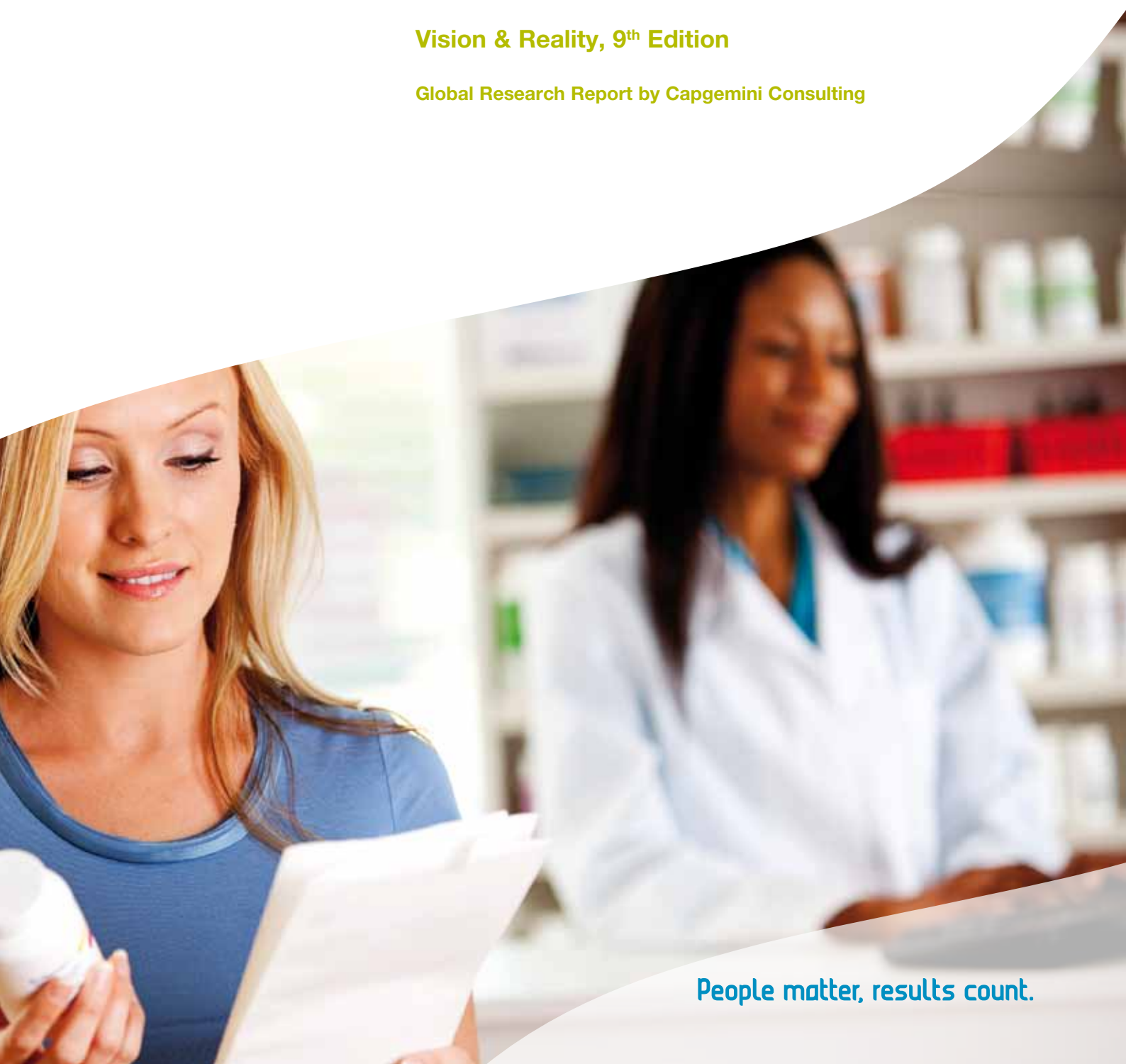# Patient Adherence: The Next Frontier in Patient Care

Vision & Reality, 9th Edition

Global Research Report by Capgemini Consulting

People matter, results count.

Contents

1 - Executive Summary

Lack of patient adherence to prescribed medications poses a tremendous challenge to the global healthcare community. In the US alone, avoidable medical spending was estimated at $300 billion in 2009. With blockbuster expiries, drying pipelines and increasing cost-containment by payers, bridging the adherence gap is a "must do" for pharmaceutical companies to protect their top line while transforming themselves from product to patient-centric organizations.

Capgemini Consulting conducted in-depth interviews with 66 life sciences executives representing pharmaceutical and biotech manufacturers, payers, pharmacists, patient and advocacy groups, across Denmark, France, Germany, Netherlands, Portugal, Spain, Switzerland, the United Kingdom and the United States to understand:

- What are the root causes of non-adherence?
- How has the industry addressed non-adherence in the past?
- What are the forces changing the ways patient adherence needs to be addressed?
- What good practices from other industries could the healthcare industry learn from?

Patient adherence levels vary between 50% for depression to 63% for enlarged prostate. According to interviewees, on average adherence levels drop over the course of the patient journey from 69% of patients filling their first prescription to 43% continuing their treatment as prescribed after 6 months.

The vast majority of pharmaceutical, pharmacy and payer executives explain low adherence levels by pointing to patient-related factors, such as poor knowledge of the disease, inadequate perceptions of the need for treatment and forgetfulness. Other factors, such as the route of administration of therapy or side effects, are often mentioned too. Divergences appear with regard to the impact of treatment costs or socio-demographic factors: pharmacists dismiss the first – both manufacturers and pharmacists dismiss the second.

As a result, the limited impact of adherence programs is often blamed on the difficulty of changing patient behavior.

Our research shows that reality is more complex. Patient adherence initiatives often lack a thorough understanding of the root causes of discontinuing treatment, fail to engage patients sufficiently and to address the issue holistically. Individual tactics are tried by different brands and then discontinued as budgets and priorities shift, before their impact is known. Successes are seldom pulled through and expanded across the organization.

We believe that patient adherence is the next frontier in healthcare innovation.

Multiple factors are pushing in this direction. The first is the continued rise in patient access to health information through digital media. The internet is now the top source of health information for adults in the US, outranking their own

physicians. As platforms for exchanging information continue to grow, so will the ability of the healthcare system to educate patients on their treatment and on the importance of adherence. Healthcare reforms will also push for improved adherence: systems need the savings. They will therefore increasingly incentivize providers and payers on outcomes and, by extension, on patient adherence. For the first time collaboration across stakeholders will become a practical reality, and should therefore grow in coming years, as 85% of our interviewees recognize. Just as important, new technologies will change the way executives think about patient adherence. Intelligent diagnostics linked to monitoring facilities are already being piloted in such therapeutic areas as diabetes. They allow approaches customized to individual patients that would have been inconceivable a few years ago. We believe they will become the norm in specific disease categories, forcing pharma companies to adjust their business model in response. Thinking ahead, smart pills and packaging may enable such approaches to be expanded across chronic diseases.

The time for re-thinking adherence is now.

Our vision is of a transformation of pharmaceutical and biotech companies that will make them the leaders in driving patient adherence. The forces we described should help align vision and reality, as the recent Merck-Cigna partnership exchanging adherence for discounts illustrates.

Transforming patient adherence starts by elevating patient adherence as a lever. In other industries it is accepted that it is cheaper to keep an existing customer than to acquire a new one. Pharmaceutical and biotech companies need to start measuring what they leave on the table for each non-adherence percentage point and reorganize to better address the issue. This will require a significant review of how they conduct business. The ambition of Capgemini Consulting's 9th Vision & Reality report on patient adherence is to help you start on this journey.

Thomas Forissier

Life Sciences Strategy Principal
Study Director
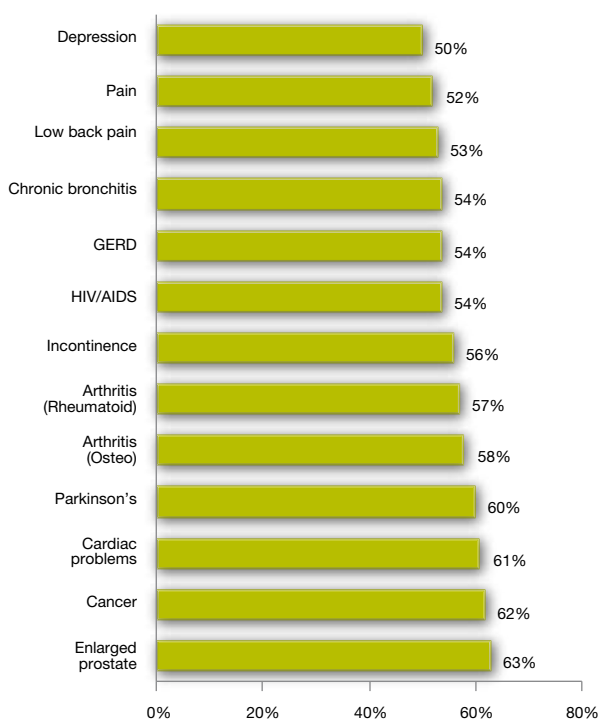
2 - Background to the Study

The fact that patients often disregard medical advice has been acknowledged for centuries. Over 2,000 years ago Hippocrates warned physicians to "keep watch also on the faults of the patients which often make them lie about the taking of things prescribed."

Within the public health community there is growing recognition of the wider impact of patients failing to take medicines as prescribed. In recent years, several terms have come to define the act of seeking medical attention, filling prescriptions, and taking medicines appropriately – or not.

In the 1970s the term "compliance" came into use, and was defined as "the degree or extent to which a patient follows or completes a prescribed diagnostic, treatment, or preventive procedure". So, if a patient fills a one-month prescription, but uses it over two months, they are 50% compliant. The term "persistence" also came into use, implying the consistent continuation of treatment over a period of time. This includes both taking medication as prescribed and refilling prescriptions when appropriate. If a patient refills their prescription from January through June, but stops in July they are 0% persistent.

Figure 1: Adherence rates of select conditions in US

Condition	Adherence
Depression	50%
Pain	52%
Low back pain	53%
Chronic bronchitis	54%
GERD	54%
HIV/AIDS	54%
Incontinence	56%
Arthritis (Rheumatoid)	57%
Arthritis (Osteo)	58%
Parkinson's	60%
Cardiac problems	61%
Cancer	62%
Enlarged prostate	63%

Source: Andree Bates, *"Ensuring Profitable Patient Adherence Programs"*, Eularis, March 2010

"Patient adherence" is widely viewed as a combination of compliance and persistence. It is defined as the extent to which a patient follows a prescribed treatment regimen and includes taking a drug (as prescribed) and following physician advice. Understanding of the issue has evolved from the narrow scope of compliance, which places the entire responsibility upon a passive patient, to a broader definition where adherence is a more collective responsibility between healthcare providers and patients who are active participants in their own care.

Despite this evolved understanding, in general the issue of poor adherence has not been given the priority it deserves. Consequently, in the past it has received insufficient direct, systematic or sustained intervention.

Adherence to prescribed medications poses a tremendous challenge to the entire healthcare community. As shown in Figure 1[1] patient adherence with medications for chronic conditions averages only 50%.

In fact, almost all chronic conditions face high rates of non-adherence and those with no visible symptoms, such as depression, have the lowest adherence rates. The problem even extends to oral formulation chemotherapy drugs, where one would not expect to encounter patient adherence issues due to the seriousness of the condition. As much as 40% of cancer patients are non-adherent in this case[2].

1 Andree Bates, *"Ensuring Profitable Patient Adherence Programs"*, Eularis, March 2010

2 Ibid

Capgemini Consulting's survey revealed an average adherence rate of 69% for first filling of prescription, with a 40% drop in adherence from first filling of prescription to continuous refill after six months (Figure 2).

Respondents offered some explanation for patient behavior regarding refills.
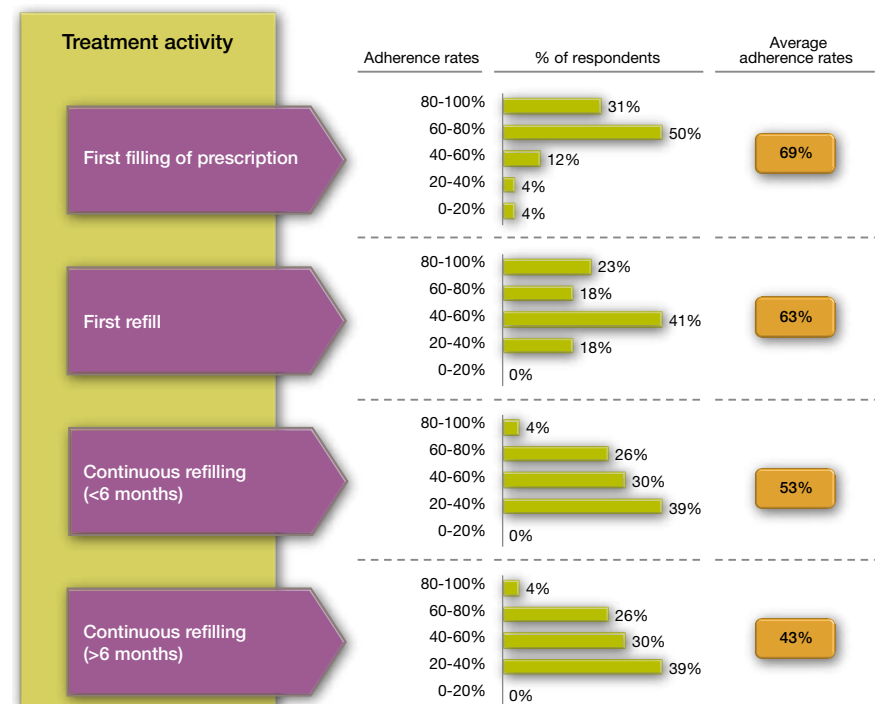
"Continuous refilling depends on whether a serious event is experienced due to non-compliance or the symptom is not relieved. For example, when a non-compliant patient experiences chest pain, they would be in the 80-100% range. An asymptomatic condition with no negative health effects would lead to 20-40% compliance." – Pharma Executive

At Capgemini Consulting we believe the time is now right for a paradigm shift in the healthcare community's approach to patient adherence. The continued emphasis on patient

outcomes, rising healthcare costs, drying pipelines and blockbuster expiries have put severe pressure on life sciences companies, health authorities, payers and providers. In addition, recent initiatives in reforming healthcare systems to enhance quality and reduce costs, have made it imperative for healthcare stakeholders to move beyond the traditional approaches and seek newer value-creating avenues.

Increasingly, poor medication adherence is being recognized as a significant source of waste by the healthcare system and life sciences companies. Studies estimate non-adherence costs the US healthcare system close to $300 billion annually in direct and indirect costs[3]. It is also estimated that non-adherence results in an average per-drug loss of 36% in potential sales for a pharma company[4]. Improved patient adherence offers huge benefits across the entire

Figure 2: Adherence rates across the duration of therapy

Source: Capgemini Consulting

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[3] *"Thinking outside the pillbox: A system-wide approach to improving patient medication adherence for chronic diseases"*, New England Healthcare Institute (NEHI), July 2009

[4] *"IMS Special pharma strategy supplement: Reviving the primary care market"*, IMS Health, July 2008
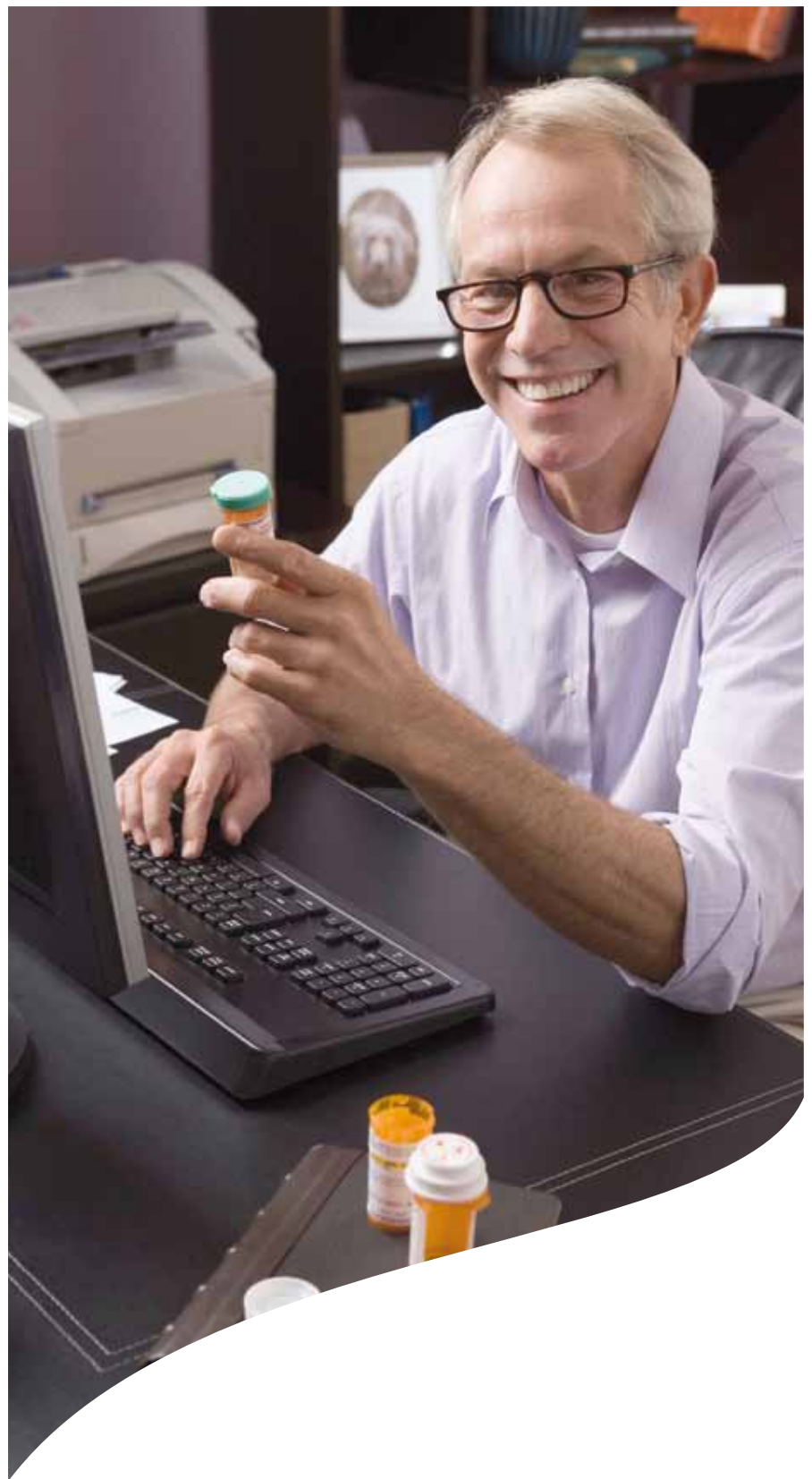
healthcare value chain and is beginning to generate renewed interest among companies, health authorities, payers and providers.

We have focused this year's edition of Vision & Reality on understanding barriers to improving adherence, elements of successful adherence programs and methods for ensuring profitable adherence programs. This report is the latest in a series of global studies examining issues most likely to impact our industry in the near future, conducted and published by the Capgemini Consulting Life Sciences practice since 2001.

To understand every possible aspect of current and future adherence initiatives, we solicited expert input by reaching out to over 60 life sciences executives. Responses came from the US (approximately two-thirds) and Europe (approximately one-third). To ensure insight into local regions, these interviews took place in Denmark, France, Germany, Netherlands, Portugal, Spain, Switzerland, the United Kingdom and the United States.

Executives covered a range of functions including Marketing, Medical Affairs, Pricing & Reimbursement / Managed Care, Research & Development, Sales, and Commercial Operations. In addition to interviews with pharma executives, we held in-depth interviews with other healthcare stakeholders including payers, pharmacists, patient associations, universities and foundations. Finally, we supplemented our findings with secondary research conducted by Capgemini Consulting's global Strategic Insights Group.

Capgemini Consulting would like to thank all those who agreed to be interviewed for their generous participation.

3 - Patient Adherence: Factors, Influencers and Interventions

The issue of patient adherence is growing in importance in the entire healthcare world. In various reports over the last decade, several voluntary health organizations – the World Health Organization (WHO), the National Institutes of Health (NIH) and the National Council on Patient Information and Education (NCPIE) – have identified poor adherence as a significant public health issue. Increasingly, patient non-adherence is becoming a severe issue, leading to significant costs for the healthcare system and for the pharmaceutical industry, as shown in Box 1.

" The more competitive the drug class and the higher the side effects, the greater the drop-off to filling a prescription "

Pharmaceutical Executive

BOX 1: Patient non-adherence is a significant issue for the entire healthcare system

Poor adherence to treatment is a worldwide problem of striking magnitude.

In recent years, the WHO has reported that, in developed countries, adherence among patients suffering from chronic diseases averages only 50% and is much lower in developing countries[5].

Looking specifically at the issue in the US, a 2007 survey conducted by the National Community Pharmacists Association[6] revealed that:
- 49% of respondents admitted to have forgotten a prescribed medicine
- 31% of respondents had not filled a prescription they had been given
- 29% of respondents had stopped taking a medicine before the supply ran out
- 24% of respondents had taken less than the recommended dose

This issue is not confined to the US According to WHO report findings[7]:
- In Australia, only 43% of asthma patients take their medication as prescribed. Just 28% use prescribed preventive medication
- In HIV and AIDS treatment, adherence varies between 37% and 83% depending on the drug and demographic characteristics of patient populations
- In developing countries like China, the Gambia and Seychelles, only 43%, 27% and 26%, respectively, of patients with hypertension adhere to their antihypertensive medication regimen

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[5] *"Adherence to long term strategies-Evidence from Action"*, World Health Organization, 2003

[6] *"Enhancing prescription medicine adherence: A national action plan"*, National Council on Patient Information and Education, August 2007
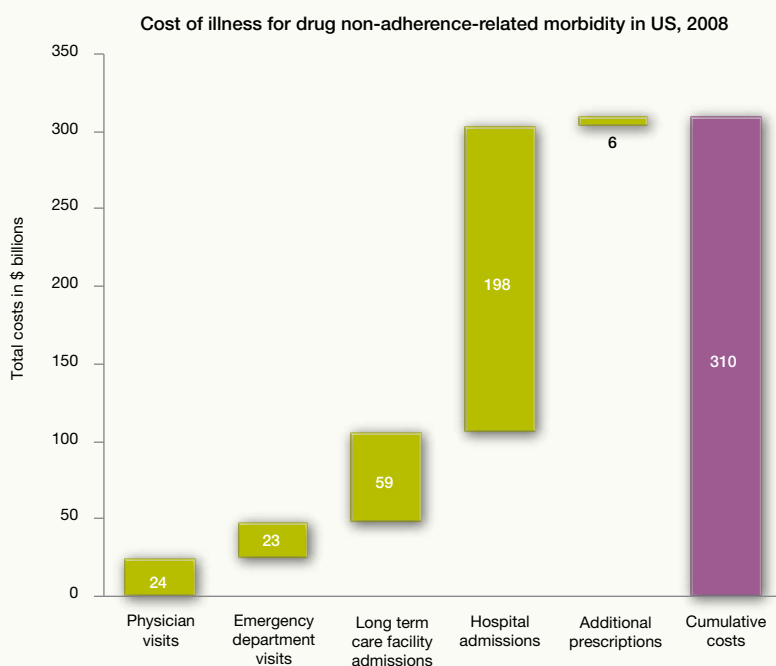
[7] *"Adherence to long term strategies-Evidence from Action"*, World Health Organization, 2003

Patient non-adherence leads to significant costs for the healthcare system

Poor adherence leads to poor health outcomes and increased healthcare costs for healthcare systems and authorities.

Research conducted by the New England Healthcare Institute (NEHI) in 2009 estimated that, in the US, the overall cost of poor adherence, measured in otherwise avoidable medical spending, is close to $310 billion annually, representing approximately 14% of total healthcare expenditures[8] (Figure 3).

Figure 3: Cost of patient non-adherence to the US healthcare system

Cost of illness for drug non-adherence-related morbidity in US, 2008

Source: "Thinking outside the pillbox"

The UK's National Institute for Clinical Excellence (NICE) produced guidelines for patient adherence in which it estimated that around £4 billion of medicines supplied on prescription through the NHS are not used correctly[9].

Patient non-adherence results in lost sales and brand equity

- The first impact of patient adherence on pharma companies is direct, resulting in lower sales on account of lower drug consumption
  - Non-adherence results in an estimated average per drug loss of 36% in potential sales

- The second impact is more long term in terms of loss of brand equity on account of wrong assumptions of drug inefficacy
  - Patients' non-adherence results in a "real-world" perception of a lack of efficacy and a lack of safety

This leads to both Rx switching by physicians and non-reimbursement by payers as they are increasingly looking towards patient outcomes and real world evidence rather than trial results.

Gaining new patients costs pharma companies an average 62% more than retaining existing ones.

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[8] *"Costing statement: Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence"*, The National Institute for Clinical Excellence (NICE), January 2009

[9] Ibid

Capgemini Consulting identifies adherence as a multidimensional phenomenon determined by a complex interplay of various factors. In this study we have analyzed adherence on three dimensions – factors driving non-adherence, influencers of behavior and interventions aiding adherence as shown in Figure 4.

3.1 Factors Affecting Adherence

The ability of patients to follow treatment plans in an optimal manner is frequently compromised by more than one barrier. These can be classified into six broad dimensions that need to be addressed by health stakeholders; namely patient-related factors, healthcare system- and provider-related factors, therapy-related factors, condition-related factors, cost-related factors and socio-economic-related factors.[10] Solving the problems related to each factor is necessary to improve patient adherence to therapies.

Adherence is difficult to address because it is a multifaceted phenomenon. While some of these factors are within patient control, most are part of the larger healthcare environment and, therefore, outside of

Figure 4: Dimensions of patient adherence

Source: Capgemini Consulting

10 *"Adherence to long term strategies-Evidence from Action"*, World Health Organization, 2003

Figure 5: Factors impacting patient adherence

Patient-related factors	■ Inadequate knowledge of disease and treatment ■ Perceptions of diagnosis and health risks associated with disease and treatment ■ Misunderstanding of treatment instructions and follow-up routine ■ Forgetfulness and patient attitude
Healthcare system- and providers- (treatment team) related factors	■ Inadequate reimbursements – like type of health insurance; pharmacy benefit design ■ Poor medication distribution systems ■ Barrier to care by providers – lack of knowledge / training of providers, weaker capacity, inability to establish community support ■ Poor patient-provider relationship – time spent, communication style, follow ups and monitoring
Therapy-related factors	■ Drug effectiveness and tolerability ■ Route of administration ■ Duration of treatment ■ Complexity of medical regimen ■ Previous treatment failures ■ Frequent changes in treatment
Condition / disease-related factors	■ Severity of symptoms ■ Level of disability (physical, psychological, social and vocational) ■ Rate of progression and severity of the disease ■ Availability of effective treatments
Cost-related factors	■ Co-payment ■ Out-of-pocket payment
Socio-economic factors	■ Demographics like age, race and sex of patient ■ Income status ■ Lack of effective social support network ■ Cultures and beliefs about illness or treatment

Source: Capgemini Consulting

patients' power to change, as shown in Figure 5.

Adding to the complexity of addressing adherence, at any given point in time multiple factors can influence patient attitudes and behaviors towards treatment. These factors can also change in their level of importance over the length of treatment.

In our survey, respondents have rated patient- and therapy-related factors among the top factors driving adherence[11] (Figure 6).

Patient-related factors represent the resources, knowledge, attitudes,

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[11] Capgemini External Interviews – Could you please prioritize the most dominant factors and also identify the top 3 stakeholders who can influence these factors?

Figure 6: Ranking of factors driving adherence across respondent groups

Degree of importance:
1.0 – Most important

Pharma   Payers   Pharmacists
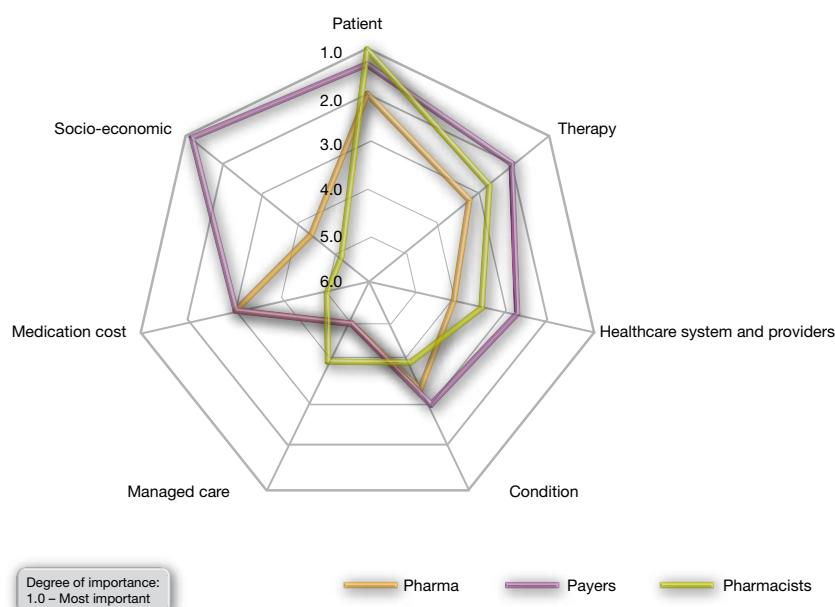
Source: Capgemini Consulting

beliefs, perceptions and expectations of the patient. Patient knowledge and beliefs about their illness, motivation to manage it, confidence (self-efficacy) in their ability to engage in illness management behaviors, and expectations regarding the outcome of treatment and the consequences of poor adherence, interact in ways not yet fully understood to influence adherence behavior.

"Patients lack understanding of their condition, of why they need this medicine or intervention and why they would benefit from the medicine. The clinicians' lack of ability/time to convey the importance of the above is the biggest driver for non-adherence" – Pharmacist

"For our rheumatoid arthritis drug there is a drop-off at the second infusion because the patient doesn't get relief or, possibly, because they feel better and don't feel they need any more treatment..." – Pharma Executive

Some of the respondents believe that factors in the healthcare environment in which patients receive care have a major effect on adherence. Lack of emphasis on treatment education and adherence by physicians is viewed as one of the most critical of these environmental factors.

"If patients understood the importance of adherence, they would be more aligned with the idea. They don't assign it the correct level of importance, but it's not their fault; practitioners don't take the time to explain benefits and side effects" – Payer Executive

Patient's condition does have an effect on the level of adherence but, as mentioned (Figure 1), adherence does not increase in proportion to disease severity. In the US, adherence rates range from 50% for depression to only 62% for oral cancer medications. Cost, managed care support and socio-economic factors play their own parts in making a patient less adherent. The majority of interviewees

consider those factors as having lesser importance.

"If you ask patients what most influences their adherence, they would say cost. From my experience, what has really helped is disease and treatment education; somebody listening to their needs and worries and addressing questions, clarifying what the disease is and what the treatment options are. After we carried out primary research on patient adherence at one of my previous employers, we started a voucher program. Patients did not even use the vouchers: they were more interested in education and open dialogue." – Pharma Executive

There continues to be a tendency to focus on patient-related factors as the main cause of non-adherence to the relative neglect of the second and third most important factors of therapy and healthcare system- and provider-related factors.
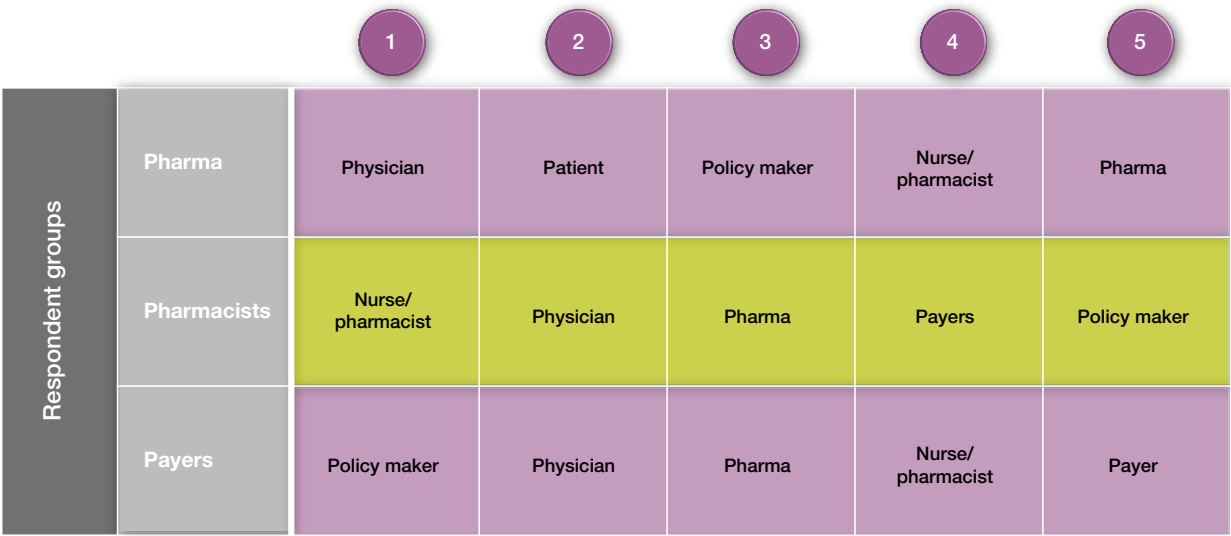
3.2 Influencers of Adherence

Healthcare industry stakeholders can influence patient behavior at many points in their interactions with them. To understand what interventions promote adherence, it is critical to identify the influencers to target these factors.

There is no consensus on the key influencers of patient adherence across respondent groups (Figure 7). Physicians rank among the top two influencers across respondent groups but payers are considered to have a low level of influence on patient adherence[12]. This signifies that physicians enjoy the maximum confidence of patients, who expect strong guidance from them. But for lack of time, physicians are less able to stress the importance of adherence to patients, and restrict their conversation to medical regimen.

Other influencers include peers (other patients), family, and media providing healthcare information. Influencers are dependent upon the patient segment and their perception of who is a trusted source of information. Parents, for example, can influence the adherence behaviors of children and adolescents.

Figure 7: Leading influencers of adherence as reported by respondents

Respondent groups	1	2	3	4	5
Pharma	Physician	Patient	Policy maker	Nurse/pharmacist	Pharma
Pharmacists	Nurse/pharmacist	Physician	Pharma	Payers	Policy maker
Payers	Policy maker	Physician	Pharma	Nurse/pharmacist	Payer

Source: Capgemini Consulting

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[12] Capgemini External Interviews – Could you please prioritize the most dominant factors and also identify the top 3 stakeholders who can influence these factors?

3.3 Commonly Adopted Adherence Interventions

Based on our secondary research and input from Life Sciences leaders involved in the study across Capgemini Consulting, we have categorized the commonly adopted adherence interventions into five groups (Figure 8) and further analyzed them.
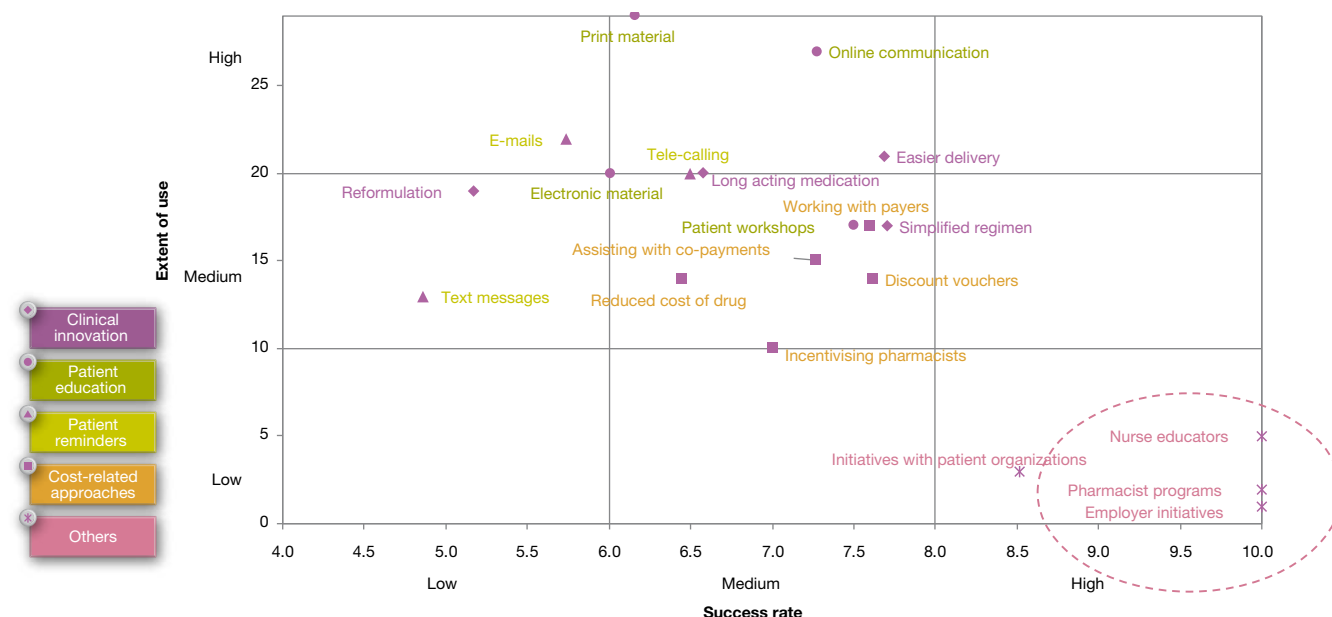
No one intervention strategy has been shown to be singularly effective across patients, conditions and settings[13]. The majority of interventions are moderately successful. Some rarely used approaches, such as nurse educators and pharmacist programs, show high success rates. But the costs associated with a high level of personal interaction in such programs have prevented their widespread adoption (Figure 9).

Figure 8: Categories of commonly adopted adherence interventions

Intervention Area	Description
Clinical innovation	■ Simplified regimen ■ Easier delivery mechanism ■ Long acting medication ■ Reformulation / combination drug
Patient education	■ Print material – brochures, leaflets, cards ■ Soft copy material – CD-ROMS etc. ■ Online Communication – website, communities, forums ■ Workshops
Patient reminders	■ Tele-calling ■ E-mails ■ Pager / text messages
Cost-related approaches	■ Reducing cost of drugs ■ Providing discounts or vouchers ■ Incentivizing pharmacists ■ Assisting with co-payments ■ Working with payers to move to lower co-payments levels on formulary
Others	■ Nurse educators / nurse forum ■ Pharmacist programs ■ Collaboration with patient organizations ■ Employer initiatives

Source: Capgemini Consulting

[13] Capgemini External Interviews – Which adherence programs/interventions have been adopted by your company over the last five years? a) Could you rate them on how successful they have been?

Figure 9: Extent of use vs. success rate of sample interventions as ranked by respondents

Source: Capgemini Consulting

Pharma companies have tried many approaches. Most robust programs support patients along the length of treatment with a series of touch points supported by multiple tactics.

"Patient Support Programs in diabetes employ nurse educators that either make home visits or visit specific clinics where patients are trained to take their insulin. They also provide training in blood glucose monitoring, in some cases providing strips free of charge, giving advice on diet, cooking and shopping and even going to the extent of spending time in the supermarket with patients." – Pharma Executive

Pharmacists want to offer adherence services to patients as a new growth opportunity. Contracting with pharma they provide patient services such as refill reminders and consultation on insulin pen usage for a fee. Pharma can increase sales in this area.

However, barriers to truly effective patient adherence programs remain common across the industry. The following are commonly faced challenges and interviewee comments:

Lack of clear objectives and continuity

"All activities need to be planned around clear objectives and you need to have a long standing plan. We have seen many programs which start up with very nice initiatives but without any continuity that is remembered by both patients and providers." – Pharma Executive

Poor understanding of patient needs

"There is a lack of market research / measurement of customer needs and wants." – Pharma Executive

Lack of patient centricity

"Most interventions are not aligned with patient needs. The incentives offered are not aligned." – Pharma Executive

"One size fits all" approach

"Several initiatives have not worked – what characterized many of them is that they are less personalized." – Pharma Executive

Lack of patient engagement

"Compliance is a complex topic and many factors play into it. There are very few programs that are smart about how to engage the patient in this process." – Pharma Executive

Programs in silos

"We have patient, pharmacist and healthcare professional based programs, but none are connected. It would be so much more powerful if we pick the theme and then build a cohesive campaign strategy ensuring that the different stakeholders are embarked the same way." – Pharma Executive

Interventions that target adherence must be tailored to particular illness-related demands experienced by the patient. To accomplish this, health systems and providers need to develop the means of accurately assessing not only adherence, but also the factors that influence it.

The next sections look at the evolution of patient adherence strategies.

4 - Things are Changing

Figure 10: Collaboration between different stakeholders to improve adherence in the future

10%

5%

85%

■ Yes ■ No ■ Maybe

Capgemini External Interviews – Do you foresee a more collaborative approach between the various HC stakeholders to tackle adherence in the coming years? Whom do you see as natural partners for such a collaborative approach?

To improve patient adherence, increased collaboration between healthcare stakeholders is vital. Changing healthcare reforms, advances in digital health media and modern technologies now provide the impetus to enable this to happen. Our research indicates that although providers will remain the most important stakeholders, influencing adherence through direct face-to-face patient contact, their influence is waning. Payers are expected to fill the vacuum, along with pharmacies and nurse educators. Health reforms in the US and other developed countries are focusing on improving the quality of care by evaluating drugs on real world outcomes, empowering patients, adopting electronic health records and other technologies, all of which will have a direct or indirect impact on patient adherence. Digitization of patient records will make plentiful data available for better understanding, segmenting the patient and forging suitable intervention plans once data privacy and interoperability issues are resolved. The execution of adherence strategies has become much easier with the various technology options now available. Companies will succeed by adopting a suitable mix of people, processes and technologies to nudge patients unobtrusively towards taking timely and regular medication and remaining adherent.

4.1 Healthcare Industry Involvement and Collaboration

Evolving stakeholder influence is the first force shaping the direction of patient adherence. Our primary research indicates that, historically, providers have been considered the most important force influencing patient adherence behavior. This will continue in the future, chiefly because of direct face-to-face patient contact. However, the impression that providers are not playing their part well, and that, as a result, their influence will decrease in the future, was expressed by nearly 60% of interviewees.[14]

Disenchantment with providers comes mainly from the physicians' five minute consultation model where they do not emphasize the need for and benefits of adherence. Nurses and pharmacists are now expected to operate in a consultative mode.

"Nurses or physician assistants are in the ideal position to increase adherence - they can establish contact with patients and they are trusted. There should be special training for them and a change in the system to foster this." – Pharma Executive

"Pharmacies will evolve to provide point-of-care measurements and counseling." – Pharma Executive

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[14] Capgemini External Interviews – Going ahead what do you feel will be role of the following healthcare stakeholders in improving patient adherence?

By contrast, the influence of payers is expected to increase by 50%. Many pharma executives are still reluctant to consider payers as essential drivers of patient adherence, but others see their role as critical, from setting co-pay levels to disease management.

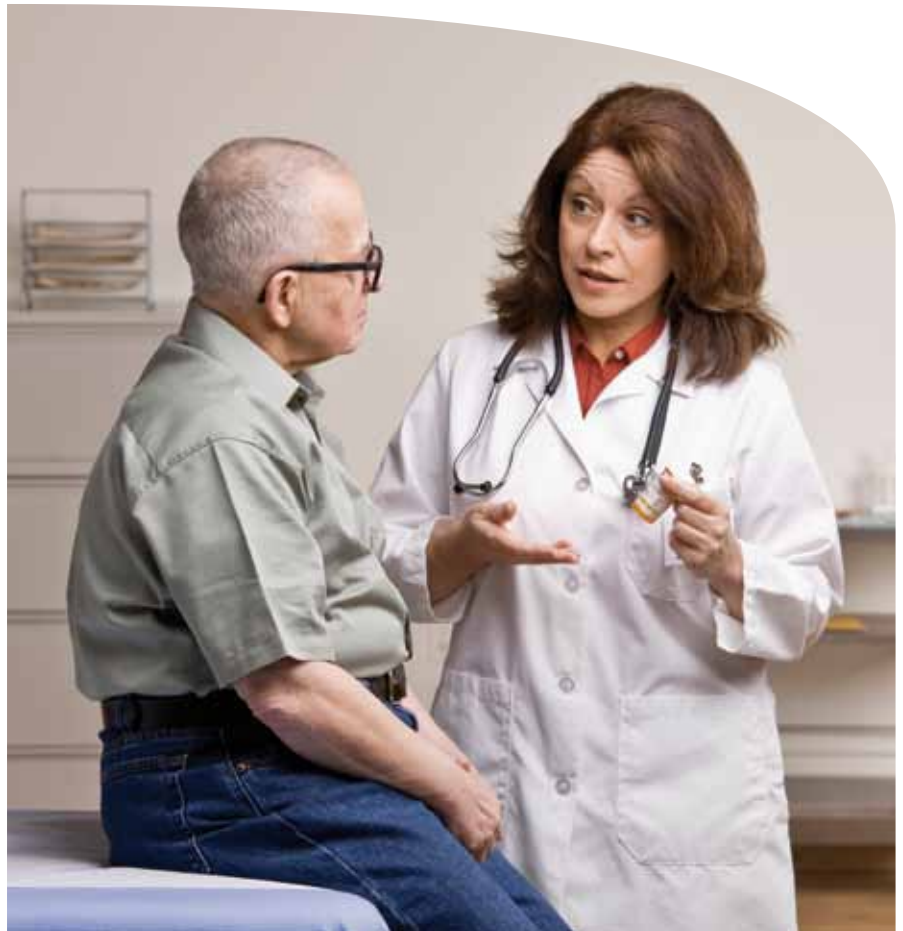*"Payers could link adherence to reimbursement."* – Pharma Executive

In the US, employers have a strong incentive to improve adherence to defray premium increases and control costs.

"They are in a position to do something. They hold a disproportionate amount of responsibility (financial) for their employee's health. The more enlightened are forward thinking, and provide their employees with incentives to be healthy." – Payer Executive

After years of growth as consumerism matures patient influence is expected to plateau, though it will continue to evolve. Families will increasingly oversee treatment of elders, at a time when patient to patient influence networks will extend beyond the family circle.

"Patients will be more involved through media and social forums." – Pharmacist

Finally, it is expected that multiple stakeholders will unite to support each other to increase patient adherence. In coming years, 85%[15] of respondents foresee a more collaborative approach between various HC stakeholders to tackle adherence (Figure 10).

Pharmaceutical companies will need to fine tune their programs to help shape the way the healthcare system moves towards improved patient orientation.

"Pharma will need to be proactive on this front. Pharma needs to play the facilitation role and drive the unified approach." – Pharma Executive

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15 Capgemini External Interviews – Do you foresee a more collaborative approach between the various HC stakeholders to tackle adherence in the coming years? Whom do you see as natural partners for such a collaborative approach?

BOX 2: Summary of US and UK healthcare reforms and implications on adherence

US Healthcare Reform

Reform priority	Description and rationale	Implications
Coverage for uninsured and underinsured	■ Expanding Medicaid to help the increasing number of unemployed and those currently lacking coverage ■ Prohibition against exclusions for pre-existing health conditions, no lifetime limits, premiums based only on age/family size and geography	■ Increase in insurance coverage would make healthcare affordable for a larger population in the US, especially the lower socio-economic strata who might have lower adherence
Payment reform	■ Increasing the reimbursement of primary care services (medical homes, preventive care, etc.) ■ Shifting from a fee-for-service model to payment systems that reward health outcomes	■ Provide incentives to providers to work towards patient adherence especially regarding chronic illnesses
Wellness and prevention initiatives	■ Insurance companies to reimburse for the whole range of preventive services ■ Establishing prevention and public health funds for research, health screening and immunization programs aimed at prevention activities, reducing chronic disease rates and addressing health disparities	■ Encourage greater use of proven screening and assessment tools to identify and target patients who are non-adherent and ultimately encouraging adherence both at the point of prescribing and in follow-up contacts with patients
Health information technology (HIT) spending	■ Investment in HIT and electronic health records for building data infrastructure	■ Encourage data sharing across care providers and care settings, including physicians' offices, hospitals, pharmacies, home healthcare agencies, and others thus boosting adherence monitoring

UK NHS Healthcare Reforms

Reform priority	Description and rationale	Implications
Patient empowerment	■ Promote shared decision-making between providers and patients with an ambition to involve patients fully in their own care ■ Empowerment of the patient will further increase the emphasis and importance of the "informed patient" ■ Patients and caregivers will have much more influence on when, where and from whom they receive care and treatment	■ Enhance patient information ■ Forge closer relationships with patient groups, charities and other patient influencing bodies ■ Offer education and support, particularly through e-channels and patient support programs
Improving healthcare outcomes	■ The government will provide online access to patient information, including patient-reported outcome measures, patient experience data and real-time feedback	■ Increase data sharing across care providers and care settings, along with insights from real world outcomes and patient's feedback could be leveraged to enhance adherence efforts
Payment by results	■ Providers will be paid according to performance, assessment of which will largely be based on outcomes ■ Coordination of care will be encouraged	■ Encourage providers to work towards patient adherence especially with regards to chronic illnesses

4.2 Healthcare Reforms

Government policies around the world are pushing towards patient empowerment and incentives centered around health outcomes to reduce healthcare cost, while maintaining or improving quality. Patient adherence is one of the levers that health authorities are counting on to improve healthcare systems' effectiveness and efficiency.

The new US Healthcare legislation provides a platform for patient adherence by granting incentives and investing to improve adherence, while facilitating wellness and disease prevention. Priorities include increased coverage for the uninsured, payment reforms towards patient outcomes and moving away from fee for service, wellness and prevention initiatives and investment in health information technology[16]. Such reforms are expected to impact adherence in three ways, by:

1. removing economic obstacles to filling prescriptions
2. offering incentives for providers to monitor their patients throughout their conditions, and to provide them with disease management support
3. enhancing the use of proven patient screening tools to identify non-adherence risks.

Similarly, UK NHS reforms promise better health outcomes and improved adherence levels. They are oriented towards building a patient-centric healthcare system, which will provide opportunities for life sciences companies to play an active role in making fresh efforts for adherence activities[17] (see Box 2 for details).

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16 *"Industry Survey: Managed Care"*, Standard & Poor's, April 2009; *"Business Trends: Healthcare Technology – Understanding Your Healthcare Technology Customer"*, Datamonitor, October, 2009; *"From sick care to prevention and wellness"*, National Journal.com, July, 2010

17 *"Equity and excellence: Liberating the NHS"*, Department of Health UK, 19th October 2010; *"Lansley announces overhaul of NHS"*, BBC Democracy Live website, 12th July 2010

4.3 Digital Health Media

Digitization of patient records and their availability in various forms will have a lasting impact on shaping the adherence landscape. Healthcare stakeholders will be able to identify the exact points in a patient journey where adherence ceases, identify root causes for such treatment cessations, and create programs to address them with the necessary tools and inducements to improve the individual's health. Along with the sharing of information through the internet and the growth of social media, these will be key trends that should be tapped into to establish a closer relationship with the patient.

Electronic health records (EHR) will be the key component in building an integrated healthcare IT framework. Records may include data in comprehensive or summary form, including demographics, medical history, medication, allergies, immunization status, laboratory test results, radiology images and billing information capable of being shared across different health care systems[18]. Data privacy, data interoperability and information exchange issues will have to be addressed in consultation with government. But the advantages make overcoming these challenges worthwhile. Some potential benefits are:

- Electronic medical records will encourage data sharing across care providers and care settings (physicians' offices, hospitals, pharmacies, home health care agencies and others)
- Data will reveal patient trends (for example, medication consumption, level of adherence, and intervention points in treatment)

Case study: eHealth strategy at a major pharmaceutical company

The client wanted to better understand the current electronic health records (EHR) and ePrescribing landscape pertaining to promotional and non-promotional activities, as well as implications of product launches. Interest in eHealth was stimulated by the expectation that adoption of EHR and ePrescribing by healthcare providers in the US will grow rapidly in coming years, primarily due to US federal mandates. Indeed, the stimulus package (ARRA) signed in 2009 has outlined incentives for providers to adopt and use EHR and penalties beyond 2012.

Capgemini Consulting conducted primary and secondary external research concentrated across three sources of information, knowledge, and insights with broad involvement from the Capgemini Consulting Strategic Research Group. First, one-on-one interviews were conducted with providers and experts from pharmacy and institutional settings from Capgemini Consulting's Healthcare Specialists Council to gather third party perspectives on EHRs and ePrescribing. EHR/ePrescribing, drug database and eCouponing vendors were then reviewed and interviewed to asses key players, industry trends, capabilities and offerings, processes, and willingness to partner with pharma. The competitor landscape was also studied to examine existing partnerships/programs, industry trends, and the current state of maturity in EHR strategy.

Research also included discussions with the company's internal stakeholders to determine the current level of understanding of EMR and ePrescribing across impacted groups. The workstream was also designed to assess the perception of where EMR and ePrescribing fit into current strategic planning and examine change management needs for the potential rollout of EMR and ePrescribing initiatives.

The resulting recommendations provided the client with a better understanding of where to "play" in the area of EHR and ePrescribing. Relevant implications and prospects for disease state information, in-line products, and product launch strategy were highlighted, including pursuit of promotional and non-promotional opportunities. Research findings also clarified the information exchanges and dependencies between pharma companies and the various vendors that make up the EHR landscape, facilitating more efficient transactions going forward.

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[18] *"Business Trends: Healthcare Technology – Understanding Your Healthcare Technology Customer"*, Datamonitor, 16th October, 2009

■ These will ultimately help design intervention and customized programs to boost adherence as well as in-patient recruitment and product usage

Different healthcare stakeholders will use this data to enhance patient adherence in different ways. EHR will help providers in supporting clinical decisions, payers in constructing accurate pay for performance models, and patients themselves in monitoring their treatment and progress.

Social media will also dramatically impact patient adherence. Where we once had standardized information pushed from a limited number of organizations to the patient population as a whole, we now have a multiplicity of actors sharing uncontrolled information with whoever accesses it. Guidelines are sparse. The FDA is hesitant to take a stand for fear of publishing already obsolete rules. New influencers are emerging: patient opinion leaders (POL) have thousands of followers. Patient advocacy groups have a new way to expand their impact. And new media emerges every day. Sharing takes place via wikis, social networks, blogs, podcasts and personal media such as personal health records where people can create, manage and share (with authorized physicians) their personal health information (Figure 11)[19].

Figure 11: New online technologies aiding adherence

Information exchange	Description
Wikis	■ Health wiki provides articles on health, diseases, treatments ■ Open access medical encyclopedia for medical community ■ Enabling knowledge management – providing more information ■ *Informing – enabling stakeholders to inform each other by sharing knowledge and experience*
Social networks / online forums	■ Online forum for patients with illnesses such as MS, HIV etc to share their experiences ■ Building fan pages and community around specific conditions, organizations etc ■ *Engaging – peer-to-peer networking; participating in and stimulating two-way conversations*
Blogs / micro blogs	■ Weblogs by health professionals offering personal perspectives, experiences ■ Micro-blogging service that enables users to send and read messages known as tweets ■ *Supporting – posting press release-like announcements which, in some cases, can supplant traditional news formats*
Video-sharing / podcasts	■ Video sharing websites enabling users to upload and share videos on various health topics ■ Some like NIH Podcasts provides information about NIH research findings, campaigns etc ■ *Energizing – empowering advocates to inform and persuade other customers*
Personal health record (PHR)	■ Interactive personal record of patient's medical history. People can create, manage and share (with authorized physicians) their personal health information ■ *Accessing – real life health information, outcomes and trends of patients*

Source: Capgemini Consulting

[19] Capgemini analysis; Social media websites

4.4 Technology Advancements

Patient adherence requires timely, unobtrusive interventions, which will nudge patients towards taking their medication as prescribed, without making them feel that they are being manipulated or coerced. Technological advances allow smart interaction with patients, depending upon the desired level of involvement. These range from decade-old longer-acting formulations and pill calendars to new technologies and approaches.

Mobile applications provide information on thousands of drugs and disease conditions[20]. They can track calorie intake and calories burned during a workout, work as a hearing aid, help patients record blood glucose readings, and remind patients about medication. Physicians can stay connected to patients and access health records (PHR) on their phones[21]. Smartphone applications can educate and engage the patient interactively.

Some pharma companies have invested in the manufacturing of smart pills, containing a chip inside the pill[22]. The chip records the time of ingestion and brings about patient adherence by informing the patient of the next medication period by communicating through a sensor (usually worn as a skin patch or embedded under the skin). This information can be uploaded to a smart phone or sent to the physician via the internet.

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20 *"Digital Technologies to Boost Patient Compliance"*, FirstWord, September 2010

21 *"Top iPhone Apps For Health Pros, Patients"*, InformationWeek Healthcare, October, 2009

22 *"Pills get smart – Potential Encapsulated"*, The Economist, January, 2010

Substantial innovation has also taken place in packaging, ranging from a simple row of boxes holding a week's medication with compartments for two or four daily doses, to electronic pill bottles equipped with a wireless transmitter, which tracks compliance and reminds patients of the time of medication by flashing the bottle top and playing a tune. Electronic pill boxes with 28 small plastic cups can be designated separately for different pill types and detailed regimens[23].

Over time interactive web games can educate patients and subtly change their behavior. Playing the game the patient gets involved in his or her condition and learns about symptoms, drugs, side effects and other health precautions. A more involved approach for patients treated at home involves remote patient monitoring via video surveillance. Devices can be linked to a central platform and can measure and transmit vital signs like glucose level, blood pressure and electrocardiogram to clinicians monitoring the patient. Diagnostic tools give physicians instant access to patients' lab results, prescriptions and medication history via electronic health records (EHR).

Customer support or call centers can support those who prefer speaking on the phone. Toll-free numbers enable patients to seek additional information about their disease and condition as well as the drugs they are consuming. They can report problems, adverse effects or irregularities and enroll for programs with call-back options to remind them of their medication schedule.

Figure 12 shows specific technology examples as discussed above.

> **"** *Electronic medical records will provide an opportunity for pharma to partner with institutions, by encouraging them to identify how patients are doing with their treatment, and what could be done to help them with their adherence* **"**
>
> Pharmaceutical Executive

23 Elizabeth Moore, *"Now you don't need a pill to remember your pills"*, cNet News, Health Tech – 1st September, 2009

Figure 12: Technology examples

Patient adherence technologies	Examples
1 Mobile applications	■ Vaxtrak, Novartis V&D – iPhone app to track and plan vaccinations – schedule, reminders, locations of vaccination centers and information about vaccines and diseases ■ GoMeals, Sanofi-aventis – iPhone app for diabetes condition – measure calories, fats, carbs, etc.
2 Smart pills and packaging	■ Novartis partnered with Proteus Biomedical to produce high tech pills with embedded ingestible sensors, which tracks medication adherence by time-stamping patient's ingestion of medication ■ Glucotrol, Pfizer – Type II Diabetes – long acting drug – once a day dosing ■ Vitality GlowCap – pill bottle equipped with a wireless transmitter – tracks compliance and reminds patients by flashing the bottle top and playing reminder melody at time of medication
3 Interactive web based games	■ HopeLab's Re-Mission and Bayer's DIDGET engage patients in fun games and help them manage their condition and side effects ■ Zeck Attack, Novartis Vaccines – game to raise awareness for tick borne encephalitis (TBE)
4 Remote patient monitoring	■ Intel Health Guide – combines an in-home patient device (PHS6000) with an online interface that allows clinicians to monitor patients and remotely manage care ■ Philips remote patient monitoring via TeleStation – blood pressure, ECG, glucose level, etc.
5 Diagnostic tools	■ Quest Diagnostic tools and Care 360 EHR module, which allow physicians and nurses to instantly monitor patients' lab results, prescriptions and medication history
6 Call centers	■ Toll free numbers (e.g., 1-800 in US) for different brands or products

Source: "Digital Technologies to Boost Patient Compliance" – FirstWord, September 2010
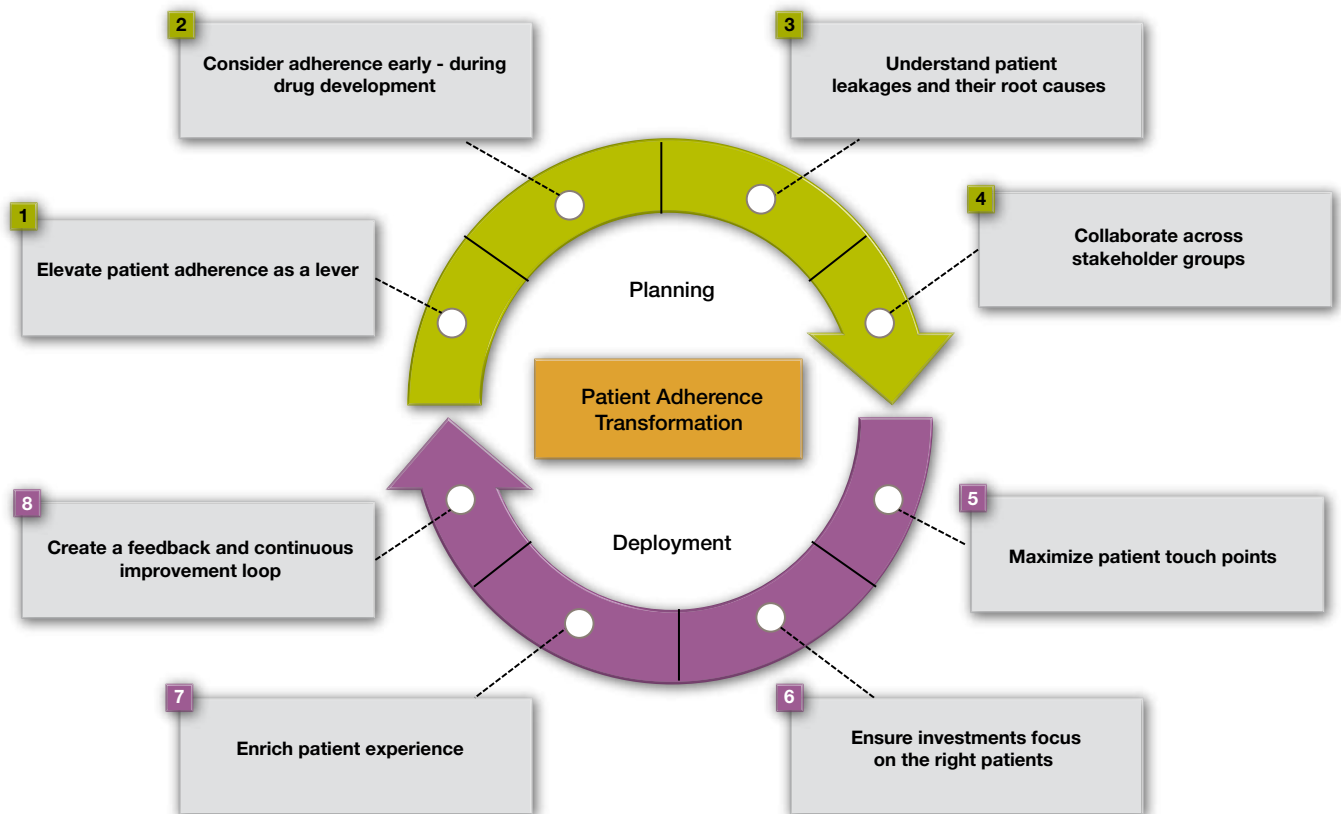
5 - The Way Forward

As a matter of urgency, pharma must radically innovate itself around patient adherence. Success in this area will improve patient outcomes, decrease overall healthcare costs, while preventing millions of dollars from being lost from revenue streams. Capgemini Consulting proposes an investigative model that will help firms make adherence central to their overall product development strategies.

The transformation framework aims to make adherence a key pillar of marketing and sales efforts. The journey begins by truly measuring patient adherence, and elevating the perceived value of a sustained treatment versus a new prescription. Once the goal is established, pharma companies must shape their strategy. This should start early in development to influence product features. All patient leakages should be thoroughly reviewed to identify opportunities. The analysis should be comprehensive and go beyond the levers that pharma can utilize directly, to encompass relevant influence points from all healthcare stakeholders. Collaboration needs to be built into the patient adherence strategy. The impact of all patient touch points must be maximized in an economical way. This will require companies to understand which patients represent the highest value and which can most benefit from external help to enhance their adherence. Finally pharma has to ascertain that it is enriching the quality of life of patients while

Figure 13: A comprehensive and coherent future framework on patient adherence

Source: Capgemini Consulting

gathering continuous feedback from them to improve its efforts.

5.1 Elevate Patient Adherence as a Lever

Most industries know that it is much cheaper to keep an old customer than to gain a new one, hence the focus on customer services and loyalty programs. Pharma needs to embrace the same conclusions.

Today, patient adherence is generally the responsibility of the number four on the brand team or of some center of excellence away from strategic decision making. Worse, data on patient adherence is often scarce and late.

To truly make a difference, pharma companies need to lift the patient adherence lever. Timely key performance indicators (KPI) are needed to allocate efforts between new patient acquisition and patient retention appropriately.

Equipped with those KPIs, a new generation of patient adherence professionals must be empowered to define strategies and compete for investment dollars. These owners of patient KPIs will have to collaborate across functions, to obtain support for activities ranging from defining the new features a product should have to truly support adherence, to co-pay management or direct-to-patient communication.[24]

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[24] *"Pharmaceutical Patient Adherence and Disease Management: Program Development, Management and Improvement"*, Cutting Edge Information, 2006

5.2 Consider Adherence Early – During Drug Development

One of the first tasks for this new breed of marketers will be to make patient adherence a part of the product design discussion from the very early stages of development. The payers we talk to tell us that they will not pay for convenience – but they will pay for outcomes. Thus the key question is: how can the link between product feature, adherence and outcomes be measured in a meaningful way? Obtaining an answer is the second big task facing our marketers in the early days of a compound.

Closer to launch and post launch, the main goals of the adherence leader are more traditional, consisting of setting up the lifecycle management strategy that will continually enhance the product's patient adherence features, and the measures and the strategies that will maximize adherence with drug prescriptions (see Box 3).[25]

5.3 Understand Patient Leakages and Their Root Causes

An in-depth understanding of the root causes of patient leakages is the foundation on which to build patient adherence strategies, whatever the stage of the product lifecycle. Marketers have a variety of tools to complete their investigations, including traditional market research, anthropological studies, social media analyses and multi-dimensional statistical analyses. However, we consider that analyses will maximize their chances of success if they respect a few principles:

1. Look at the problem holistically, including all patient touch points across and beyond the organization
2. Consider how the causes of non-adherence evolve over the patient journey, from prescription to long term adherence
3. Identify how adherence behaviors vary across patient group, and define what criteria are the best predictors of future behaviors

The following are examples of patient psychology at different stages in a patient journey, the corresponding root causes behind non-adherence and possible intervention mechanisms that can be targeted at each stage.

- **Disease condition evaluation**: Non-acceptance of disease conditions and ignoring non-severe symptoms are the main causes leading to non-adherence, when the patient is initially reluctant to accept that he has a problem which requires careful following of a physician's instructions. Informational websites

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BOX 3: Product lifecycle based adherence strategy

Adherence during drug development

	Before launch	Patent period	Patent expiry period
Activities	■ Adherence measurement criteria 　• Use anonymized patient level data for a therapeutic area ■ Adherence barriers 　• Identify point of non-adherence 　• Understand causes of non-adherence ■ Calculating outcomes 　• Quantify health outcome 　• Define measurement criteria	■ Collecting evidence 　• Support adherence-based marketing 　• Conduct real world studies to quantify adherence benefits ■ Preparing the market 　• Communicate medical and economic need of adherence ■ Improving patient experience 　• Develop appropriate product packaging and information inserts	■ Tactical improvements 　• Add to ongoing adherence initiatives ■ Program effectiveness 　• Determine ROI on chosen criteria. Revise program accordingly 　• Calculate value of improved outcomes - medical cost offset due to adherence ■ Reinforcement of brand position 　• Communicate adherence statistics & results to payers, providers and consumers
Benefits	■ Elimination of product formulation characteristics that make patients non-adherent ■ Robust outcomes report can act as a reimbursement differentiator and help plan launch strategy	■ Market access plan based on real world adherence and outcome results ■ Marketing & communication plan promoting adherence benefits	■ Proven adherence will act as a differentiator post-patent securing payer access and allowing price premiums to be maintained

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25 *"Persistence and compliance: New initiatives for brand success-Part I"*, Product Management Today, June 2007

highlighting the advantages of completing the treatment process might help patients stay the course.

■ **Financial obligation**: Paying for medication on an ongoing basis is a major concern, especially for patients with chronic diseases. Information on different support programs and providing co-pay cards will help dropouts.

■ **Ease of medication intake**: Once patients have begun taking medication, it is important to ascertain that they are comfortable with the dosage and formulation, that they are not experiencing unforeseen side effects and that the medication regimen is not too complex or interferes with other medicines they may be taking. The mitigation recommended is to communicate on adherence complexity, improve customer service, and consider adherence in early product development so that appropriate product modifications can be done in time.

■ **Evaluation of medication**: Patients tend to doubt the benefit they are getting by diligently following a prescribed regimen over a period of time. At this stage the biggest root cause of non-adherence is lack of faith in the medication due to lack of visible recovery signs. Pharma will do well by establishing communication strategies at these intermediate stages.

■ **Lack of persistence**: Once the patient's health starts to improve they may consider stopping. As possible intervention strategies pharma should have opt-in programs to drive awareness of the risks associated with stopping treatment.

■ **Losing interest**: With time the above state of mind becomes exacerbated as the patient begins to lose interest and wonders how long to keep taking medication. Pharma should release novel offerings to engage the patient, such as online games and reward contests for keeping good health and maintaining vital signs.
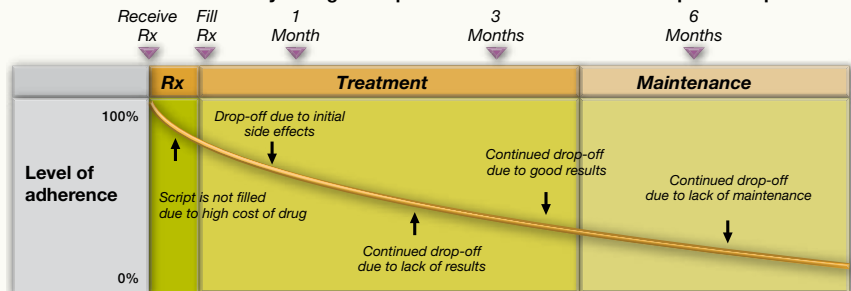

Case study: Growth / patient adherence strategy at a dermatology unit of a global pharmaceutical company

A leading pharmaceutical company was looking for long-term growth platforms for a well-established dermatology franchise. Senior management identified patient adherence improvement as a key opportunity and wanted to precisely assess potential and determine strategy.

The Capgemini Consulting team conducted a thorough root cause analysis, developing a new patient segmentation model and identifying critical leakage points in the treatment continuum. Part of the analysis was done using new social media based market research methodology and tools.

Key findings highlighted that non-adherence factors tend to change over the course of treatment. At first, patients dropped off because of side effects, perceived product underperformance and regimen complexity (daily application seen as burdensome). As symptoms receded, patients abandoned treatment because of relief and not understanding the importance of maintenance.

Factor for non-adherence may change in importance over the course of the patient experience

Capgemini Consulting then developed case studies on how the industry addressed similar challenges. The team worked in collaboration with the client team to prioritize the most attractive and feasible tactics for each patient segment, leveraging existing brand awareness and social media. Recommendations included engagement of patient opinion leaders, creation of an online adherence program and developing a patient community. The outcome was a comprehensive strategy to educate, support and motivate patients throughout the treatment continuum.

■ **Apathy**: Forgetfulness can be addressed with opt-in programs, giving patients reminders for medication using options like SMS, automatic phone calls or smart packaging, which keeps track of the number and frequency of medicines consumed and reminds the patient when they miss a dosage.

5.4 Collaborate across Stakeholder Groups

Many root causes of non-adherence exist. Some can be overcome by encouraging the patient, directly or indirectly. Some require addressing the financial burden of the treatment, others involve improving the product or services provided. Marketing can only address some of these. Support from other parts of the organization can open additional doors. But deep change may require collaboration with other healthcare stakeholders, such as pharmacists, providers, patient advocacy groups or payers.

85% of executives from pharma companies or healthcare entities foresee a more collaborative approach between healthcare stakeholders to tackle adherence in the coming years. Among others, they cite the success of the Merck-Cigna partnership on Januvia, credited with improving patient adherence to 87% through a combination of lower co-pays and disease management, funded by discounts linked to outcomes results (see section 7.4 for details).

However, all our interviewees are very conscious of the sometimes formidable barriers to cross-stakeholder collaboration initiatives. Payers are often wary of partnering with manufacturers perceived as more focused on profits than outcomes. Pharmacy chains or patient advocacy groups share the same concerns. It is the job of the new generation of patient adherence leaders to unlock those barriers and drive win-win collaboration.

5.5 Maximize Patient Touch Points

Pharma needs to increase the number and quality of interactions it has with patients in a planned strategic manner. Ideally, pharma would find out how all interactions with patients influence their behavior, their current level of satisfaction, and what is necessary to promote a positive and consistent customer experience across all key points of the patient journey. One client initiated a full re-think of its customer service strategy based on those principles, mapping all points of interaction with patients, assessing their strengths and opportunities versus competition, and defining a clear, overarching objective to have service levels at least as good as those of their best competitor. This initiative contributed significantly to their success in dominating their product class.

BOX 4: Potential cross-stakeholder collaboration initiatives

Stakeholder	Engagement plan
Physicians and nurses	■ Involve physicians and nurses while designing and executing adherence programs ■ Aid them in medication reconciliation, regimen-setting ■ Communicate to them aspects of patient motivation and adherence ■ Encourage regular follow-ups not only on medication but on overall progress as well
Pharmacists	■ Devise collaborative medication therapy management strategies with pharmacists 　• Pharmacists holding motivational discussions with patients since they are more accessible 　• Home visits by pharmacists ■ Support pharmacy based clinics ■ Build supporting service model
Payers	■ Collaborate with payers to link discounts/rebates for drugs to improved adherence (e.g., Merck-Cigna collaboration) ■ Assist payers in leveraging EHR technologies ■ Engage with payers early even during clinical trials (e.g., Novartis partnership with NICE in UK for its psoriasis drug NOV001) ■ Promote mail order when appropriate
Patients	■ Conduct multi-disciplinary adherence approaches exploiting different family structures in society ■ Provide functional (knowledge) and emotional (confidence) support to make the patient self-dependent ■ Implement loyalty programs or altruistic programs
Government	■ Lobby governments for supportive policies that subsidizes adherence efforts ■ Support and influence efforts to realign current healthcare reimbursement incentives from fee-for-service to rewarding improved adherence or outcomes ■ Raise public consciousness by suitably designed campaigns (e.g., speed camera lottery in Sweden)
Employers	■ Help employers design value-based insurance programs that reduce employee cost sharing for good management of chronic diseases ■ Collaborate with employers to help them design health insurance benefit programs that provide employees with incentives to utilize preventive medicines and wellness services

Figure 14: Ensuring investments focus on the right patients

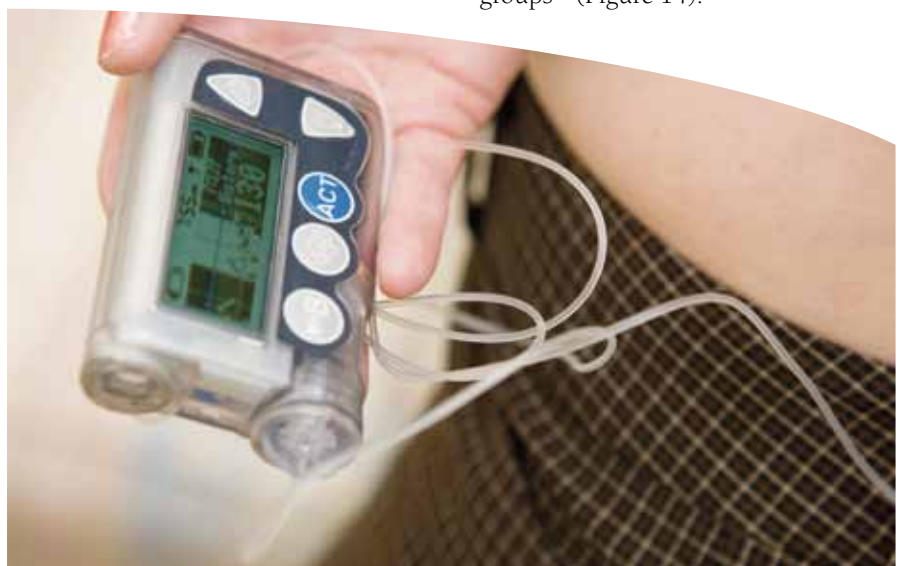|	"Actives" High adopters Fully adherent	"Information seekers" Want to adhere Need a little push	"Skeptics" Skeptical Less receptive	"Benigns" Own set ideas Will not budge
Patient type				
Focus of adherence programs	None (Low ROI)	Yes (Medium to high ROI)		None (Low ROI)
Key question	■ How to minimize spend? ■ How to exclude this patient population?	■ How to identify? ■ How to recruit? ■ How to engage? ■ How to impact most effectively?		■ How to minimize spend? ■ How to exclude this patient population?
Filtering approaches	■ Segmentation for exclusion	■ Opt-in or opt-out programs ■ Past adherence behavior from Rx data ■ Market research ■ Enrollment at doctor's office, pharmacy		■ Segmentation for exclusion

Source: Capgemini Consulting

Many initial decisions to maximize patient touch points can be made based on non-formalized information available across the company. However, a full optimization of customer touch points requires data to help focus investment, track results, and support interactions with potential partners. New data strategies are required to better understand individual patient or patient segment behaviors over time and touch points. When available, longitudinal prescription or electronic health records data could be leveraged in internal decision-making and prompt action from providers or pharmacists, new types of dashboard could be created, compiling complex adherence and behavior data into simple indicators. All of this will require enhanced analytics capabilities, and re-thinking how the value proposition of pharma companies should evolve beyond a pure product focus.

The next frontier in patient adherence management – full re-centering of pharma around patient services – is closer than many executives think. Intelligent diagnostic and monitoring devices can already inform providers on the evolving condition of individual patients. Complex drug delivery tools, such as insulin pumps, are becoming more intelligent every day; and providers, payers and dedicated companies are already experimenting with pilot programs to manage more complex therapies on an ongoing basis. Some technical issues remain to be solved before expanding the scope of such initiatives. However, the real effort for pharma will be to adjust its business model to drive the move towards integrated care services.

5.6 Ensure Investments Focus on the Right Patients

It is important for pharma to focus investments on the most attractive patients. Investing in patients with high adherence propensity or who are completely unresponsive to communication or incentives will typically yield low return on investment. Pharma should collect enough data to filter patients and therefore minimize adherence spends on the very high and very low interest groups[26] (Figure 14).

26 Lisa Roner, *"Putting consumer science to work on patient compliance – eyeforpharma.com, April 2009; Stanley Wulf,"* Take Your Medicine: A Prescription for Brand Growth", Pharmaceutical Executive, October 2008

5.7 Enrich Patient Experience

Pharma will benefit by embracing a philosophy of achieving holistic health for patients, enriching patient experiences and differentiating on patient satisfaction, which implies staying connected with the patient throughout his or her journey, before and after initiation of treatment across all channels and media. Some pharma companies have already launched major initiatives to restructure around patient centricity principles[27].

Changes that pharma should consider when embracing patient-centricity include:

- Establishing patient experience as a cross-functional hub in the organization
- Demonstrating the value of service in each and every interaction with patients
- Establishing a service culture to and move away from a strict product focus
- Integrate channels across all patient touch points
- Enhance business analytics to continually adjust services in line with patient data
- Employing Web 2.0 methods to engage patients
- Rewarding loyal patients suitably
- Linking patient satisfaction goals with internal incentives of employees

It is imperative for pharma to set goals towards increasing patient satisfaction. Enhanced patient experience could be reflected in factors such as brand advocacy and adherence levels. A high patient satisfaction score can be a unique brand differentiator, with patients becoming brand ambassadors and talking about the improvement in the quality of their lives.

Case study: patient management at top ten pharma company

Capgemini Consulting helped a leading European pharma company develop a Patient Management Program (PMP) for diabetes patients across continents. The firm was already performing a number of activities related to Patient Support Programs (PSP) and awareness campaigns, but wanted to improve patient adherence, gain new patients and establish patient loyalty and stickiness.

Capgemini Consulting conducted workshops for understanding patient needs and developing the PMP. The activities included analyzing current market trends, conducting focus interviews, developing patient profiles and, based on the data, conduct gap analysis and select core activities and KPIs for PMP.

A holistic strategic plan was designed supporting existing goals of developing diabetes awareness, shaping the market, improving market access and bringing the best offer to market vis-à-vis competition. One major initiative that was recommended across the continents was that all employees should spend "A day with patients" to understand patient needs. Other recommendations included patient on-boarding, starter kit for T1D children, using waiting rooms and point of sales to create awareness, and enlisting patient advocates to convey a positive image of diabetes.

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27 *"New Trends in Customer Experiences"*, Capgemini, June 2010

While working towards greater patient satisfaction, pharma should also consider building efficient mechanisms to reward patients loyal to its brands. Many industries, such as banking and air travel, have become masters at developing efficient loyalty programs, providing incentives to the right customers at the right time. Pharma can learn from their experience, to develop its own approaches. In the process, pharma will be able to collect valuable patient activation and usage data and use it to measure ROI and develop adherence strategies for the future[28].

5.8 Create a Feedback and Continuous Improvement Loop

Collecting data on patient behavior and the impact of pharma's and other stakeholders' interventions to increase patient adherence is a theme common to most of the improvements already discussed. Pharma needs to move towards a culture of rapid and continuous improvement leveraging data. Patient adherence is no exception. It is only when a full feedback loop is created, that pharma will be able to effectively and efficiently adjust its programs to maximize ROI.

Closing the loop on patient adherence initiatives is a major challenge requiring better, more frequent data, but, more importantly, the ability to analyze data and act on it, leveraging streamlined processes. This is the task that pharma companies are facing.

Some of the new capabilities they need to consider include:

Analytics
- Sophisticated and holistic analysis of data with powerful tools and dedicated talent
- Analysis of prescription-level patient data and market research data to establish trends
- Identification of interventions and response patterns to discern, test, and refine tailored approaches for patient segments across approaches

Marketing strategy
- Transformation of analytical findings into strategic insights
- Messages and intervention mix tailored to narrow segments
- Increased accuracy in resource allocation against patient segments
- Improved ability to run multiple adherence programs and quickly refine them

Execution
- Closer functional alignment among Sales and Marketing, Medical Affairs, Drug Safety and others
- Customized messages and interventions delivered to the most attractive segments

Feedback
- Continuously collecting qualitative and experiential feedback automatically from all points of contact with patient
- Generating almost real-time market data

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28 *"Coupons, Vouchers and 'Loyalty' Cards Connect Drug makers With Patients"*, Pharmaceutical Commerce, October 2009

6 - Conclusions

In essence, this report aims to address, understand and find relevant solutions for the causes of non-adherence. Through conversations with 66 life sciences and healthcare executives, covering a wide range of conditions, we gained perspective on how issues change from one therapeutic area to another and insight into the limitations in companies' understanding of the causes of non-adherences to prescriptions of their drugs. In each situation, in-depth analyses are required to get to the root of the problem.

However, our research has led us to believe that a few common principles can help life sciences companies transform to better address patient adherence:

1. Elevate patient adherence as a lever
2. Consider adherence early – during the drug development process
3. Understand patient leakages and their root causes
4. Collaborate across stakeholder groups
5. Maximize patient touch points
6. Ensure investments focus on the right patients
7. Enrich patient experience
8. Create a feedback and continuous improvement loop

As with any transformation initiative, the journey towards patient adherence starts with aligning executives on the business case and its urgency. With lost revenues for pharma resulting from poor adherence estimated at 36%, no one can argue with the potential benefits, but it may be harder to obtain consensus on the ability of pharma to significantly impact patient behaviors. We invite you to read some of the success stories we have gathered to gain a perspective on what can be achieved with drive and structure.

We will let you decide the right time to act. As healthcare reforms continue to reinforce the influence of payers; as new technologies with the potential to transform the patient journey, such as remote monitoring, emerge; and as patients keep expanding their involvement in their own care, the choice will soon be to drive change or adapt to it.

7 - Appendix – Case Studies

7.1 Pfizer – Chantix GETQUIT® Patient Management Program

The GETQUIT® plan is offered free with Pfizer's Chantix prescription[29]. It is a step by step plan designed to help smokers prepare for life as a nonsmoker. Key features are:

- Free online and phone support. Unlimited access to coaches available for answering queries and providing counselling if patient is having an urge for smoking
- New ways of thinking about quitting smoking – topics and activities designed to help patients learn what to do when faced with tempting situations

- Tracker to measure non-smoking days and savings achieved by not buying cigarettes
- Encouraging patients to get involved through their online web-based program and share their success stories online

7.2 Novartis – BP Success Zone Patient Management Program

Novartis established the Blood Pressure Success Zone (BPSZ), a patient adherence and education program to help patients monitor their blood pressure and track their improvement while providing educational information, diet plans, and exercise programs to help enhance their overall health. Patients placed on any of Novartis' hypertension treatments are encouraged to sign up for BPSZ to manage their medication along with lifestyle changes. Incentives for joining the BPSZ include[30].

- Patients receive a membership card with a coupon for $10 off their next prescription
- Members can purchase a blood pressure monitor to track their progress at home. Novartis provides each patient up to $40 towards the cost of the unit
- An innovative goal tracker, helping patients set goals with their HCP and help track progress towards blood pressure, weight, exercise routine, and medicine regimen

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29 Getquit.com; *"Pfizer kicks off pharmacy adherence program"*, Pharmacy e-news, March 2010

30 bpsuccesszone.com; *"Patients and understanding"*, DTP report, MM&M, June 2006; *"A Hard Pill to Swallow"*, Pharmaceutical Executive, August 2009

- Healthy recipes – a virtual library of healthy and nutritious dishes
- Easy ways to incorporate physical activity in daily routine
- Encouraging patients to get involved, engaged and share their success stories online

7.3 AstraZeneca – Symbicort® Online Adherence Program

AstraZeneca created an interactive online program for its SYMBICORT® drug, enabling patients to adhere to their asthma treatment dosing. SYMBICORT® helps control asthma, reduces lung inflammation and keeps airways open. The program's key features were[31].

- Creation of a product website, giving detailed information about the drug, controlling asthma symptoms, assessing asthma condition and helping patients understand how the drug will control asthma
- Patients offered first prescription free on presenting a SYMBICORT savings card
- The adherence program was tied to a direct-to-consumer campaign. It launched a unique "Measures of Success" program where patients were asked to register and request materials online
- Patients offered refills at $25 with AstraZeneca paying up to $75 for the first 11 refills

- Patients were offered a Symbicort starter kit and adherence emails or SMS to remind them of physician appointments or dose intake time
- Six months into the program, over 20,000 registrants requested information about Symbicort. 10% requested the adherence program materials

In February 2009, AstraZeneca launched a branded YouTube channel and a website (myasthmastory. com), encouraging patients to post testimonial videos on YouTube. These are reviewed by an expert panel and are not open for comments.

AstraZeneca successfully created an integrated, engaging brand experience resulting in drug sales which have increased exponentially since launch from $50 million to $255 million.

7.4 Merck-Cigna – Pay for Outcome Program

Merck has signed a deal with Cigna that pegs the cost of its diabetes medicines Januvia and Janumet to their performance. Merck will give discounts if patients follow the medication regime as prescribed. Bigger discounts will be available if patients show that blood sugar is under control, helping Cigna to offer lower co-pay for adhering patients. Merck has committed to reimburse Cigna even if patients get better using other drugs[32].

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[31] AstraZeneca website; symbicort.com; Common Health website; Television Bureau of Advertising Dec 2008, Hot category Market Watch; allbusiness.com MM&M awards 2008; Annual Reports; AstraZeneca 2007 and 2008 full year results press release

[32] *"Merck leads the way to US cost-sharing"*, Fierce Pharma, April 2009; *"Cigna, Merck in performance deal on diabetes drugs"*, Reuters, April 2009; AISHealth.com

Cigna has assigned the two drugs preferred status on its drug coverage lists, meaning co-payment levels are generally $20-$25 less than brand-name drugs without such preferred status. Cigna will apply a range of programs to help patients improve adherence with their medicines, including phone calls to see why they are failing to take their treatments. This is expected to improve patient outcomes by lowering sugar levels via increased medication adherence. Cigna claims its medicine adherence programs have helped diabetics cut emergency room and other hospital visits by 50% for those reaching blood-sugar goals, and reduced diabetes-related costs by 24%.

Cigna's latest results show that, among 165,000 members taking the two oral diabetes drugs, blood sugar levels improved by over 5% on average. Participants also registered a 4.5% increase in blood sugar lab testing during this period. Finally, medical adherence improved across the board, rising to 87% for those taking Januvia and Janumet.

7.5 Sanofi-aventis – Actonel® Pay for Outcome Program

Sanofi-aventis and P&G have established the Alliance for Better Bone Health which includes development and marketing arrangements for Actonel® worldwide (except Japan). In the US they have jointly entered into a deal with Health Alliance Medical Plans, the insurer, where they will reimburse the medical costs of non-spinal fractures in women taking the osteoporosis drug for six out of the nine most recent months. Actonel® is clinically proven to reverse bone loss and increase bone strength to prevent fractures[33].

The Factor Protection Program by Health Alliance based on Actonel® was found to be successful in initial trials. During the pilot's first nine months, the reimbursement rate was 79% lower than the maximum outlined in the agreement based on the number of non-spinal fractures which met eligibility criteria for reimbursement among Actonel® patients. The incidence of non-spinal fractures was consistent with clinical trial data for Actonel®.

7.6 Kaiser Permanente – B-SMART Adherence Program

Kaiser Permanente created a framework to systematically identify and target non-adherent patients for specific adherence interventions[34]. This multifaceted approach involving adherence tools and reminders, mapping relationships and triage used before, during, and after any patient-clinician interaction creates a consistent method to help patients use their medications more effectively. The B-SMART process includes involving patients in the decision making, simplifying dosage regimens, education about the medication, self-management training, ongoing reinforcement and motivation, and positive relationships. The B-SMART framework (Barriers, Solutions, Motivation, Adherence Tools, Relationships, and Triage) is described below:

Identifying barriers and assessing readiness to change: Barriers are evaluated at different aspects (patient-related, medications-related, clinician-related) via 'Yes'/'No' questions. Furthermore, a Readiness Assessment ruler is employed to assess whether a patient is ready to accept a condition

33 Company websites; Wikiinvest; Pharafeed.com; PRNewswire.com, *"Health Alliance Announces Promising Nine-Month Results from First Ever Outcome-Based Reimbursement Program for Actonel(R) (risedronate sodium) Tablets"*, Health Alliance Medical Plans Inc. October 2009

34 *"The B-SMART Appropriate Medication-Use Process, A Guide for Clinicians to Help Patients – Part 1 & 2, 2009"*; George Koroneos, *"Adherence through education"*, Pharmaceutical Executive, August 2010; Diabetes 10 city challenge newsletter 2009

and/or use the prescribed medications as a component of his/her overall health care plan.

Patient-related barriers	Medication-related barriers	Clinician-related barriers
Forgetfulness	Complex medication regimens	Poor relationship with clinician
Lack of knowledge about medication and its use	Side effects or adverse effects from the medication	Poor communication with clinician
Cultural, health, and/or religious beliefs about the medication	Taking multiple mediations at the same time	Cultural, health, and/or religious beliefs – disparity between clinician and patient
Denial or ambivalence regarding conditions	Length of therapy	Lack of feedback and ongoing reinforcement from clinician
Financial challenges Lack of health literacy Lack of social support		

Provide solutions to nine challenges: The framework identifies nine broad challenges to adherence and offers solutions for each as shown below:

Challenges	Solutions
Forgetfulness – *"I forgot to take my medication"*	■ Pill organizers and reminders, including electronic devices ■ Linking medication regimen to daily habits ■ Pharmacy-generated written prescription information ■ Visual aids ■ Follow-up management in one to two weeks
Lack of knowledge – *"I don't know why I have to take this medication"*	■ Pharmaceutical pearls to help patient understand the benefits of the medication ■ Pharmacy-generated written prescription information ■ Visual aids ■ Teach-back method ■ Follow-up management in one to two weeks
Side effects or adverse events – *"I had a stomach ache when I took the medication"*	■ Pharmacy-generated written prescription information ■ Pharmaceutical pearls about side effect management ■ Follow-up management in one to two weeks
Complex medication regimens – *"I am taking too many medications and I cannot remember how to take them"*	■ Adherence tools; e.g., pill boxes and reminder calls ■ Combination medications to simplify regimens, for example, Metaglip [glipizide (Glucotrol) and metformin (Glucophage)] ■ Frequency of dose modification ■ Help patients make associations, linking medication use with daily habits ■ Follow-up management in one to two weeks
Denial of conditions – *"I am not really sick"*	■ Explore readiness to accept the disease condition ■ Educate about the disease condition ■ Provide pharmaceutical pearls to help patient understand the benefits of the medication ■ Follow-up management in one to two weeks

Cultural or religious biases – *"I do not believe in taking this medication"*	■ Using the LEARN framework to explore and understand patients' beliefs
	  ● L – Listen with empathy
	  ● E – Explore & understand patient beliefs
	  ● A – Acknowledge difference in beliefs between clinician and patient
	  ● R – Recommend treatment
	  ● N – Negotiate an agreement
	■ Provide pharmaceutical pearls to understand the benefits of the medication
	■ Follow-up management in one to two weeks

Lack of financial support – *"This medicine is too expensive"*	■ Prescribing generic drugs rather than brand names ■ Mail-order drug discount programs ■ Medical financial assistance ■ Pharmaceutical company programs
Depression	■ Identify depressive symptoms ■ Use available tools to assess effectiveness of psychological and/or medication treatments ■ Follow-up management in one to two weeks
Poor health literacy	■ Provide pharmaceutical pearls to help patient understand the benefits of the medication ■ Provide interpreter services for non English speakers ■ Provide patient medication information at fourth-grade level ■ Use nonmedical language. Speak slowly ■ Provide information in an organized manner ■ Use visual aids whenever possible ■ Use the "teach-back method" to check for comprehension

Helping patients help themselves by motivation: Setting goals in stages is an important step in helping patients link their problems to things they care about. It is intended to educate, empower, and encourage patients to make them adherent.

Adherence tools and reminders: Common tools used to ensure patient adherence are follow-up and reminder phone calls, devices (pillboxes, calendars, diaries), written information about a medication, visual aids (medication charts, instruction labels), teach-back methods (the patient explains medication directions back to the clinician), newsletters, letters, e-mail, appointing health coaches to help patients change their behavior and become more adaptive by listening, supporting, and advising patients about medical choices, treatment plans, preventive care, and overcoming barriers, introducing patients to disease classes and support groups, providing them with handbook and self-care resources, websites, etc.

Relationships and roles of the adherence team: The framework recommends that clinicians should establish a strong relationship with the patient. It also gives recommendations to various other stakeholders (pharmacists, nurse care managers, registered nurses, medical assistants, technicians, health care organization and employers) to address the needs of a non-adherent patient.

Triaging patient resources from overall healthcare system: It is advisable to coordinate the patient's medication therapy management plan with broader healthcare management services to ensure continuous screening of non-adherence and continuous support. This will include better case management, health education classes, web tools and community programs.

This program won the Best Innovation Award at the annual Strategic Patient Adherence Awards in 2010 given by Center for Business Intelligence[35].

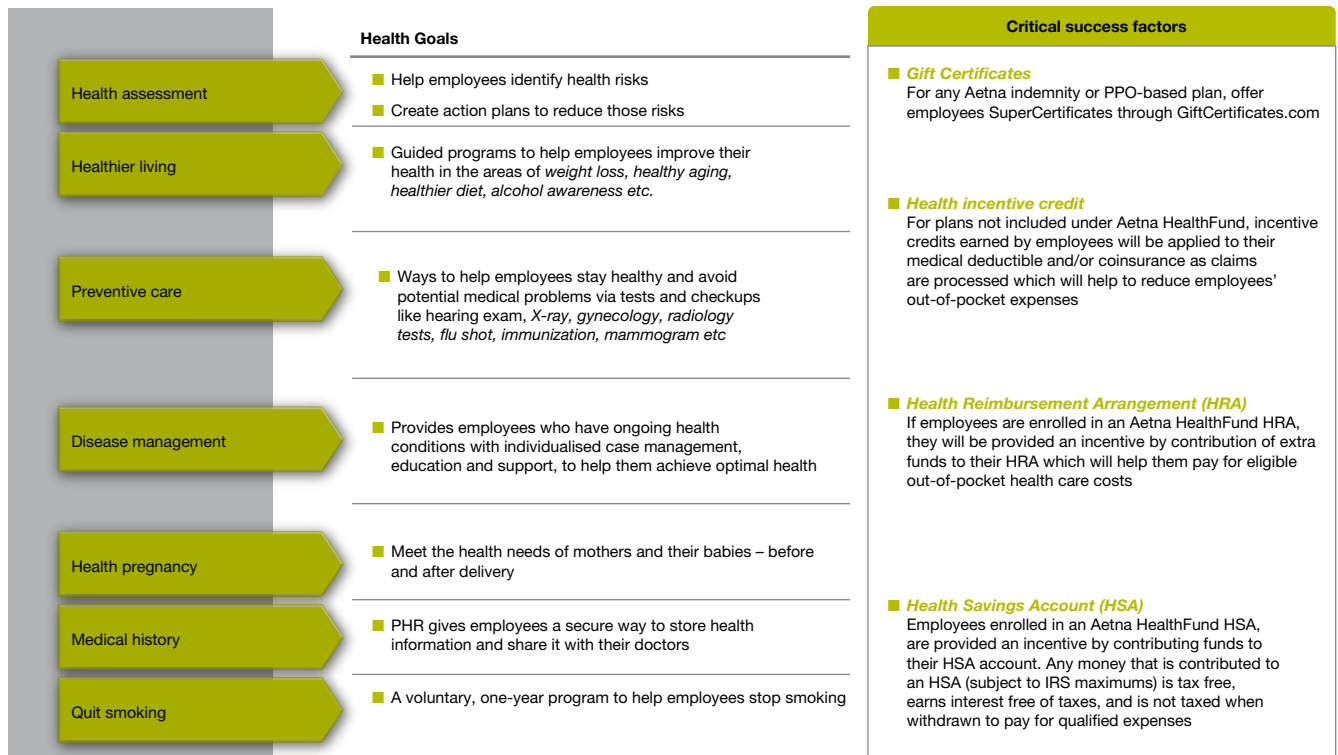## 7.7 Shire – Fosrenol "On Track" Patient Adherence Program

Shire's FOSRENOL 'On Track' program won Best Integrated Campaign at the 5th Annual Strategic Patient Adherence Awards in April 2010. It includes a co-pay card, a patient assistance program, and relationships with third-party grant organizations to help Medicare Part D beneficiaries. The drug used in the treatment of renal disorders had the challenge of having significant drop-off in a short timeframe (80% within the first four months of therapy[36]). The chief causes of non-adherence are cost issues associated with dialysis treatment, the patient's perception of wellbeing as the condition is asymptomatic and the patient can be unable to tell when their phosphorus levels are high, and barriers in communicating with healthcare professionals. Shire runs a third party support center where patients get complete guidance on claims, appeals, insurance verification, co-pay assistance and alternate funding resources. They also send a series of five mailers that include details on food choices, information on how to better utilize support staff to get dialysis, and how to better interact with healthcare professionals[37]. The program provides the educational materials needed for patients to have a robust conversation with their physician so that the patient will understand the issues they are facing and how critical it is to make every dialysis appointment. Shire offers easy enrolment for patient assistance and grants for low income patients or those without insurance. They also connect patients with renal nurses, renal care techs, and renal

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35 *"Patient Adherence Awards Winners Revealed"*, PharmaExecBlog, April 2010

36 Company Website; *"Fosrenol On Track Program"*, PatientAdherence.com

37 George Koroneos, *"Adherence through education"*, Pharmaceutical Executive, August 2010

Case Study: Aetna Healthy Actions Program for employers rewards employees who are working towards better health

Health Goals	Critical success factors
Health assessment	*Gift Certificates*
■ Help employees identify health risks	For any Aetna indemnity or PPO-based plan, offer employees SuperCertificates through GiftCertificates.com
■ Create action plans to reduce those risks	
Healthier living	
■ Guided programs to help employees improve their health in the areas of *weight loss, healthy aging, healthier diet, alcohol awareness etc.*	*Health incentive credit*
	For plans not included under Aetna HealthFund, incentive credits earned by employees will be applied to their medical deductible and/or coinsurance as claims are processed which will help to reduce employees' out-of-pocket expenses
Preventive care	
■ Ways to help employees stay healthy and avoid potential medical problems via tests and checkups like hearing exam, *X-ray, gynecology, radiology tests, flu shot, immunization, mammogram etc*	
Disease management	*Health Reimbursement Arrangement (HRA)*
■ Provides employees who have ongoing health conditions with individualised case management, education and support, to help them achieve optimal health	If employees are enrolled in an Aetna HealthFund HRA, they will be provided an incentive by contribution of extra funds to their HRA which will help them pay for eligible out-of-pocket health care costs
Health pregnancy	
■ Meet the health needs of mothers and their babies – before and after delivery	*Health Savings Account (HSA)*
Medical history	Employees enrolled in an Aetna HealthFund HSA, are provided an incentive by contributing funds to their HSA account. Any money that is contributed to an HSA (subject to IRS maximums) is tax free, earns interest free of taxes, and is not taxed when withdrawn to pay for qualified expenses
■ PHR gives employees a secure way to store health information and share it with their doctors	
Quit smoking	
■ A voluntary, one-year program to help employees stop smoking	

Sources: Aetna Healthy Actions Program

dieticians to help them understand the disease state and treatment progress and medication intake. Shire tracks the program by tallying the number of drugs sent out through the patient assistance program, as well as through prescription-level data analyzed through data collection firms.

7.8 Aetna Healthy Actions Program

Aetna Healthy Actions Program is aimed at rewarding employees who are working towards better health. Some of health goals are as follows:

The rewards on meeting the health goals can be a health fund contribution, an incentive credit or a gift certificate from GiftCertificates.com and is used with Aetna Health Reimbursement Arrangement (HRA) or Health Savings Account (HSA) and also without it.

■ **Gift Certificates**: For any Aetna indemnity or PPO-based plan, employees are offered SuperCertificates through GiftCertificates.com

■ **Health incentive credit**: For plans not included in Aetna HealthFund, employee-earned incentive credits are applied to their medical deductible and/or coinsurance as claims are processed. This will help cut employees' out-of-pocket expenses

■ **Health Reimbursement Arrangement (HRA)**: Employees are enrolled in an Aetna Health Fund HRA are provided an incentive by contribution of extra funds to their HRA which will help them pay for eligible out-of-pocket health care costs

■ **Health Savings Account (HSA)**: Employees enrolled in an Aetna Health Fund HSA, are provided an incentive by contributing funds to their HSA account. Any money that is contributed to an HSA (subject to IRS maximums) is tax free, earns interest free of taxes, and is not taxed when withdrawn to pay for qualified expenses

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- **Technology Services and Outsourcing Services**: Package-based implementation services (SAP, Document Management, Oracle, etc) as well as custom-based development on- or off-shore. We also provide run services (BPO and IT services out of our Rightshore® Centers located in India, China, Canada, and Poland)

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The Life Sciences Strategic Insights Lab

The Life Sciences Lab is a global network of life sciences domain experts that provides in-depth strategic research and analysis to stimulate new ideas and drive innovation for life sciences clients. The lab continuously challenges existing paradigms and the associated business impact, to come up with transformational perspectives through thought leadership publications and Point of Views. The Lab brings to bear the full power of Capgemini's global expertise by frequently drawing on the firm's extensive network of subject matter experts, industry and functional specialists and external industry experts and academics.

Study Team

Director:
Thomas Forissier
Principal, Life Sciences Strategy
North America
Thomas.Forissier@capgemini.com

Contributors:
Suday Karkera, Lubomir Merkov,
Deepankar Nayak, Taweechai Qunfoong

Global Life Sciences Leadership Sponsors:

Hanne Buus van der Kam
Global Life Sciences Leader
hanne.vanderkam@capgemini.com

Jean-Marc Neimetz
Global Life Sciences Leader
JeanMarc.Neimetz@capgemini.com

Omar Chane
Life Sciences Head, North America
Omar.Chane@capgemini.com

Vincent Carrere
Life Sciences Head, France
Vincent.carrere@capgemini.com

Tim Dulley
Life Sciences Head, United Kingdom
Timothy.Dulley@capgemini.com

Carlos García Santos
Life Sciences Head, Spain
carlos.garcia.s@capgemini.com

Dr. Jochen Kohler
Strategic Consulting, Central Europe
jochen.kohler@capgemini.com

Sebastian von Strachwitz
Life Sciences Head, Central Europe
Sebastian.von.Strachwitz@capgemini.com

For questions regarding this research report please contact:

Monika Hespe
Global Life Sciences Marketing
+49 30 88 703 175
Monika.Hespe@capgemini.com

Christine Schlumberger
Senior Manager, Life Sciences Strategy
North America
+1 (917) 547-9228
Christine.Schlumberger@capgemini.com

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ST-05/2011