders in our organization. Then there is primary care, which is all our major products, such as Lipitor, Lyrica and Viagra. This segment includes a number of products which remain quite strong in emerging markets, some of which are still growing at double-digit rates.

All of this is approximately half of our business. The last of the dimensions is what we call established products, which are products that have lost patent exclusivity. Pfizer's history is studded with many mergers and the resulting acquisitions of products. Consequently, Pfizer has a huge breadth of brands in many therapeutic areas. This is central to our strategy in emerging markets because of how much of the market this segment represents. In Brazil, for example, this is two-thirds of the market revenues.

In China about half, in India it's close to 100 percent. I'm not talking about Pfizer here, I'm talking about the market.

Pulse: ***Who do you see as your competition in the emerging markets?***

Jean-Michel Halfon: When we looked at our competitors in each of these markets, we realized that our competitors were not the big international pharmaceutical companies. In fact our competitors were the local companies in each individual country.

Pulse: ***Back to growth – what are the drivers of growth for Pfizer?***

Jean-Michel Halfon: The first driver of growth was brand excellence. The second driver of growth is of course, again, the development of a new model to face generic business. The third driver is development of R&D specifically for and

in these markets.

First, let's discuss brand excellence. The market dynamics in many emerging countries are very different from that in the U.S. or in Europe. There is a very strong link to brands and the perception of quality in markets where there is real risk of counterfeit or fake products. There are very strong such associations with Pfizer products.

As I said before, the model in emerging markets varies by regions and countries. But there was little interaction between countries. So we have focused on fostering collaboration behind the brand team, without going to a centralized model.

This model is working amazingly well for three reasons. First, a member of a team in Chile working on a brand, can influence Latin America at large. Second, if you are part of this team you can partner with scientific communities at the regional level, for Latin America, for the Middle East, or for Asia. Third, it's the only way to ensure sufficient collaboration for colleagues across regions working on the same topic or product or business goal.

The second driver of growth is of course, again, the development of a new model for the generic business. It's based on internal growth of the portfolio coming from Pfizer, but it's also coming from outside through partnerships with local companies.

The third driver of growth is absolutely critical. Increasingly, we will see the move from marketing and sales organizations in emerging markets to increasingly integrated organizations with broader capabilities. Take China as an example. In China we are leading the market with our own manufacturing facilities and two research centers in Shanghai and Wuhan.

The specific timing is probably highly dependent upon the country and the development of the life science community and research community in the countries. We will see these types of developments taking place in a number of emerging countries.

Pulse: ***When, if ever, will we see a life sciences innovation ecosystem such as San Francisco or Boston – with all of the components, including startups, institutions, scientists, entrepreneurs and financiers – emerge in countries such as India or China?***

Jean-Michel Halfon: Frankly, I would not have been able to answer this question three months ago. Today, I have a better idea of the increasing level of low cost, high quality scientific expertise that is being developed in India and China. Recently, I was in Wuhan, China. Wuhan is an urban center which is two hours from Shanghai and has 54 universities and one million students. In Wuhan, the Chinese government is building a life science center where Pfizer has put its own research. Eventually, the center will include a hundred thousand people doing healthcare research. So while I don't know exactly what will be in this center, I know that it stands on what was a completely rural area two years ago. So this is moving very, very fast. In India, I think there will be a different model because the innovation is coming from the private sector. Recently, for example, Pfizer partnered with Biocon on biosimilars. But through my interactions with a number of Indian companies, I've noticed something positively systematic here, which is different forms of reverse innovation. I believe we are at the beginning of that phenomenon. But I don't think it will take long before innovation begins to be exported from emerging markets.

As a result of all this, there are huge opportunities for partnerships between two sets of companies.

Pulse: ***What about developing innovative products targeted at the unique diseases and contexts of emerging markets?***

Jean-Michel Halfon: I hinted earlier at more research being done in emerging countries. As I said, Pfizer is already doing this in China. As more research is being done there will be an increasing focus on diseases which are more prevalent in emerging markets, such as some forms of gastric cancer in China. The idea is a drug for the Chinese market developed by Chinese scientists in partnership with Pfizer.

Pulse: ***As part of the role that Pfizer is playing in diseases in the developing world, you have been unique in having pursued micro-insurance and other ability-to-pay related initiatives. Can you tell us more about the challenges and successes?***

Jean-Michel Halfon: It has been very, very difficult. I will go through exactly how it started. In 2008, a few other people at Pfizer and I decided that we needed to define a strategy for global access, because we need to play a role in providing medicine at an affordable price to the populations that are not served today.

Then, in May 2008, we set up a large meeting with two-thirds Pfizer colleagues

and one-third NGO representatives. The latter included the World Bank and micro-finance institutions. We asked these people to help us define the role of Pfizer. By the end of this meeting, we were collectively clear on the two directions that we wanted to take. We decided 1) we wanted to play a role in research and development in the developing world and 2) we wanted to somehow leverage micro-finance.

We decided it was critical that we partner with global funds and institutions to invent a way to increase access for products which are being sold at a high price in areas such as oncology. We felt that we needed to start by piloting some projects in individual markets.

Grameen Bank from Bangladesh was present at our original kickoff meeting. We began talking to them starting in the summer of 2008 and eventually, we were talking to the founder, Muhammad Yunus. I said to Yunus, "I believe that you have the number one micro-finance institution in the world. You were the inventor of the micro-finance institution 20 years ago, when you left Princeton. If you are looking for a partner in healthcare. You found it."

So, towards the end of 2008 we signed a partnership with Grameen and hired Dr. Ponni Subbiah to form a small, dedicated global access group within Pfizer. I also had a relationship with another global micro-finance institution called PlaNet Finance. Together, we formed another partnership working in four regions of China, to try to understand the health care needs and see if we could leverage micro-finance in China. It was a bit risky, but very exciting. So the team started to work on these partnerships. Our results in China will be useful for the Chinese organization and our work with Grameen continues today.

> ***As more research is being done there will be an increasing focus on diseases which are more prevalent in emerging markets.***

Pulse: ***Is there anything else you are doing around improving access?***

Jean-Michel Halfon: On the topic of access, I must mention the work that has been done in the Philippines, where our organization has been very innovative. For example, they pioneered the e-card. This is a card that the doctor gives to the patients. The patient presents the e-card at the pharmacy and gets a discount along with a number of services, such as helping ensure compliance. We have, I think, two million E-cards in five years in the Philippines. Now a number of other countries in Latin America and Asia are following in this direction.

Let's get back to the big picture. At the end of 2009, I thought that the global access group had played a very good role, but was still an incubator of projects. We had partnered with the Clinton Global Health Initiative to provide a product called Rifabutin as second line treatment for patient with AIDS in emerging markets. I went to Caracas to see with my own eyes a partnership that Pfizer had developed with doctors in the slums there. But these were pilot projects. So the global access group was still an incubator – an incubator of good projects, but an incubator. I saw that we had to move to something more formal. I felt at the beginning of 2010 that Pfizer had a responsibility to have a strategy for less developed countries.

At that point, we were doing many things in these markets, but it wasn't coordinated in one strategy. And so during 2010 I suggested transforming the global access group from an incubator into a commercial unit, dedicated to understanding and serving the needs of patients in less developed countries. At the same time, it would provide expertise to emerging countries to help them build new commercial models targeting the bottom of the pyramid. This is where we find ourselves today.

Biography:

Jean–Michel Halfon is President and General Manager of the Emerging Markets Business Unit at Pfizer. He leads colleagues across more than 70 countries in Emerging Markets on a strategic platform that emphasizes driving incremental organic growth, pursuing strategic acquisitions and partnerships, and seeking game–changing opportunities–enabled by operational excellence, ethics and integrity, communication, and building talent and culture. Under his leadership, Pfizer Emerging Markets launched innovative ways of doing business adapted to the unique needs of markets in Latin America, Africa, the Middle East, and emerging markets in Asia and Europe.

Shadow of a Drought

Perspectives on the Pharmaceutical Industry From Oliver Wyman

By Jerry Cacciotti, Jeff Hewitt, and Bill Shew

Pharma companies can't easily or instantly fix R&D productivity. But there is something they *can* do: change the organizational mindset created during an era of scientific abundance and high productivity.

After several decades of relative stability and predictability, pharma today faces a genuinely chaotic new world. Favorable conditions that prevailed for decades—consistent innovation flow, a benign regulatory environment, relative freedom in pricing—have reversed. Supportive tailwinds have become stiff headwinds. Valuations of manufacturers—even major manufacturers—have been moving sideways for the better part of a decade; Pfizer, the industry's largest company, and in many ways its bellwether, trades at a multiple just over seven times earnings; a decade ago it was in the mid-20s. Industry pundits and executives alike lament the secular decline.

For the most part, large pharmaceutical companies have responded to the challenges of recent years in two ways: They have expanded their efforts in rapidly growing emerging markets (which now account for most of the growth in world pharmaceutical sales), and they have begun to reinvent the commercial model, reducing bloated sales forces, focusing on high-value prescribers, and addressing the rising influence of payers. These are important initiatives, providing on the one hand a new source of top-line growth and on the other cost relief to enhance the bottom line. But, they do not address the core issue. The declining multiples and stagnant valuations in pharma aren't the result of declining profits: Big Pharma still generates significant margins—a fact that leads some to diminish the case for change. But the financial markets want more than margins. They want a credible growth story, and Big Pharma isn't currently providing one.

At first glance, the industry's problems may look diverse, but we believe that poor Research and Development (R&D) productivity— especially coming after several decades of brilliant innovation—is at the heart of many, if not all of them. Increased regulatory scrutiny, the rising controversy over safety issues, and the continuing high rate of late-stage failure in clinical trials: all are caused at least in part by the need to make the most of badly depleted pipelines and the pressures of increasingly desirable generic products.

The scary thing is that the R&D productivity problem may be worse than we originally thought. An Oliver Wyman study to be released soon paints a chilling picture:

- Not only have new drug approvals declined, the average value of those introduced in the last six years has dropped by 35 percent below prior years.
- Big Pharma's participation in new innovation is at record lows.
- The success rate of new molecules entering late stage development (Phase III) is no better than a 50/50 coin flip—far from the odds-on, safe bet assumed by some R&D leaders.

There are no easy answers to improving R&D productivity. The big bets companies made a decade ago on technology platforms have not paid off. A movement to increase the scale of R&D operations did not improve performance, and may in fact have hindered innovation. Successful companies will continue to run experiments that enable them to discover how to sustainably increase

their performance. In doing so, they face a largely unrecognized challenge. Pharma is structured for its past rather than its future. Its organization structures, expectations, and processes—its basic industry mindset— are all oriented toward the era of R&D abundance it has left behind.

Best Practices—for Yesterday

The challenges outlined above are not new or unknown, and most companies have begun to address some aspects of them. In their defense, the path to change is neither easy nor obvious. But few have embarked upon the major undertaking that is required for renewal: the fundamental redesign of business processes and culture. Many are taking some actions, but to reverse the tide in R&D, we believe companies must address the issue that practices designed for a time of abundance don't necessarily work in a time of scarcity.

While these practices that have evolved over decades exist in many forms and in many areas of R&D, we offer a few simple examples to illustrate our point:

Traditional assumptions and rules of thumb for pharma R&D may be working against us. Over the past 20 years, pharma companies have seized on a handful of ideas about development: For each day a drug is delayed, a million dollars is lost; fail faster; aim for the broadest possible label; take more shots on goal. None are necessarily wrong, and in some situations they are quite right, but all arose in response to a very different environment. They presume that the supply of high-quality drug targets is inexhaustible and that the fundamental quality of R&D can be preserved even as it scales up. Neither condition holds true today.

Drug companies profoundly lack product flow, yet they still rush programs through development as if alternatives were abundant. Have we erred too far on the side of speed to market? In many situations, yes. There is mounting evidence that an alarming portion of late-stage failures stem from poor execution of fundamentally sound science. Poorly optimized compounds rushed into development generate unexpected side effects in Phase III. Narrowly defined proof-of concept programs fail to address important scientific questions, and the compounds unsurprisingly fail to show efficacy on a primary endpoint. When companies are able to go back and redo clinical trials, they too often watch as luckier or more diligent competitors get to market first.

Business Development provides the majority of product flow, but it is still treated as an add-on, a fully separate group, or a gap filler. Externally sourced assets constitute a sizable and growing percentage of the pipelines of large pharmaceutical and biotech companies—38 percent of molecules (and an even higher percentage of value) in the case of top 10 pharmaceutical companies. The role of Business Development (BD) in sourcing innovation is unquestioned. Yet in many companies, BD groups remain primarily transaction oriented teams, focused on filling gaps in the pipeline as guided by the leadership of R&D and therapeutic area teams.

The BD function typically sits outside the R&D organization, and while R&D and BD increasingly work closely together, the relationship is not one of equals. Typically the internal portfolio is managed with elaborate industrial-development operations and rational decision-making processes. When a failure occurs or surprising gaps appear, a whole separate BD process, less industrial and rational, is engaged. Desperate companies enter the bidding frenzy for compounds or whole companies sourced from the outside. While most companies no longer have the "not invented here" mindset that was prevalent in many organizations a decade ago, the culture of scientific and business challenge that permeates best in- class BD processes has not always carried over to the internal pipeline, where champion bias retains its firm hold.

R&D has been industrialized, ignoring the fundamental serendipity—preparedness + luck—present in most breakthrough innovation. Years ago, many large pharmaceutical companies embraced scale as a potential source of competitive advantage. While, in many cases, scale yielded benefits commercially, the opposite was often true in R&D, particularly in research, where many companies sought to industrialize key aspects of the R&D process. With increasingly large and complex pipelines, larger than any single person could reasonably oversee, companies sought to standardize and streamline processes, institute best practices, reduce cycle time, increase efficiency, accelerate timelines, and improve throughput— all with rigorous metrics and checklists to ensure "productivity." A throughput-oriented,

check-the-box mentality—common in manufacturing processes—permeated many organizations.

But this approach failed to recognize that R&D, particularly research, is as much—or more—an art or craft as it is a process that can be repeated and optimized.

The craft skills learned and used when a scientist sets up an experiment at a bench or when a clinician observes a patient response have mostly been lost at many companies.

The advantages created by increasing scale were typically offset by a reduction in creativity and insight generated from the research scientists expected to deliver new sources of innovation.

Governance models developed during a period of abundance are a poor fit in a world of scarcity. Stage-gate and portfolio management processes designed for the old world assumed an abundant product flow. They are quick to assert criteria for failure; they rarely point toward ways to save, redirect or reinvent a troubled program. Once again, these models were developed during a period of abundance. Many were designed to identify the most promising prospects as opposed to collaborate upon creative solutions to more challenging product development questions. Review bodies often serve as a judge and jury and executioner when they could play a far more productive role as a collaborator on how to solve difficulties, offer multiple strategies for advancing the product, and point resources toward assets that face challenging situations.

Most would agree that incentives are broken in R&D. Companies reward throughput advances to the next level, not the creation of effective molecules. As a result it is better to move programs that are "close to transition" as opposed to moving the best programs forward—an approach that systematically slows down higher value programs.

After Abundance

The abundance era is over, at least for now. No matter what we do to change R&D, the available pace of change is limited. The last decade of low R&D output will impact us for much of the coming decade. It is far from certain that current industry leaders will thrive, or even survive a decade from now. Unlike the past, in which companies that hit a bump in the road exited via a relatively rich wave of acquisition and consolidation, there will be clear winners and losers in the coming era.

> ***R&D, particularly research, is as much—or more—an art or craft as it is a process that can be repeated and optimized.***

Winners will recognize new fundamental realities: that the standard of what is valuable has increased, and that the basic rarity of drugs has been underappreciated. They will recognize that, the innovation drought will likely not be temporary but persistent, and they will change behavior accordingly. They will emphasize quality over speed and quantity. They will take bigger swings at bat. They will take more risk, and some will fail doing so. They will recognize, now more than ever, that drugs are rare and require big investment. They will recognize that innovation is at the heart of the industry's challenges and the source of its renewal.

The one piece of good news is that pressures on the industry and individual companies are uneven. Most franchises are still enormously profitable. Generic erosion hits only one piece of the business at a time. Emerging markets and more efficient commercial models can provide near-term lift to top and bottom lines. But this does not eliminate the urgency with which companies need to advance fundamental change. Winners will begin that transformation process today. They will pick a piece of their business—the most vulnerable, or perhaps the most promising—and undertake deliberate, dramatic experiments with radically different innovation models. Their greatest need is to transform the way they discover and develop new drugs. They must engage in a rare and difficult kind of discovery: looking not just for new drugs, but for the moment and place in which broader changes to the innovation model must be advanced.

About the Authors:
Jerry Cacciotti, Jeff Hewitt, and **Bill Shew** are Partners in Oliver Wyman's Health and Life Sciences Practice. They can be reached at: jerry.cacciotti@oliverwyman.com, jeff.hewitt@oliverwyman.com, and bill.shew@oliverwyman.com.

Editors in Chief

Jay Desai

Jay graduated with high honors from the University of Michigan with a Bachelors in Business Administration. Prior to Wharton, he worked in business development for Triad Isotopes, the largest independent radiopharmacy network in the United States. Prior to Triad, Jay was a private equity associate at Parthenon Capital where he focused exclusively on evaluating investments in and supporting the development of health care services companies, including reference laboratories and other provider-based businesses. Jay also held a position as an investment banking analyst at Lehman Brothers. Jay is a Coro Fellow in Public Affairs – New York City. After graduation, Jay is excited to build a career in health care services/information technology.

Lindsay Rand

Lindsay earned a BA with Honors in Psychology and a minor in Economics from Stanford University in 2007. Upon graduation, she moved to Boston and joined Accenture as a consultant in the company's Health and Public Service practice. Lindsay worked on the implementation of electronic medical records (EMR) systems, the design of an online patient portal and efforts to streamline billing processes at several medical centers around the country. When she wasn't traveling for work, Lindsay continued her involvement in academic research, which she began as an undergraduate. Her work on health behavior and health promotion was most recently published as a chapter in a book about the obesity epidemic and obesity prevention strategies. One day Lindsay hopes to serve in an administrative capacity at a hospital, helping to improve patient access and physician experience.

Elizabeth Kiernan

Elizabeth graduated from Cornell University with a degree in History and Economics. Following graduation, Elizabeth worked in the New York office of Oliver Wyman, a management consulting firm. Elizabeth quickly began to focus on Health and Life Sciences clients, including pharmaceutical companies, health insurance companies, and health IT firms. Before going back for her M.B.A, Elizabeth was an Associate in the San Francisco office of Oliver Wyman, and a member of the Health and Life Sciences practice. In the long term, Elizabeth hopes to help build innovative integrated health management companies.

Marina Zeltser

Marina is a dual degree MD/MBA student between the Wharton School and Robert Wood Johnson Medical School. She attended Columbia University for her undergraduate education, fully funded by the Rabi Fellowship, a prestigious award given to students showing promise in scientific research. Marina has nearly four years of academic research experience in public health, health services, genomics, and critical care. Marina has served in national leadership roles for the American Medical Student Association, including leading a national committee of medical education, steering major policy campaigns and creating national training programs. She currently works as a senior consultant in the Wharton Small Business Development Center, serving CEOs of local healthcare start-up companies. In the long term, Marina looks forward to a career in health systems improvement.

Staff Writers

Arun Roy

Arun graduated Magna Cum Laude from the University of Pennsylvania with a BA in Chemistry from the College of Arts and Sciences and a BSc in Economics from the Wharton School. He then spent five years with Deloitte Consulting focused primarily on life sciences clients. At Deloitte, Arun worked on a diverse range of projects across a variety of functional areas, including sales and marketing, research and development, real estate and supply chain. Currently he is a first year M.B.A. candidate majoring in Health Care Management. After graduation, Arun plans to pursue a general management career in the life sciences industry with the long-term goal of leading a commercial organization within an emerging economy.

Cody Dashiell-Earp

Cody graduated magna cum laude from Yale University in 2006 with a BA in Anthropology. After graduation, she worked with Siempre Unidos, a small nonprofit that provides treatment and support to people living with HIV/AIDS in Honduras, where she was responsible for facilitating communication between Honduran and US leadership to develop sustainable revenue sources for the organization. Her work reaffirmed her desire to become a physician with a strong foundation in health care management skills, which lead her to the MD/MBA program at the University of Pennsylvania. Cody plans to pursue a career in primary care medicine, health services research, and health policy.

Jonathan Pearlstein

Jonathan graduated with honors from Stanford University in 2006 with a B.A. in Science, Technology, and Society. Following graduation, he joined the National Opinion Research Center in Washington, DC, where he evaluated the impact of federally-funded health IT initiatives. Later, he joined The Advisory Board Company as a strategic analyst. In this capacity, he advised hospital executives on industry best-practices in HR, IT, and nursing. In addition, he co-authored seven publications on topics such as: health reform, staff retention, and nursing documentation systems. After Wharton, Jonathan plans to pursue a career in health care services.

James Rhodes

James graduated with honors from Harvard College in 2006 with a B.A. in Economics and a minor in Health Policy. Upon graduation, James joined Deloitte Consulting's Strategy & Operations practice, where he advised health care providers on clinical systems implementations and operational performance improvement opportunities. He is currently a first-year M.B.A. candidate majoring in Health Care Management. After graduation, James hopes to begin a career in health services.

Jill Vanak

Jill is a graduate of Georgetown University, earning a BSN in 2003. Following graduation, she began work at Memorial Sloan-Kettering Cancer Center, specializing in the care of bone marrow transplant patients. She earned her MSN, specializing in Acute Care, from Columbia University in 2003. Prior to returning to the University of Pennsylvania, Jill worked as a board-certified research nurse practitioner specializing in clinical trials involving lymphoma patients at Memorial Sloan-Kettering Cancer Center. She is currently a first-year doctoral student at the Center for Health Outcomes and Policy Research at the University of Pennsylvania.

Wharton's Health Care Management Program

Central to the Wharton Health Care management student experience is each individual's ability to shape and participate in a number of dynamic student-run initiatives. We have highlighted some of these activities below. for more information about the program and its student-run initiatives, please contact June Kinney, associate director of the Health Care management program (kinneyj@wharton.upenn.edu).

Wharton Health Care Club

The Health Care Club organizes professional and social activities for all Wharton graduate students who are interested in exploring opportunities in the health care industry. Members share their knowledge and perspectives in addition to interacting with current industry leaders to develop an understanding of the issues facing hospital, physician, managed care, pharmaceutical, biotechnology, and medical device organizations.

Wharton Health Care Board Fellows Program

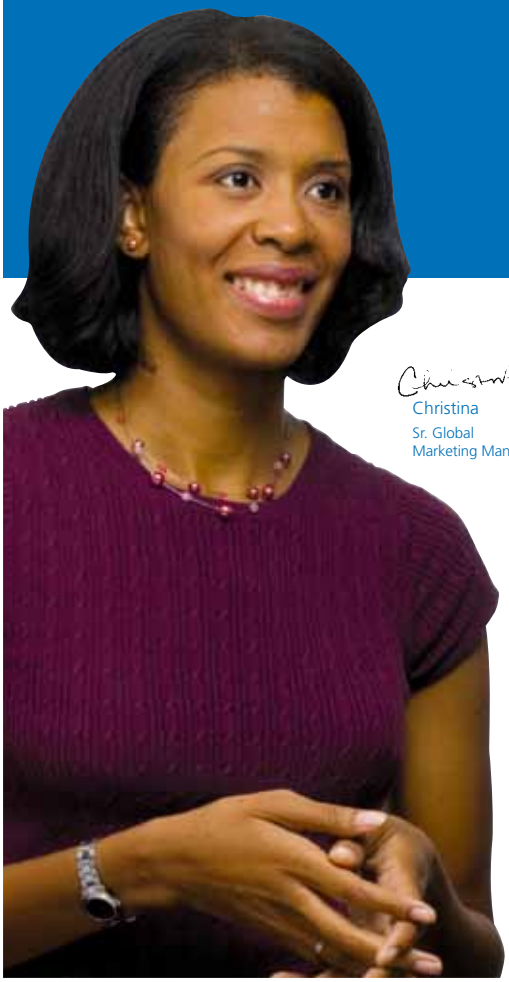
Wharton's Health Care Board Fellows Program strives to cultivate and enhance mutually beneficial learning relationships between Wharton's Health Care Management Program and the nonprofit board. The program serves to meet the needs of Health Care Management M.B.A. candidates who are personally and/or profressionally interested in health care social sector leadership. Program participants will gain first-hand experience as Board Observers on the boards of socially responsible nonprofit organizations dedicated to health care pursuits. The program also serves to meet the needs of non-profit health care organizations seeking access to the Penn and Wharton communities, as well as the professional experience and training of current Wharton M.B.A. students.

Wharton Global Health Volunteer Program

WGHVP is designed to give Wharton health care management students the opportunity to participate in global health care related projects with limited resources. WHIVP trips are student organized, student run, and student led. Projects give participants exposure to health care challenges in the developing world as well as the opportunity to work closely with organizations on the ground to develop viable strategies to improve their organizations.

The Penn Biotech Group

The Penn Biotech Group is a cross-disciplinary club with a mission to promote careers related to the biotechnology and medical device industries through practical experiential learning. The club draws members and expertise from graduate programs at Penn, including The Wharton School of Business, the School of Engineering and Applied Sciences, the Law School and the School of Medicine, as well as the larger life sciences community of Southeastern Pennsylvania.



Christina
Sr. Global
Marketing Manager

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