Pharmacist Partners®

THE CLINICAL KNOWLEDGE ORGANIZATION™

Health Literacy, Medication Adherence, and Pharmacist Interventions

A two-part position paper
by Pharmacist Partners, for PharmaForce 2015

PHARMA FORCE

Primary Author: Dr. Lisa Gale Van Brackle, PhD, MSW

With commentary from:

Valencia Courts, RN, MSN, MBA; VP Clinical Operations, Pharmacist Partners®

Dr. Salvatore J. Giorgianni, PharmD, BSc, CMHE; Advisor to Pharmacist Partners®

Paul Hellerick, RPh; Director, Patient-Centered Care, Pharmacist Partners®

Dr. Donney John, PharmD; Chief Clinical Officer, Pharmacist Partners®

CONTENTS

Foreword 3
Introduction 4
Literacy and Health Literacy Defined & Conceptualized 8
The State of Literacy in the US 10
Literacy and Health 12
Health Literacy – Defined and Characterized 14
Who are we talking about? 17
UHC has successfully engaged this population group with PlanBien℠ 19
PART TWO: Using Pharmacist-Patient Interventions to Impact Medication Adherence 22
Health Literacy Interventions 23
Patient Interventions 26
Provider/System Interventions 29
Potential of Pharmacists 30
Pharmacist Interventions 31
Cultural Competency 33
Telephonic vs In-Person Interventions? 35
About Pharmacist Partners 38
About the Authors 39
Bibliography 43

Foreword

This paper isn't meant to quantify the dollars lost to medication non-adherence. CapGemini (2012) and IMS (2013) did this; consequently the Healthcare industry is well aware of these lost and wasted billions. Pharmacist Partners' paper explains the root causes, and illustrates how personalized Pharmacist interventions (preferably face-to-face) leave a deep and lasting impression on the patients, which naturally leads to increased adherence.

Scattered throughout the paper are comments by our Pharmacists and Advisors. Dr. John, our Chief Clinical Officer shares his insights into Cultural Competency--What it means and how it can help to enhance health and medication adherence among patients, and employees.

It is clear that mobile apps cannot accomplish improved medication adherence on their own. The Introduction to Part 2 (page 22), written by our Talent Management VP explains why, using an adult education model developed in the 1950's, which remains the industry standard to this day.

We believe this paper is unique because the primary author does not have a pharmaceutical background. Dr. Van Brackle's bio is on page 39. She has devoted her life to helping the underserved and people with limited literacy --not to push more drugs into them, but to improve their lives in all areas, including their health. Yes--she has a plethora of health/healthcare experience, but this was not her primary focus.

Finally, we would like to thank iTriage® and HealthAtHand.com for allowing us to use their survey data from "***Tracking American Health Literacy and Prescribing Improvement".*** The full report is available upon request.

All of us at Pharmacist Partners hope you enjoy reading this paper!

A two-year old is diagnosed with an inner ear infection and prescribed an antibiotic. Her mother understands that her daughter should take the prescribed medication twice a day. After carefully studying the label on the bottle and deciding that it doesn't tell how to take the medicine, she fills a teaspoon and pours the antibiotic into her daughter's painful ear. (Ratzan & Parker, 2000)

Introduction

Health literacy is "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions" (Ratzan & Parker, 2000). At one or more points along this mother's movement through the health system, the instructions of how to administer this liquid medication was not communicated effectively enough for her to know what to do. In addition to not recalling the instructions, this mother appears to not understand where to go to get help. It is not surprising given the complexity of its places and people, that the health system can itself be a barrier to the patient access, regardless of the patient's education or skills. For this reason, the problem of health literacy is a problem to be addressed not only by remediating the patient's skills, but also by making the system easier to navigate. Its professionals must be sensitive and responsive to low health literacy when they confront it in order to achieve good health outcomes. The American College of Preventive Medicine identifies "low health literacy" as a social/economic factor of adherence (Medication Adherence -- Improving Health Outcomes, 2011) and a factor in achieving patient outcomes (2011, p. 3). This presupposes that professionals recognize low health literacy in patients, know how to intervene, and are willing to engage with patients without fear of reprisals or the addition of tasks that will further complicate their efforts.

Among the places where a patient may be made knowledgeable and comfortable about how to take medication is the pharmacy. Pharmacists are particularly effective at improving adherence in chronic diseases including heart failure (Murray, et al., 2007), hypertension

(Morgado, Morgado, Mendes, Pereira, & Castelo-Branco, 2011) and in the care of the elderly with multiple conditions (the latter is brilliantly summarized by Williams, Manias & Walker, 2008). As a result of the "cognitive care" provided by pharmacists, patients demonstrate higher recognition of medication, greater knowledge of their indication and improved knowledge of dosage schedule (Alkatheri & Alberkairy, 2013). With the passage of the Medicare Prescription Drug Improvement and Modernization Act and Medicare Part D, the pharmacy profession critically examined its practice, articulating medication therapy management as an intervention to identify, prevent and resolve medication-related problems so that therapeutic outcomes are optimized (Morrison, et al., 2004). This moved pharmacists beyond the role of the professional who dispenses medication into an active care professional who closes the loop in the very fragmented and disjointed healthcare system. In the Patient Protection and Affordable Care Act (ACA), pharmacists are members of the accountable care organization team, as such providing comprehensive medication reviews and correcting the lack of overall coordination in medication management in health care (Smock, 2013). Through it all, pharmacists are mediators of health literacy.

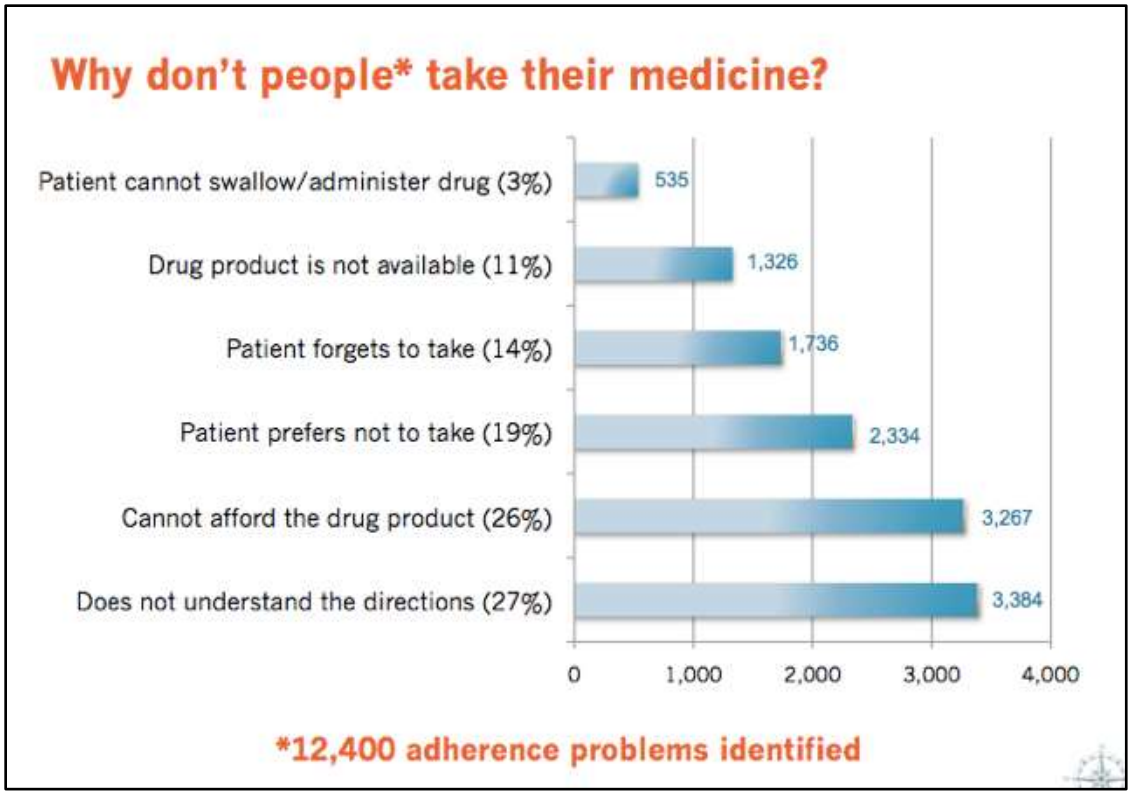
There are obstacles to and opportunities for pharmacists to respond to limited health literacy challenges of their patients. High volume, low margins and overall physical and work flow limitations (that reinforce the erroneous notion that pharmacists just dispense medications) and absent or inadequate reimbursement for cognitive versus distributive services are among the reasons why pharmacists have not yet adopted interventions that serve patients with limited literacy (Shoemaker, Staub-DeLong, Wasserman, & Spranca, 2013 (in press)). Although patients of pharmacies that provide counseling for new prescriptions, side effects and indications and use clear health communications are satisfied, the use of such literacy-based communication methods by pharmacists are limited (Collum, Marcy, Stevens, Burns, & Miller, 2012 (in press)). Certainly, in this litigious society, it is important to be explicit about the

nature of the interaction between patient and pharmacists, so as to not create a circumstance that could lead to medication errors.

It is the purpose of this paper to explore how pharmacists are presently and purposefully leveraging their competencies to address health literacy. The following sections explore the nature of literacy and health literacy in this country. It is followed by a discussion of interventions, mostly by health providers, to patients with low health literacy. In the final section the tasks of rendering medication therapy management is examined more closely, with the goal of revealing whether and how pharmacists are already engaged in mediating health literacy for their patients, and how they might, with support, engage more fully in supporting their patient's needs.

Explaining the Link between Literacy and Health Literacy

Paul Hellerick, RPh, is Pharmacist Partners' Director of Patient-Centered Care. He explains why adherence and compliance is tied directly to Health Literacy, as illustrated by a study done by Minnesota Medicare among 22,694 patients. "This study demonstrates the points made by my colleagues in upcoming sections of this paper, relating to patients (particularly the elderly) who don't want to take medicines and a large portion of the population who can't afford their medicines." This section of the paper will address the issue of **Literacy**, which obviously impacts the most common reason (27% of the problems identified), among patients--**they don't understand their medication regimen.**



Source: *Minnesota Medicaid Study among 22,694 patients*

Paul Hellerick elaborates: "However, some of the issues of not wanting to take, forgetting to take, and/or can't afford the medicine can be positively affected by elevating the literacy of the patient about their medications. By educating the patient through direct pharmacist-to-patient interaction, they will understand the **purpose** of the medication and how it can help their disease and overall health. Also, during this interaction the pharmacist can help facilitate the issue of medication costs by suggesting lower cost alternatives or formulary changes."

As a practicing Pharmacist for many years, Mr. Hellerick points out that "the retail Pharmacy setting is hectic and stressful with the 'average' chain pharmacist checking between 1500-2000 prescriptions per week. Based on 1750 prescriptions per week and the pharmacy being open 80 hours, the pharmacist is checking 1 prescription every 2.5 minutes in a 12+ hour

workday. The lack of Health Literacy combined with the fact that the Pharmacist filling the prescriptions doesn't have the time to effectively educate about the medication, explains why there is such a huge problem with compliance and adherence. It is the role of the Pharmacist to educate the patient about their medication, but unfortunately the current business models aren't conducive for allowing this to take place."

Adding to the confusion is the fact that Retail Pharmacies routinely buy medications from various manufacturers in order to increase profit margins. According to Mr. Hellerick, "The detrimental part of this practice is that the shape and color of the patient's pills change almost on a monthly basis. If the patient isn't alerted to this change in tablet shape or color, there is potential for duplication (taking double doses) leading to a Physician visit or worse--hospitalization. Adding to the confusion--particularly for recently hospitalized patients-- is the fact that hospitals often have different colors/shapes of pills as well."

James Appleby (Executive Director of the Gerontological Society of America) expands: "In the case of baby aspirin for cardiac health, many patients end up taking two pills, instead of one, because they don't realize the two different colored pills are the same."

Additionally, a recent study published in the *American Journal of Preventive Medicine* reports that just over half of older adults surveyed in the United States reported taking aspirin daily, despite the fact that routine use for primary prevention of heart attack or stroke is **not** recommended. Because aspirin is available over-the-counter (OTC) but correct use for primary prevention is complex, many patients could be inappropriately taking daily aspirin.

These are just a few of the issues that lead to poor compliance--even in a well-educated patient--which are compounded in the low health literacy patient.

Literacy and Health Literacy Defined & Conceptualized

Before investigating health literacy, an exploration of the more general concept of "literacy" is warranted. Literacy is defined as "an individuals' ability to read, write and speak

English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential (US Congress, Adult Literacy Act of 1991, PL 102-73). Conceptually, literacy is a continuum, which represents the range of skills that a person possesses, from "a little" to "a lot". There is no zero point on the literacy continuum: there are relatively few individuals who are completely illiterate. The word "illiteracy" has a pejorative connotation in that it characterizes people by what they lack as opposed to what they have. This paper will use the word literacy, modified by "low" or "limited" to indicate that the subject has less than optimal levels of literacy. Fundamentally, literacy is less about the number and type of words (mono- versus poly-syllabic for example) that a person knows, but their ability to use words and numbers to make meaning, so that they can act.

The aforementioned definition is a US-based definition, which gives greater credence and relevancy to the English language. The United States is celebrated as a country of immigrants, whose cultures and languages add to its richness and distinctiveness. English may not be the language spoken in the homes, in the neighborhoods and communities in this country. However, in order to navigate and pursue the American dream, capacity to speak and write in English is necessary. Consequently, a sizable population of those in need of literacy skills requires help not because they are low literate, but possess limited knowledge of the English language. Some of these English language learners possess strong literacy in their native tongue and will have an easier time learning English. There are others who lack literacy in their native tongue and, lacking the reference point upon which to learn a new language, find it difficult (but not impossible) to acquire a sufficient amount of literacy to gain access to the opportunities for which they came to this country.

The US adult literacy populations include two different groups of people who have limited literacy skills. The ***US native born*** has literacy issues that emerge from poor or limited access to education. The ***English language learner*** population may include immigrants, for

whom English is not their first language. They may have strong or poor literacy skills in their native language, but the basis of their need is to build English language skills. These two groups comprise the population of people who have-- what has been, and will continue to be-- referred to here as limited literacy skills.

The State of Literacy in the US

There have been few federally funded national censuses of adult literacy in the United States. The most notable and comprehensive of these studies was the 1993 National Adult Literacy Survey (NALS) and the 2003 National Assessment of Adult Literacy (NAAL). The purpose of these studies was to profile the capacities of individuals based on the literacy demands that are common to their daily lives. Prior studies attempted to count the low literacy population, arbitrarily based on levels that had little meaning in the world. The NALS produced a profile of the skills that are needed as individuals move through their daily lives and involved one hour interviews in the homes of over 26,000 adults (Kirsch, Jenkins, Jungeblut, & Kolstad, 1993). The NAAL was designed as a national assessment of English literacy among adult 16+ and would measure the change between 1992 and 2003: more than 19,000 adults participated in the national and state level assessments, most in home but this latter study also include 1,200 inmates in prisons (Kutner M. , Greenberg, Jin, Boyle, Hsu, & Dunleavy, 2007). Additionally, the NAAL conducted assessment of literacy status in Kentucky, Missouri, Maryland, New York, Massachusetts and Oklahoma.

Participants in both national studies were asked to perform tasks on prose, document and quantitative materials. Prose materials include magazines, newspaper articles, book selections and pamphlets. Document materials include tables, graphs, forms and schedules (as in a bus schedule). Quantitative materials include those that are printed materials with numbers being embedded. The tasks were categorized as being “very easy” (including tasks like “write your name”) to difficult (“summarize a survey’s results”). Depending upon the degree

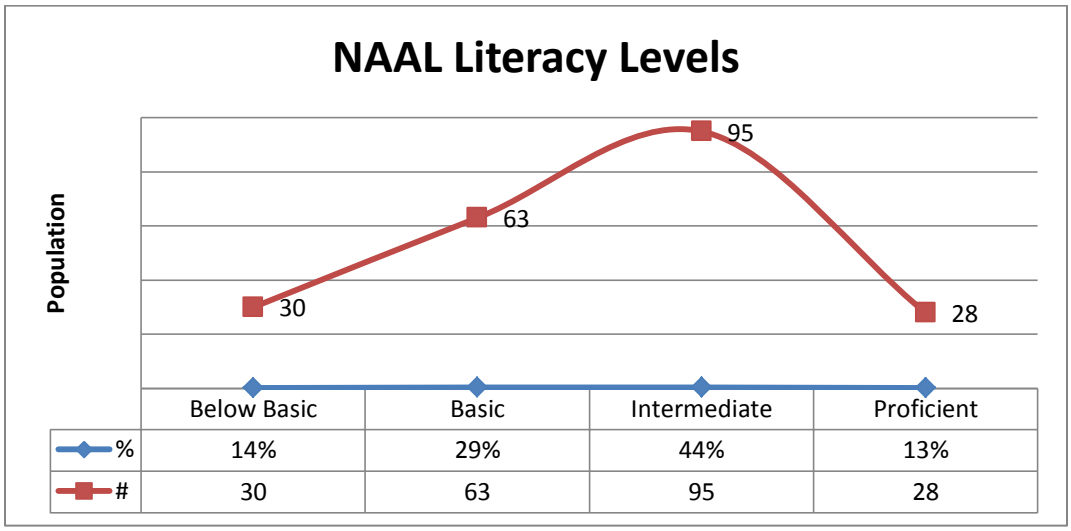
to ease and correctness, in the NALS, the results were categorized into levels 1, 2 and 3, with one being the lowest levels of literacy and three being those with high levels of literacy skill.

More than 50% of the population who participated in the NALS survey performed at levels 1 and 2. These individuals could read a short piece of text, locate a single piece of information that is identical of synonymous with the information given in a question, handle distractions in the print if the answers are not intuitively placed (e.g. explain) and make low level inferences. These individuals cannot locate and synthesize information from dense or lengthy text that contains no organizational aids such as headings, synthesize multiple pieces of information, search through complex tables and graphs with a variety of detailed information and numerous distracters, nor search for numbers when they are embedded in the printed materials. In quantitative reasoning, these individuals cannot infer the operation to be used in a calculation when it is not stated explicated (i.e., add the following to get the answer).

The segments of the population who comprise Levels 1 and 2 of the NALS are disparate, sharing only that they are vulnerable and generally being excluded from the economic, social and/or political mainstream. Approximately 25% are immigrants having limited access to employment and education. One third of the population is over 65 years of age. While today's seniors are in much better health and have longer life span that prior generations, their physical and mental capacities are less than optimal due to age. Individuals with physical, mental or health conditions represented about 26% of the group. Economic conditions are relevant as well: 40% of the people score in Level 1 live in poverty, more than half are out of the labor force and 30% are employed full time. This information is merely descriptive of the dataset's characteristics and does not imply causality between immigration status, age, condition or economic circumstance and literacy.

The NAAL relied on a similar methodology (interviews) and a comparably large sample size (19,000 versus the NALS' 26,000), but relied on terminology that was more descriptive that

the levels of the NALS and offered projections that remain in use today. The following chart explains the levels of literacy proficiency that exists today:



More than 90 million US residents have basic and less than basic literacy skill. While 57% of the population falls into the intermediate and proficient literacy levels, **43% are at the basic or below**. The NALS also revealed that the individuals who have lower literacy are unaware that they have limited literacy. In the case of the NALS study, only 29% of those in level 1 on the prose scale acknowledged that they do not read well. The 90 million, as does the members of the rest of the country, are navigating through life, have or are looking for jobs, have families and all that that entails and are walking the halls of our nation's health system. The 90 million are challenged to and are obligated to manage in society. And their navigation of systems are done with little recognition and acknowledgement of their situation.

Literacy and Health

According to NALS: "Over a third of U.S. adults—77 million people—would have difficulty with common health tasks, such as following directions on a prescription drug label or adhering to a childhood immunization schedule using a standard chart".

The data on the relationship between literacy and health outcomes has been tenuously established. Low literacy is associated with poor health outcomes, low health knowledge, increased incidence of chronic disease and "less than optimal" use of preventive health services; yet it is difficult to isolate literacy levels from other socioeconomic factors that intervene and otherwise influence health outcomes (Berkman, et al., 2004). That said, in the Berkman et al (2004) meta-analysis, a statistically significant association exists between high literacy and knowledge of health care services and health outcomes. Of the four studies included in this study that examined literacy and adherence, three found no relationship between literacy and adherence. **This raises the question of whether increased knowledge drives adherence.**

Even with this questionable empirical evidence, it is intuitive that in order to navigate the system and to self-manage health conditions, information must be clear and actionable. Dr. Sal Giorgianni, advisor to Pharmacist Partners and outgoing Chair of APHA's Men's Health Caucus, agrees: "I also believe that the information must be seen as relevant to the person's welfare. Most people know, for example, that high-blood pressure or diabetes or smoking is not good for them but this level of health literacy often does not translate into a sufficiently strong message for it to become actionable, particularly over the long run."

According to Valencia Courts, Pharmacist Partners' VP Clinical Operations, in the acute care setting the responsibility for educating patients falls heavily on the patient's nurse. "Unfortunately, nurses have competing priorities and typically may or may not have access to the educational materials needed to provide patients prior to home discharge. Other problems facing nurses are the lack of materials in the patient's native language and/or lack of material for the patient's literacy level. **The key to resolving this is working together as an interdisciplinary team** by using the pharmacists' expertise to train nurses on the materials that should be shared and communicated with the patient. It closes the educational gap for nurses and ensures that all patients are receiving consistent standard information."

In the course of treatment and use of medication, good health demands that information be communicated clearly. While it seems incumbent upon the patient to have the skills necessary, in the wake of an emergency there is not time nor interest in skill building. It is expected then that notwithstanding the patient capacity, the health system and medical professionals have some responsibility to ensure that patients understand enough about their circumstance so that they can act on health information. It is the idea that health is a significant context of life that has lead scholars and medical professionals to agree that literacy in the context of health is an important phenomenon to understand.

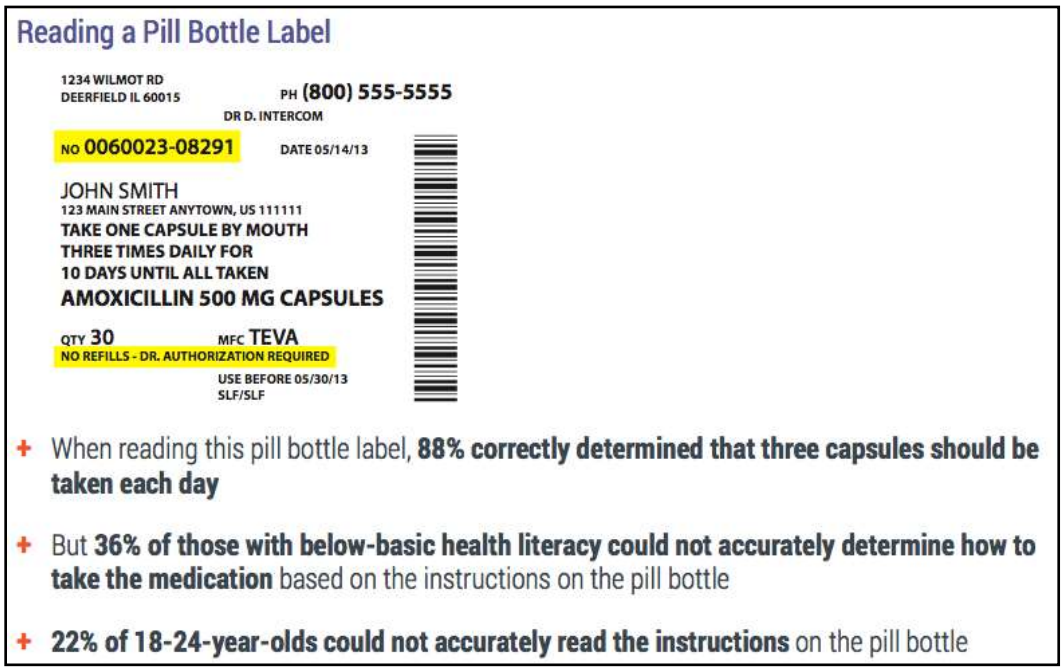
Health Literacy – Defined and Characterized

While a subset of literacy, health literacy focuses on the health context and not as much about reading, writing and numeracy skills for their own sake, but understanding the significant amount of information that is dispensed in the context of a health care encounter. Data from the NAAL was analyzed to shed light on health as a context of daily living and concluded that nearly 90% of adults "have difficulty using the everyday health information that is routinely available in our healthcare facilities, retail outlets, media and communities (Kutner M. , Greenberg, Jin, & Paulsen, 2006).

Approximately 75% of Americans with long-term illness have limited literacy and likely know less about their condition and how to handle symptoms, according to the NALS. Recalling the earlier anecdote about the mother of the child with the ear infection, that mother had limited health literacy skills in that she had the antibiotic but was unable to discern the information that may have been discussed with her during her visit and spelled out on the prescription bottle enough to appropriately act. While within the domain of health literacy, this patient is exhibiting poor *functional* health literacy, or "the ability to read and comprehend prescription bottles, appointment slips and the other essential health related materials required to

successfully function as a patient (Selden & et, 1999). Our understanding of health literacy is informed by knowledge of literacy in general.

In February 2014 iTriage commissioned a survey of 1000 U.S. adults 18 and older, matching U.S. Census data for sex, age and race. Overall, the data revealed disparities in health literacy rates between respondents based on four key factors: gender, age, education, and insurance. While 88% of those surveyed correctly determined that 3 capsules should be taken each day, 22% could not. For more complicated prescriptions it is clear that more people would have trouble understanding the instructions.

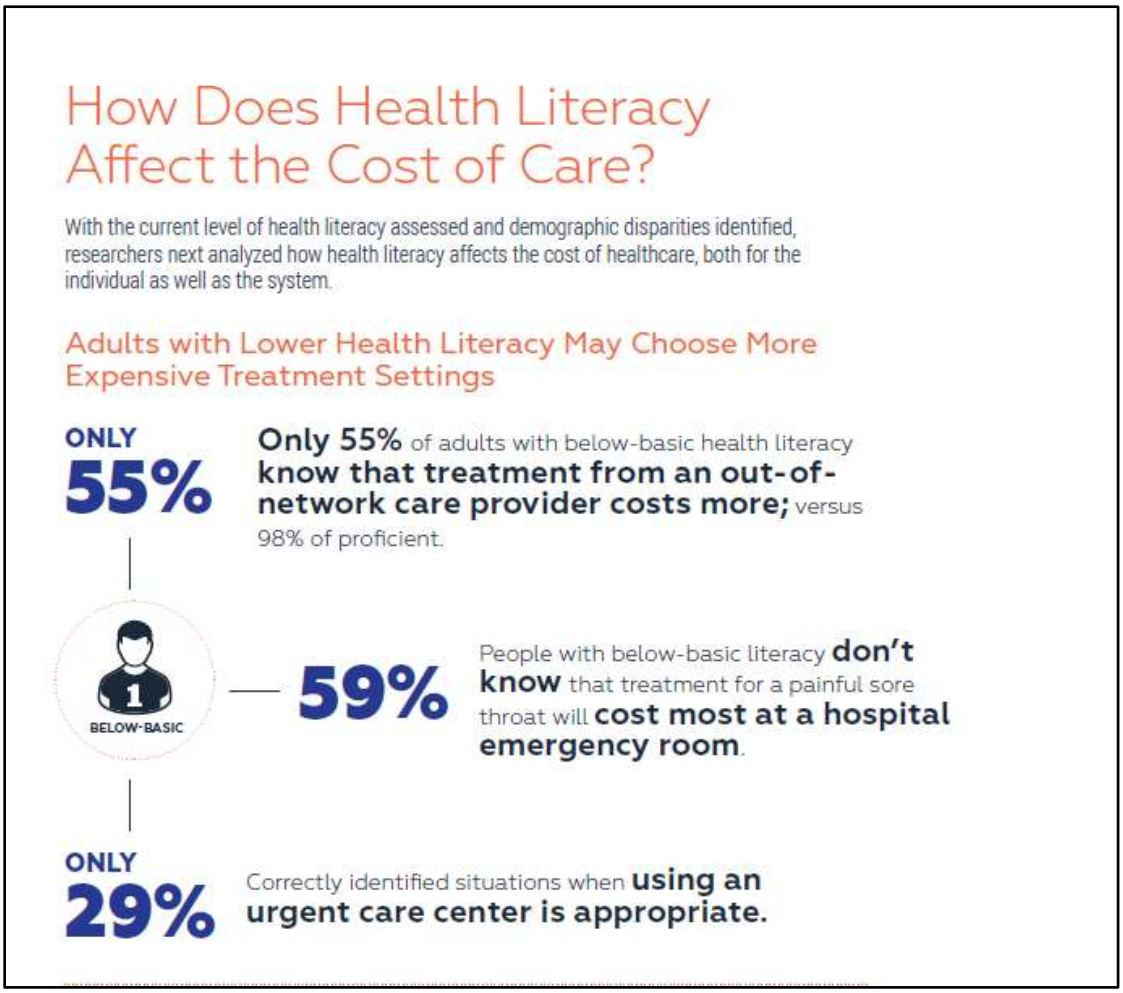


Source: Tracking American Health Literacy and Prescribing Improvement, iTriage, February 2015

According to an estimate by the National Center for Education Statistics in 2003, low health literacy costs the US economy between $106 and $236 billion annually (Nielsen-Bohlman, Panzer, & Kindig, 2004). Adjusted for inflation this figure is currently between $134B and $299B. It is a shared function of social and individual factors (IOM). Certainly limited literacy

has some implications for individual well-being, but so too does it influence the treatment and therefore the quality of health care. Health literacy involves the confluence of education and health system and culture/society.

The iTriage survey underscores the cost to the system, as adults with lower health literacy are more likely to choose more expensive treatment settings.



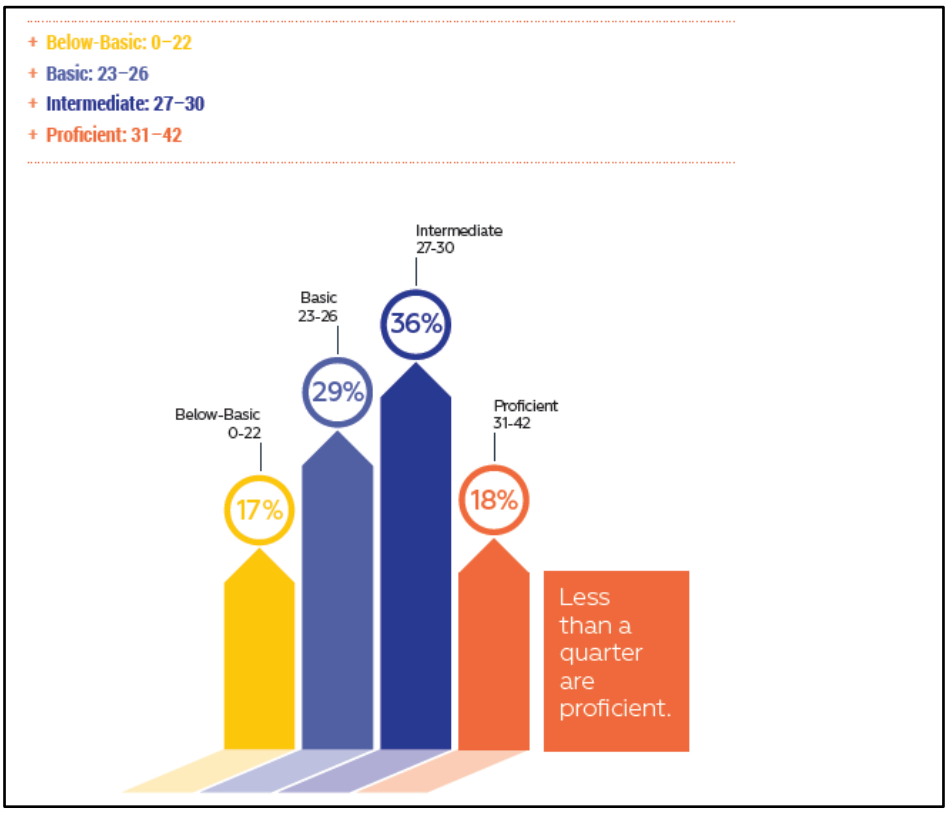
Source: Tracking American Health Literacy and Prescribing Improvement, iTriage, February 2015

As with limited literacy, poor health literacy is wide spread, and affects the most vulnerable people. Older adults, people with limited education and those with limited English proficiency tend to have limited health literacy (Beers, et al, 2003; Gazmarian, et al, 1999;

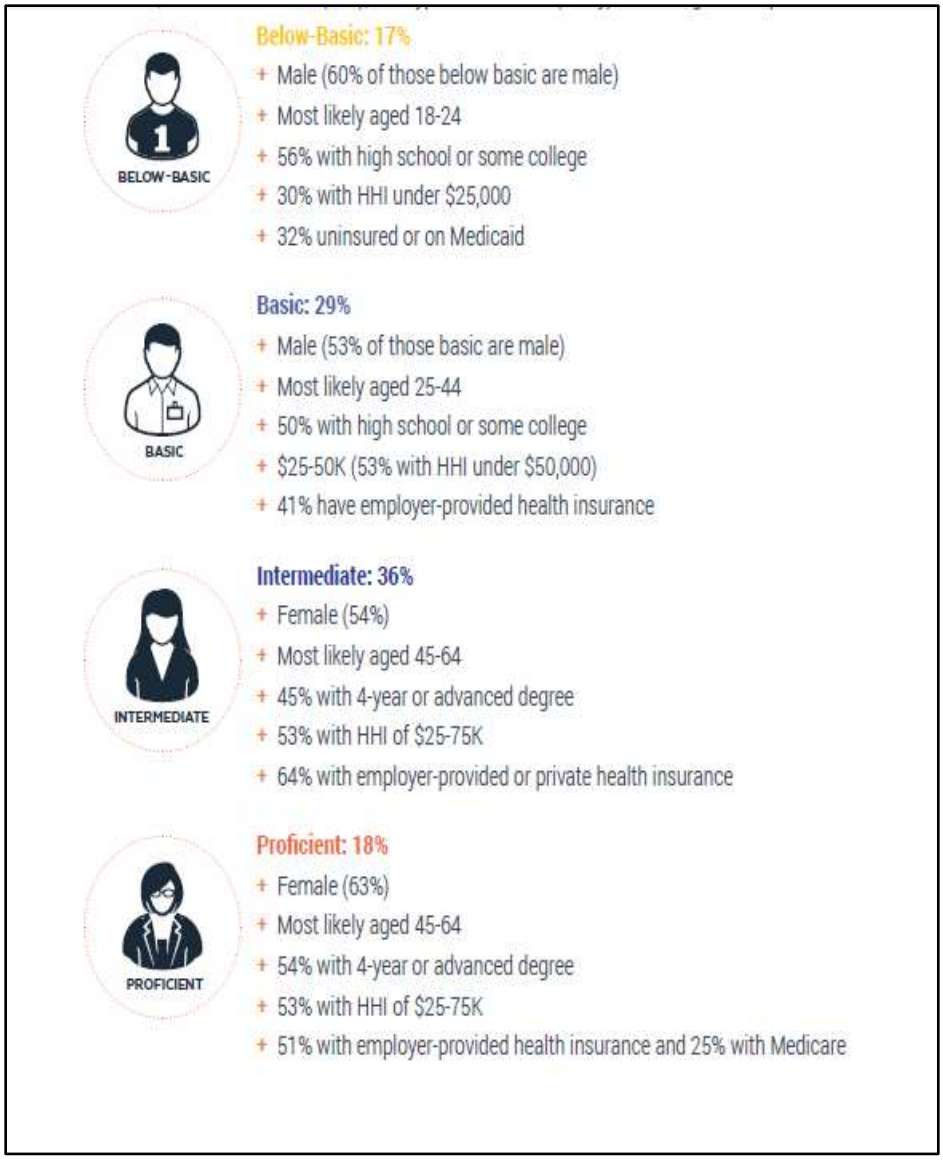
Williams, et al, 1995). It disproportionately affects non-white racial and ethnic groups; the elderly, individuals with lower socioeconomic status and education, people with physical and mental disabilities; those with low English proficiency and non-native speakers of English (NCES, 2003).

Who are we talking about?

The results of the iTriage survey were remarkable: less than one quarter (18%) were **proficient** in health literacy, and of these 63% were female between the ages of 45 and 64. Seventeen percent were considered **Below Basic**, and another 29% were scored as **Basic**.



The iTriage Health Literacy Index is based on a point system in which respondents earn points for each of the 17 questions they answer correctly. The maximum number of literacy points a respondent could achieve is 42 and the minimum is 0.



Source: Tracking American Health Literacy and Prescribing Improvement, iTriage, February 2015

Women, who more often fulfill the role of Household Decision Maker, score higher in health literacy proficiency: 22% vs. 14%. In addition, more men than women have below basic health literacy: 21% vs. 14%, according to the iTriage survey.

Source: Tracking American Health Literacy and Prescribing Improvement, iTriage, February 2015

Race and Ethnicity were not analyzed in the iTriage survey, however these demographics play a critical role in Health Literacy.

Example of Target Population: Focus on the Hispanic/Latino community—the fastest growing population, and largest minority group: numbering 52 million now, by 2050 will total 132 million, or 30% of the US population. By 2020, Latinos are expected to comprise 19 percent of the U.S. labor force.

Researchers have documented that Spanish-speaking patients may have a great deal of trouble understanding medication use instructions. Rand and Rhee found that "47% of Spanish-speaking patients stated that the side effects of their medications were not explained to them in contrast to only 14% of non-Spanish-speaking patients." Dr. Giorgianni, who is also a practicing Pharmacist in Florida, brings up a critical issue: "This may certainly be true but it is questionable in my mind if the patient has limited literacy or if the health professional who is responsible for engendering understanding is not competent in communicating understanding in the context of that specific patients' frame of understanding."

UHC has successfully engaged this population group with PlanBien℠

PlanBien℠ transcends traditional health plans with a host of linguistically and culturally relevant health information and customer service programs tailored to meet the unique health care needs of Latinos. These include: bilingual online provider directories that list physician

offices with Spanish-speaking doctors and/or staff; Spanish-speaking customer service representatives to answer questions and help plan participants locate Spanish-speaking doctors; specialized educational materials printed in Spanish including *¿Que le dijo el doctor? (What did the doctor tell you?)* and other bilingual photo stories depicting how a family discusses common health concerns. PlanBien℠, developed by Russ Bennett for United Healthcare, currently offers over 600 health care coverage plans to Spanish-preference members and their employers in eight states. In 2012, Russ received the "Leadership in Innovation Award" from the National Hispanic Medical Association.

The implication of limited health literacy on health outcomes and specifically medication adherence and patient self-management is considerable. Patients with limited health literacy are more likely to misinterpret their prescriptions than those with adequate skills (Williams, et al, 1995); have difficulty identifying medicines (Kalichman, Ramachandran, & Catz, 1999; Kripalani, Henderson, Chiu, Robertson, Kolm, & Jacobson, 2006); and understanding how to take medicine (Hardin, 2005; IOM, 2004; Davis, et al, 2006; Williams, 2002). Understandably, patients with limited literacy skills are reluctant to ask providers questions because they are ashamed to admit that they do not understand (Parikh, 1996; Baker et al, 1996; Wallterstein, 1992, citing Friere, 1973). Without clear information and an understanding of the information's importance, patients are more likely to skip necessary medical tests, end up in the emergency room and have a harder time managing chronic diseases like diabetes or high blood pressure (Rudd, et al, 2007). Additionally, in more recent conceptualizations to characterize individuals with low health literacy, the literature reports that individuals with low literacy have worse short term memory as compared to those with higher literacy, having implications for how patients "hold" information when confronted with distractions or the need to perform simultaneous activities, to retain information and to sort and classify that which is most immediate and relevant (Baker, et al., 2011, pp. 75, citing Baddely, 2003).

"The future health of the nation will be determined to a large extent by how effectively we work with communities to eliminate health disparities among those populations experiencing a disproportionate burden of disease, disability, and death."
(Office of Minority Health)

PART TWO: Using Pharmacist-Patient Interventions to Impact Medication Adherence

"Tell me and I forget. Teach me and I remember. Involve me and I learn."
Benjamin Franklin

Introduction by Khrys Kantarze, certified training and development professional, and VP of Talent Management at Pharmacist Partners:

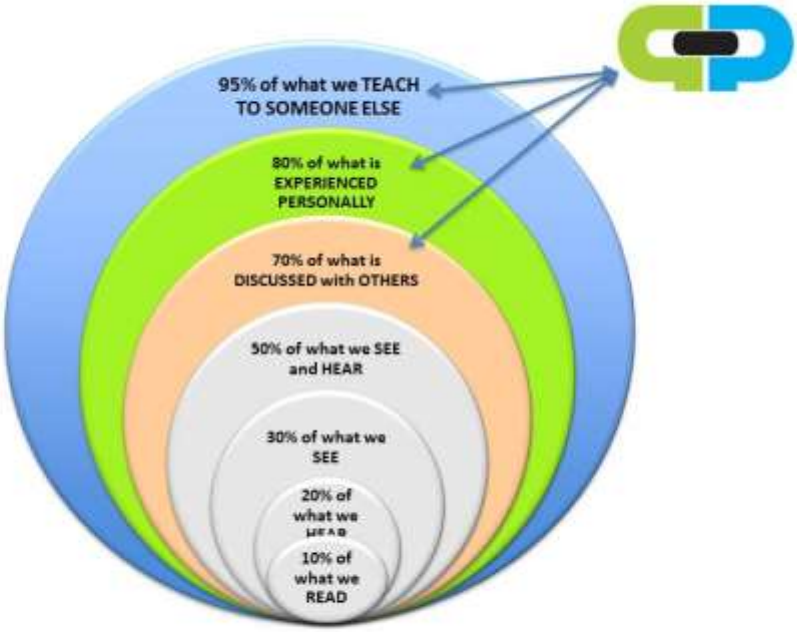
To best enhance efficacy of patient medication adherence, providers are well served to understand the modes of communication that are most effectively utilized for adult learning. In the studies presented by Dr. William Glasser, it is shown that adults maximize learning through hearing, seeing and doing, with a combination of these three elements giving optimal results. Dr. Glasser's work remains the industry standard, having withstood the test of time for over 5 decades.

Additionally, adult learning is improved through a secondary, less measurable, means via personal motivation of pride of knowledge and independence.

Adults Learn and Retain New Information By:

Method	Retention Rate
What they **READ**	**10%**
What they **HEAR**	**20%**
What they **SEE**	**30%**
What they **SEE** and **HEAR**	**50%**
What they **DISCUSS**	**70%**
What they **EXPERIENCE (DO)**	**80%**
What they **Teach (SHOW)**	**95%**

Through awareness and knowledge of the means by which adults achieve literacy, and the ability to motivate the desire for literacy, the pharmacist can greatly improve their success in patient outcomes and follow through.



Adult Learning

Source: Dr. William Glasser/Dale & Nyland Experience

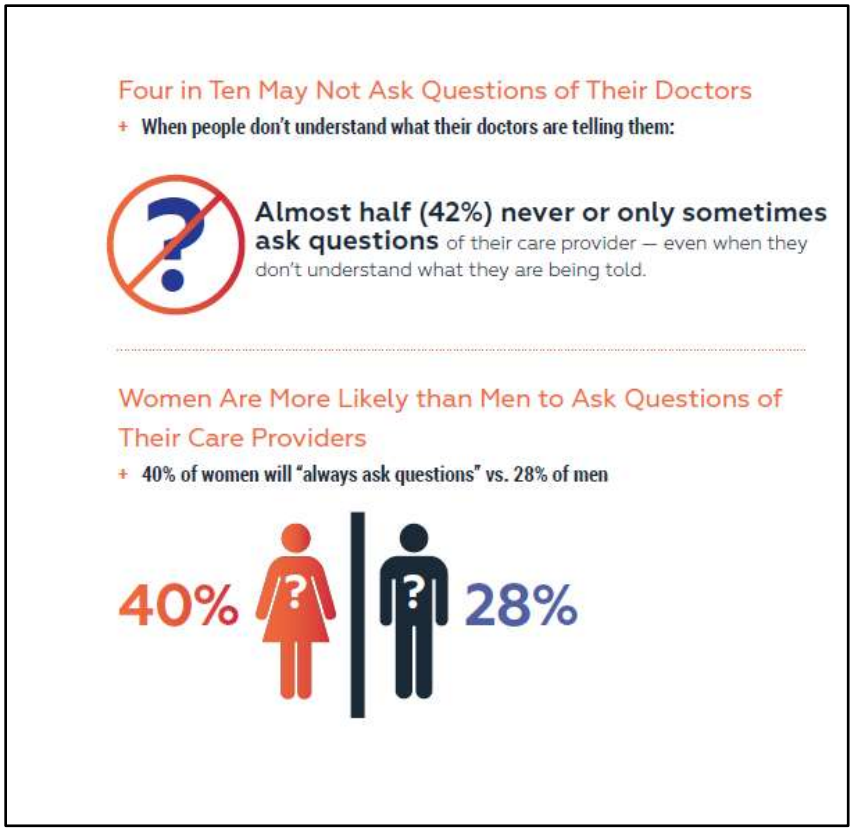
Health Literacy Interventions

Given the preceding exploration on the nature of literacy and health literacy, the purpose of interventions need first be explicated. Health literacy influences, or is a reflection of, knowledge, self-efficacy and social stigma (Berkman, et al., 2011). Therefore, the focus of a health literacy intervention is to address knowledge, self-efficacy and social stigma. A health literacy intervention enables so that the patient can act or perform. Dr. Giorgianni takes this one step further: "The optimal health literacy impact is not just to initiate self-directed care or to engage in care for a short time but to **inform** and to **motivate** the patient over a **sustained**

period through the course of treatment." With the ability to act in a manner that corresponds to the recommendations of the health provider, the patient is adherent and as such is on the pathway to improved patient health and good health outcomes.

Toward addressing knowledge, self-efficacy and social stigma, the health literacy intervention should facilitate communication between the health provider and the patient. Communication is defined as the exchange of information (Merriman- Webster) and is effective when the parties in the exchange understand and can act on said information. When the provider asks a question, the patient answers, providing insights that can help the provider to address the health condition. Reciprocally, the patient is comfortable enough to pose questions and/or respond fully and comprehensively to questions, as well as is critical of the information being provided.

According to the iTriage Survey, women are far more likely than men to ask questions of their care provider. Forty percent of women surveyed said they would always ask questions, vs. 28% of the males surveyed.



Source: Tracking American Health Literacy and Prescribing Improvement, iTriage, February 2015

Direct evidence of effective communication is increased knowledge, self-efficacy (a term which does not necessarily apply only to the patient but to the health provider who is armed with information from the patient and can render an appropriate recommendation) and reduced stigma associated with health literacy. Distal evidence is adherence and improved health outcomes.

Therefore, health literacy interventions are centered on improving the modes of information exchange between the patient and provider within the health system. Toward good health, information is available to increase the knowledge about good health. This information takes the form of written materials that may be found in health settings or in the community at fairs or in public places like libraries and government offices. Information is also disseminated

through verbal messages in the context of a health encounter or via other media like television or radio or the Internet. Information is also provided to facilitate self-efficacy, or so that the patient can take care of themselves and the provider can make recommendations that are appropriate to the patient circumstance. Health systems should recognize and appreciate that they need to meet patients where they are and not expect that the patients have command over knowledge. The health system accommodates the patient who is in the system because of a health problem that could compromise not only their physical well-being, but logic and judgment.

Health literacy interventions therefore are directed at the patient, the intervening provider (which includes the full constellation of people who engage with the patient in the health setting, from receptionist through to pharmacist) and the broader health system. Therefore the following review the literature on interventions that are focused on the patient, the provider and the health system at large.

Patient Interventions

Interventions for health literacy that improve patient functioning can occur in education, social (read: community) and health settings (Nielsen-Bohlman, Panzer, & Kindig, 2004). Health is an important context of instruction used by educators to engage students in learning processes. Students of health learn how to prevent or care for themselves and read, write and speak about that which pertains to their health. Additionally, students learn how to count and the meaning of numbers in the health context: reading thermometers, calculating body mass indices are but two examples of using health as a way to improve numeracy skills. These educational pursuits are available to young children as well as adults through the adult literacy system. Innovative partnership between adult literacy practitioners and scholars in public health have resulted in curricula that can be used in adult literacy classrooms, contributing to improve the skills needed to navigate health settings, manage health and aspire to employment

in health (Lawrence & Van Brackle, 2007). Patients learn by reading and talking about how to perform and are given the opportunity to learn about and practice skills within the safety of a classroom.

Particularly in pursuit of prevention, health literacy interventions occur throughout the community. Information about good health is available not only in health care settings, but throughout the community, most notably in public spaces like libraries, employment centers and income maintenance centers. The information takes the form of printed materials, and can include the television that may be in the waiting areas. The content provides general information that can be calibrated to the urgent health needs of the demographics of the population being served: young parents who may be accompanying their children to the income maintenance office may learn about putting their newborn babies to sleep on their backs and Hispanic users of employment centers may learn about smoking cessation as a means to reduce the instances of asthma.

Health literacy interventions occur in health settings. Printed materials and video and audio messages are generally available as one visits a primary care physician or moves through a hospital or clinic. Certainly, the health provider may have print materials on hand to support and/or supplement the recommendations that are offer. The purpose of these materials is to increase patient knowledge and self-efficacy. The availability of information and care taken to deliver messages suggests that the health setting is a safe space for patients who have limited literacy skills. The commitment by the health provider to communicate using materials that have been adapted to respond to needs of a person with limited literacy is in itself evidence of reduced social stigma. Merely talking, drawing or engaging with a patient in a manner that assumes the responsibility for effective communication is shared normalizes low health literacy and reduces the patient's potential for embarrassment and the provider's challenge to be able to adequately engage and deliver the quality services as is intended.

Interventions that make accommodations for low literacy by, for example, increasing access to information about health or healthy behaviors, using videos (Murphy, et al; Wydra), illustrated or other materials developed with a mindfulness of low literacy (Meade, et al; Micheilutte, et al) and verbal teaching using simplified language (Harvey; Davis et al) have been proven to be effective.

The overall effectiveness of interventions has been the subject of study by scholars, which conclude that health literacy invention strategies are effective means to putting a patient on the road to improved literacy, knowledge/self-efficacy/social stigma mitigation, adherence and good health outcomes. A systematic review of intervention studies conducted by noted scholars under contract to the Agency for Healthcare Interventions and Outcomes identified that use of the single design or multiple strategies used to mitigate the effects of low health literacy are effective. Single design interventions, used individually, to present health information include alternative documents by design or numerical presentation, alternative or additive pictorial presentations, use of alternative media and use of alternative readability and document design (Berkman, et al., 2011). Documentation supporting that "optimal designed written materials for low health literate population includes the use of simpler words, shorter sentences, proper syntax and appropriate graphics to illustrate key points" (Baker, et al., 2011, pp. 74, citing Doak, 1996). The following chart details the design features of studies that were included in this review that improve comprehension of limited health literacy patients.

Design Features	Comments
Present essential information by itself	Limit or eliminate distracting information
Present essential information first	Enable the reader to focus on what is important, first
Present health plan quality information such that the higher number (rather than the lower number) indicates better quality	
Use the same denominators to present baseline risk and treatment benefit	
Add icon arrays to numerical presentations of	

treatment benefit	
Add video to the verbal narrative	Particularly in native language such as UHC has done with PlanBien℠.
Reduce reading level	Even educated academics have trouble reading medication material.
Use illustrated narratives	Like the *fotonovelas*, developed by PlanBien℠.

These interventions used singly or in combination, are effective to mitigate the effects of low health literacy on health care use or outcomes. Findings of this systematic review revealed the following:

- These studies create intensive self-management and adherence that result in reduced emergency room visits and hospitalizations.
- Interventions are effective because they are delivered with great intensity, have a theory basis, were piloted before implementation, emphasize skill building and were delivered by a health professional.
- The interventions changed distal outcomes, increasing knowledge, self-efficacy and leading to behavior change in the patient.
- Studies performed to date do not provide sufficient evidence of altering behavioral intent.

Provider/System Interventions

By improving the health literacy providing capacity of providers and the system, it is possible to reduce stigma and create an environment where a patient regardless of health literacy skill levels can obtain the critical and optimal health services. These efforts involve providers altering their services to accommodate low health literacy among their patients. The changes made revolve around more effectively communicating and increasing their cultural

awareness. In some cases, their services integrate theories of learning as a means to increase the chances that their communication is more effective and that the patient learn.

Perhaps borrowing from educators, health literacy scholars who are health providers posit that Mastery Learning Theory as a means to facilitate patient health literacy (Ryan & Schmidt, 1979; Gusky, 1985). This strategy is notable because it acknowledges that it is repetition that facilitates mastery in a learning context. Recognizing that patients are entreated to employ a primary care physician, or in the case of recent healthcare reform, as needed visits with members of their accountable care team, the opportunity exists with this intervention to achieve the goals of this theory: specify learning objectives; divide content and objectives into "instructional units"; create formative/diagnostic evaluations that determine whether the patient has mastered content and design and implement corrective, remedial instruction until mastery is attained (Baker, et al., 2011). This method is a health literacy approach that is resonant with patient engagement in health system that promotes the sharing of information so that the patient's knowledge and self-efficacy is increased.

Potential of Pharmacists

Given the aforementioned characterizations of literacy and health literacy and the interventions and their respective effectiveness, the role of pharmacists can be envisioned through their practice (what they currently do) and the promise of practice (what they could be doing). With this in mind, Paul Hellerick points out that in Pharmacy school "we are taught not to assume anything about the education and learning capabilities of our customers who pick up prescriptions. We are told that we need to explain that the foil needs to be removed from the suppository before insertion (or someone may insert the suppository enclosed in the foil). We need to be very specific about the liquid antibiotics we dispense because our customers may place the antibiotic in the ear because it was prescribed for an ear infection, when in fact it should be taken orally. We are also instructed about being very specific about the information

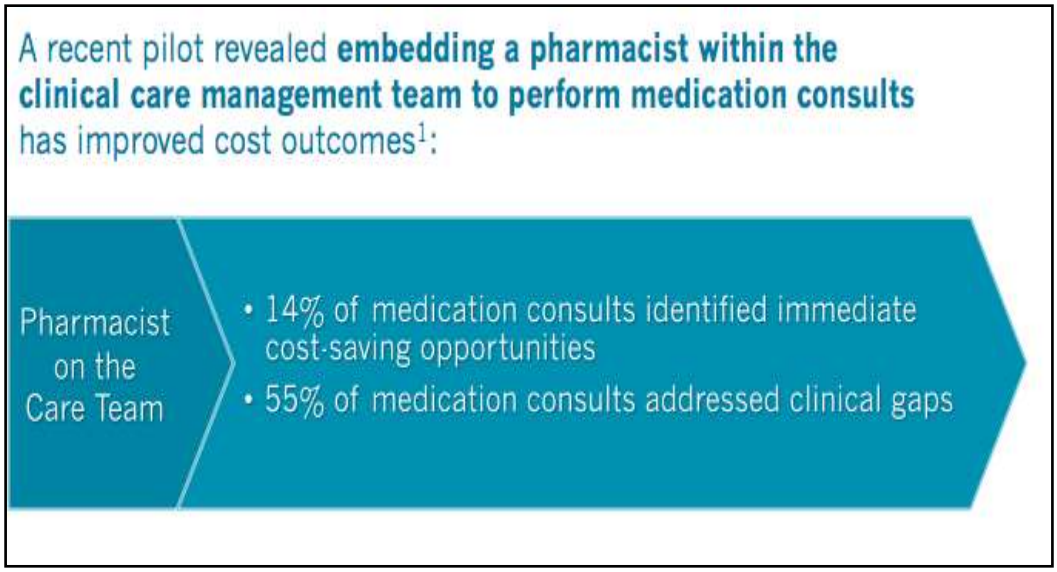
typed on the prescription label. However, we don't really know if the patient can read English or read at all."

Pharmacist Interventions

Dr. Sal Giorgianni has coined the term **Contextual Medical Illiteracy.** He explains: "No matter what your educational level is when first faced with a new, serious or unexpected diagnosis or emergency situation, almost every person is so overwhelmed with the emotionalism of the situation that knowledge and capacity to retain details goes out the window.

Even the Astrophysicists among us would have a hard time remembering and understanding a verbal barrage of information about their newly emerging diabetes, cancer or a serious condition affecting their children. We sometimes assume that when we instruct patients who are highly intelligent, particularly those who are among the best educated of our patients, they "get it" the first time out of the box and remember it over time. This is not usually the case.

Pharmacists, particularly those in community practice, generally have the opportunity to see their patients much more frequently than any other health professional...so as we interact with patients over time we continue to reinforce understanding and motivation for adherence."



Source: Clinical study on synchronization, reported by Optum in Clinical Synchronization brochure, 2013.

Dr. Giorgianni has offered the following examples of interventions, to illustrate how the pharmacist, when adequately positioned in the treatment management cycle, can enhance both knowledge and motivation (e.g. enhance the personal value proposition):

1. In many cases patients, particularly the elderly, are very concerned that they are taking too many medications. There is a general perception that if you take too many medications you will become "tolerant" or "addicted" to them. This is not limited to concern about opiates or other pain medications or even psychoactive medications, but also extends in some to medications used to treat chronic diseases, such as hypertension, diabetes or asthma. This objection can lead to very poor compliance. When I hear from a patient that they, or a spouse, are concerned with the number of meds. being taken or the fact that they have to take them chronically and are becoming "addicted to them", I take great care to assure them that these medications are not for frivolous reasons and that they are essential to maintain health and vitality. I also work with them to help them understand the difference between **reliance** on a medication (to control a chronic condition) and **addiction**.

2. I was doing a Complete Medication Review with a patient who, among other conditions, had severe cardiovascular disease. He had active prescriptions a range of medications

including nitroglycerine sublingual tablets (to abort angina attacks) as well as for ranolazine (to prevent angina attacks). I always ask patients how often they need to use the nitro-sublingual tablets to get an idea how well their cardiac condition is being managed. This patient stated that he had been using the nitro with increasing frequency and it was not unusual for him to use it 2-3 times a week. I expressed my concern to him about this and noted that it is unusual for someone to have so many angina attacks while on ranolazine. When I re-confirmed how he was taking this he said that he used the medication just as it was prescribed on the pill-bottle label from the pharmacy "Take one a day for chest pain". **He was taking the ranolazine only when he had chest pain rather than once a day as it was intended**. In this patient's view he was following the prescription label instructions exactly. We often get caught up with imprecise language in preparing prescription labels and this imprecision can lead to confusion in patients with low-literacy or who simply are confused by all that is happening to them.

3. All too often we take the position of instructing patients, looking for what they are not doing properly and trying to counsel to correct that behavior. We forget that there is an inherent resentment in many individuals who are not knowledgeable about their conditions, which interferes with what they want to do. These conditions force them to change their lives to treat something they do not think they "deserve". I try to enhance and create opportunities for learning through positive reinforcement. I always look for something positive in the patient's practices, behaviors or knowledge base. Even if it is something as minor as knowing how to pronounce medication names or having lost a few pounds over the course of several months. These positive motivational notes give the patient a sense of empowerment and accomplishment that is useful in helping them do what they do not want to do – deal with their medical condition in a forthright way.

Cultural Competency

When looking to find ways to improve health literacy-- in order to improve health outcomes-- one key factor that has to be addressed during this process is cultural competency.

What is "Cultural Competency"?

Dr. Donney John, Chief Clinical Officer at Pharmacist Partners, and a practicing pharmacist in Virginia explains: Cultural and linguistic competence is a set of congruent

behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations. **'Culture'** refers to integrated patterns of human behavior that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups. **'Competence'** implies having the capacity to function effectively as an individual and an organization within the context of the cultural beliefs, behaviors, and needs presented by consumers and their communities. (Adapted from Cross, 1989).

A patient's cultural belief can have a direct impact on their health. For example, within certain patient populations there is a belief that patients started on insulin for treatment of diabetes signifies that they are going to die. This belief stems from past experiences of friends and family members who may have been started on insulin therapy but soon after had experienced an amputation, loss of vision or resulted in death. What these patients fail to understand is that these unfortunate circumstances occurred not because the patient was started on insulin therapy but it's a result of the progression of complications of diabetes.

One of the keys to improve cultural competency and health literacy is to make the information relative to the individual patient when possible. The National Patient Safety Foundation patient education program ***Ask Me 3*** is a great way to help make information more relative to the patients.

Ask Me 3

- What is my main problem?
- What do I need to do?
- Why is it important for me to do this?

"It is important to keep in mind--as pharmacists who counsel patients--that we reinforce that the medications are just **one part** of the equation in improving their health." Dr. John continues: "We should stress the importance and the impact of food choices on the medications we take. For example if a patient is on anticoagulation therapy such as warfarin but is a vegetarian then it would be important for the pharmacist to educate the patient about "green leafy vegetables" and other foods high in vitamin K. But be mindful that if the patient is vegetarian then it may be hard for them to change their dietary habits. So you can use the ***Ask Me 3*** questions as guide to help frame the conversation and make the information more personal for the patient."

Telephonic vs In-Person Interventions?

We (Pharmacist Partners) have frequently been asked why in-person visits are so much more effective than telephonic. Particularly among the most ill, which are the people who take multiple medications, telephonic interventions have not been successful. According to Dr. Allan Zillich, Pharm.D., Research Scientist, VA HSR&D Center of Excellence, Roudebush VAMC, Regenstrief Institute, and Associate Professor of Pharmacy Practice, Purdue University College of Pharmacy, "**A telephonic MTM program is suitable for the least sick patients, but does not appear robust enough for a sicker population."**

A national study of Medicare patients with multiple chronic illnesses found that 30% take five or more medications, and some are on 20 to 30 medications! In fact, adverse medication events are responsible for more than 88% of emergency hospital admissions among elderly patients. Face-to-face counseling by a pharmacist is 2 – 3x more effective at increasing patient adherence than other interventions, according to "Modes of Delivery for Interventions", American Journal of Managed Care.

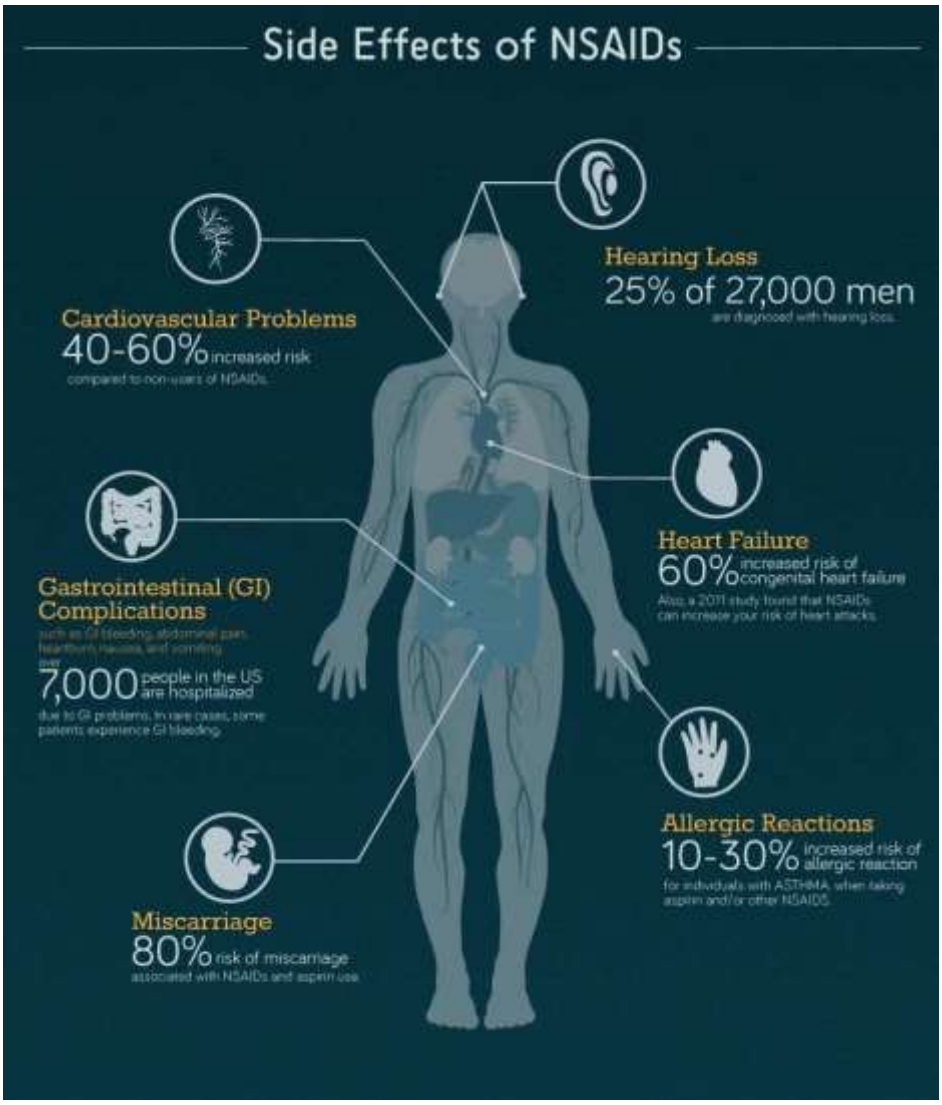
Seeing the patient, in their home with their medications (Rx and OTC) laid out in front of them, plus whatever supplements they are taking, gives the Pharmacist an opportunity to

review each one with the patient. The Pharmacist can read body language and discover issues that would not be revealed via phone. For example—if the Patient is on statins, and Celebrex for muscle cramps/arthritis, but the Pharmacist sees that the Celebrex is not working, the Pharmacist can ask questions which might reveal that the muscle cramps/pain are not due to arthritis but are due to a side effect of the statin.

Other issues may include side effects from OTC medications, being taken with Rx, as well as supplements, which can also cause adverse reactions and/or render a prescription drug less effective. "There is a general perception among the public that any OTC products or supplements that are sold is generally safe and the things that could harm you are kept behind in the pharmacy", according to Dr. John. "An example of this would be the use of a very popular supplement called 'black cohosh' which has been used to treat hot flashes and sometimes used for anxiety. This supplement, if taken with certain prescription medications, can increase the risk of liver damage. The U.S. Food and Drug Administration (FDA) does not determine whether dietary supplements are effective before they are marketed. So it is imperative that pharmacists are engaged to provide in depth discussions and guidance on what type of OTC product or supplement may be safe to use for an individual patient."

Paul Hellerick agrees: "Misuse and overuse of OTC Pain relief medications pose significant problems. NSAIDS in particular: People tend to take more (in quantity) and extend the duration, WITHOUT ASKING their Physicians, or reading the warning labels on the package inserts. Over 60 million people take NSAIDS in the USA, and, even more concerning, NSAIDS account for about 100,000 hospital visits and 15,000 deaths per year!"

The image below illustrates the range of side-effects from NSAIDS.



Source: Mercola.com

As highlighted through this paper it is imperative that all health care professionals work together in order to make sure that the patients they care for clearly understand the information regarding their health. This is not a task that can be done solely by just one medical provider but it is a task that can be done best with the collaboration of inter-professionals who have an opportunity to reinforce the appropriate message. Physicians, nurses

and pharmacists all come into contact with patients at different points of the care continuum so we each have opportunity to make sure the patients we care for have positive health outcomes.

Pharmacist Partners would like to leave you with a quote: **"Teamwork – coming together is a beginning, keeping together is progress, and working together is a success."** – ***Henry Ford***

About Pharmacist Partners

Pharmacist Partners® is the only Clinical Knowledge Organization™ (CKO) and is devoted to complementing the efforts of drug manufacturers, Payers, and other stakeholders to improve medication awareness and adherence, utilizing our nationwide network of pharmacist partners (clinical field consultants). Pharmacist Partners also provides hospital transition-in care and medication reconciliation consultative services to health systems and ACO's. We leverage evidence-based best practice principles to help increase workflow efficiency and create cost effective solutions to improve health outcomes.

Pharmacist Partners' model is predicated on having robust peer-to-peer conversations that focus on validated information. This helps bring a better understanding of medication use and program management to practicing clinicians, and will therefore naturally enhance medication compliance among patients. **Pharmacist Partners'** principle resources are experienced credentialed pharmacists who have extensive clinical practice backgrounds. More about Pharmacist Partners can be found here: www.PharmacistPartners.com.

"Strive not to be a success, but rather to be of Value"
Albert Einstein

About the Authors

Lisa Gale Van Brackle, PhD.

Lisa Gale Van Brackle, PhD, has more than 20 years' experience in the design and implementation of social programs that improve the conditions and increase awareness of the circumstances of under- and unemployed, substance abuse, formerly incarcerated and other vulnerable populations. She is currently the Deputy Commissioner, Employment Services, NYC Human Resources Administration.

Previously, Dr. Van Brackle managed the employment and training grant program of the Upper Manhattan Empowerment Zone Development Corporation (UMEZ), which provides unprecedented access to employment for the hardest to employ residents of Harlem and Washington Heights in New York City. She also serves as adjunct faculty at the Silberman School of Social Work at Hunter College and Rutgers University's School of Social Work where she has taught policy, research and organizational management and leadership courses. Throughout her career, she has developed a deep appreciation for and knowledge of social policies in the fields of employment and training, education, health and social services.

Dr. Van Brackle has responded to the challenges that confront vulnerable populations' access of health systems and contributed to building a culturally competent healthcare workforce. Leveraging the experience and skill acquired through health literacy training of adult literacy teachers and volunteers, Dr. Van Brackle was part of the executive team at New York City's Literacy Assistance Center that negotiated and secured the contract to provide health literacy training to clinical and support staff of New York City's Health and Hospital Corporation (HHC). In this contract and several engagements that followed, she participated in medical grand rounds and convened training sessions for clinical and support teams at HHC. She also helped to build capacity of staff at public healthcare providers to produce print materials and signage that makes their facilities and services more accessible to patients. These efforts were chronicled and presented at conferences including the American Public Health Association. At UMEZ, she manages grants that provided access to unionized jobs with major healthcare

institutions in Upper Manhattan and financial support to residents who are enrolled in college programs that will lead to careers in allied health fields.

Dr. Van Brackle earned her PhD in social welfare from The Graduate Center of the City University of New York. In her dissertation she explored the implications of market-based enterprises on the financial capacities of nonprofit human service organizations. She also holds a Master in Social Work from Hunter College and a Bachelor's in consumer and market research from Baruch College.

Dr. Donney John, PharmD, Chief Clinical Officer, Pharmacist Partners

Dr. John is leading our Employer Solutions and Hospital Discharge (TIC) Programs. He is a practicing pharmacist, healthcare consultant and entrepreneur. Dr. John has expertise in the areas of patient engagement, population health management, transition in care and mobile health technology solutions. He serves as a medical advisor for a variety of companies focused in the areas of health/wellness, patient engagement and medication adherence.

Dr. John is the founder of Urban Medical Solutions LLC, a health consulting company based in the DC metro area which provides consultative services focusing on clinical workflow and technology integration. He is also the Interim Executive Director for NovaScripts Central a non-profit pharmacy that provides free medications to uninsured patients in the northern Virginia area.

Dr. John has previously worked as an Assistant Professor of Pharmacy Practice at Massachusetts College of Pharmacy & Health Sciences where he developed innovative ambulatory care practice sites within federally qualified community health centers. He has trained pharmacy students, pharmacy residents, medical residents and other healthcare professionals in the areas of health literacy and cultural competency.

Dr. John holds a Doctor of Pharmacy degree from St. John's University in Queens, New York and has completed a pharmacy residency with Massachusetts College of Pharmacy & Health Sciences.

Valencia Courts, RN, MSN, MBA, VP Clinical Operations, Pharmacist Partners

Ms. Courts has expertise in population health management, hospital operations, healthcare consulting and lean methodology. She has extensive knowledge in telemedicine and has spearheaded numerous telemedicine programs with VISICU throughout the United States.

Ms. Courts also served as the Director of a pharmacy-implemented Transitions of Care Program at Inova Health System in northern Virginia. She has held several leadership positions in hospitals and consulting firms, and continues to maintain her commitment to nursing by serving as adjunct nursing professor and mentoring nursing students.

Ms. Courts earned her Bachelor of Science degree from the University of Alabama at Birmingham. She graduated with honors from The Johns Hopkins University in Baltimore, Maryland where she earned a dual degree of Master of Science in Nursing (Concentration: Health Systems Management) and an MBA. Valencia also holds a Business of Nursing Certificate from The Johns Hopkins University and is certified in Lean Healthcare.

Paul Hellerick, R.Ph., Director, Patient Centered Care, Pharmacist Partners

As Director, Patient Centered Care, Mr. Hellerick plays a critical role in Pharmacist Partners' Employer, Home Care and Hospital solutions platforms, specifically regarding patient engagement. He is a practicing pharmacist, health care business owner and entrepreneur, with 25 years of experience in different aspects of Pharmacy practice including Hospital, Long Term Care and Retail. Mr. Hellerick has extensive experience with patient counseling and patient relationship building. He believes health care needs to focus its attention on the patient and encourage them to be partners in their own health care outcomes.

His previous work in Hospital Pharmacy included being a member of the Chronic Illness Team and creating a new Narcotic Reconciliation process for the inpatient Pharmacy, while his retail experience focused on Patient Relationship Development, Budget and Staff Management.

Mr. Hellerick holds a Bachelor of Science degree in Pharmacy from the Philadelphia College of Pharmacy and Science in Philadelphia, PA.

Dr. Salvatore J. Giorgianni, Jr., PharmD, Advisor to Pharmacist Partners

Dr. Giorgianni is one of Pharmacist Partners' key advisors. A practicing pharmacist, consultant pharmacist and pharmacist educator, Dr. Giorgianni is recognized as an expert in men's health, pharmacy practice and the U.S. pharmaceutical industry. Dr. Giorgianni has over 26 years of pharmaceutical industry experience in areas of regulatory policy, research and marketing and sales training. Dr. Giorgianni currently serves and has served on several patient and professional association board of directors including the AOA Foundation, the National Association for Continence, the American Public Health Association and the Men's Health Network.

Prior to his joining Pharmacist Partners he had responsibilities in medical, marketing, sales training, regulatory affairs and alliance development at Pfizer over a 27-year career. During that time Dr. Giorgianni led, and was a member of, several product development and global launch teams including those for Cefobid, Aricept, Lipitor, Zoloft and Viagra.

Dr. Giorgianni has authored over 120 articles in health care, serves on several peer review publication committees and is a frequent speaker at professional and general audience programs on men's health and health care practice. Dr. Giorgianni is an active member of the governing board of the Men's Health Network and chair of the American Public Health Association Men's Health Caucus. Dr. Giorgianni holds a Bachelor of Science and a Doctor of Pharmacy graduate degree from Columbia University in New York City.

Bibliography

Baker, D. W., DeWalt, D. A., Schillinger, D., Hawk, V., Ruo, B., Bibbins-Domingo, K., et al. (2011). "Teach to Goal": Theory and Design Principles of an Intervention to Improve Heart Failure Self-Management Skills of Patients with Low Health Literacy. *Journal of Health Communication*, 73 - 88.

Berkman, N. D., DeWalt, D. A., Pignone, M. P., Sheridan, S. L., Lohr, K. N., Lux, L., et al. (2004). *Literacy and Health Outcomes.* Rockville: Agency for Healthcare Research and Quality.

Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., Viera, A., Crotty, K., et al. (2011). *Health Literacy Interventions and OUtcomes: An Updated Systematic Review.* Rockville: Agency for Healthcare Research and Quality.

Brown, M., & Bussell, J. (2011). Medication Adherence: WHO Cares? *Mayo Clinical Proceedings*, 304 - 314.

Collum, J. L., Marcy, T. R., Stevens, E. L., Burns, C. F., & Miller, M. J. (2012 (in press)). Exploring Patient Expectations for Pharmacist-Provided Literacy-Sensitive Communication. *Research in Social and Administrative Pharmacy*.

Gusky, T. R. (1985). *Implementing Mastery Learning.* Belmont: CA.

Haynes, R. B., Ackloo, E., & Sahota, N. (2008). Interventions for enhancing medication adherence. *Cochrane Database of Systematic Reviews*, CD000011.

Johnson, V. R., Jacobson, K. L., Gazmararian, J. A., & Blake, S. C. (2010). Does Social Support Help Limited-Literacy Patients with Medication Adherence? A Mixed Methods Study of Patients int he Pharmacy Intervention for Limited Literacy (PILL) Study. *Patient Education and Counseling*, 14 - 24.

Kalichman, S., Ramachandran, B., & Catz, S. (1999). Adherence to Combination Antiretroviral Therapies in HIV Patients of Low Health Literacy. *Journal of General Internal Medicine*, 267 - 273.

Kirsch, I., Jenkins, L., Jungeblut, A., & Kolstad, A. (1993). *Adult Literacy in America: A First Look at the Results of the National Adult LIteracy Survey.* Washington: National Center for Education Statistics.

Kravitz, R., & Melnikow, J. (2004). Medical Adherence research: time for a change in direction. *Medical Care*, 197-199.

Kripalani, S., Henderson, L., Chiu, E. Y., Robertson, R., Kolm, P., & Jacobson, T. A. (2006). Predictors of Medication Self Management Skill in a Low-Literacy Population. *Journal of General Internal Medicine*, 852 - 856.

Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The Health Literacy of America's Adults: Results from the 2003 National Assessment of Adult Literacy.* Washington: National Center for Education Statistics.

Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y.-c., & Dunleavy, E. (2007). *Literacy In Everyday Life.* Washington: National Center for Education Statistics.

Lawrence, W., & Van Brackle, L. G. (2007). *Addressing Health Disparities Through Adult Literacy Education.* New York: Literacy Assistance Center.

(2011). *Medication Adherence -- Improving Health Outcomes.* tbd: American College of Preventive Medicine.

Merriman- Webster. (n.d.). Retrieved July 30, 2013, from http://www.merriam-webster.com/dictionary/communication

Morgado, M. P., Morgado, S. R., Mendes, L. C., Pereira, L. J., & Castelo-Branco, M. (2011). Pharmacist Interventions to Enhance Blood Pressure Control and Adherence to Antihypertensive Therapy: REview and Meta-Analysis. *American Journal of Health-System Pharmacy*, 241 - 253.

Morrison, C., Glover, D., Gilchrist, S. M., Casey, M. O., Lanza, A., Lane, R. I., et al. (2004). *Partnering with Pharmacists in the Prevention and Control of Chronic Disease.* Washington: National Center for Chronic Disease Prevention and Health Promotion.

Murray, M. D., Young, J., Hoke, S., Tu, W., Weiner, M., Morrow, D., et al. (2007). Pharmacist Intervention to Improve Medication Adherence in Heart Failure: A Randomized Trial. *Annals of Internal Medicine*, 714 - 725.

Ngoh, L. N. (2009). Health Literacy: A Barrier to pharmacist-patient communication and medication adherence. *Pharmacy Today*, 45 - 57.

Nielsen-Bohlman, L., Panzer, A. M., & Kindig, D. A. (2004). *Health Literacy: A Prescription to End Confusion.* Washington: The National Academies Press.

Peterson, A. M., Takiya, L., & Finley, R. (2003). Meta-analysis of Trials to Improve Medication Adherence. *American Journal of Health-System Pharmacy*, 657 - 665.

Ratzan, S. C., & Parker, R. M. (2000). Introduction. In C. R. Selden, M. Zorn, S. C. Ratzan, & R. M. Parker, *National Library of Medicine Current Bibliographies in Medicine: Health Literacy.* Bethesda: National Institutes of Health, US Department of Health and Human Services.

Ryan, D. W., & Schmidt, M. (1979). *Mastery Learning: Theory, Research and Implementation.* Toronto: The Ontario Institute for Studies in Education.

Sabate, E. (2003). *Adherence to Long-Term Therapies: Evidence for Action.* Geneva: World Health Organization.

Selden, C., & et, a. (1999). *Health Literacy: January 1990 - January 1999.* Washington: National Library of Medicine.

Shoemaker, S. J., Staub-DeLong, L., Wasserman, M., & Spranca, M. (2013 (in press)). Factors Affecting Adoption and Implementation of AHRQ Health Literacy Tools in Pharmacies. *Research in Social and Administrative Pharmacy*.

Somers, S., & Mahadevan, R. (2010). *Health Literacy Implications of the Affordable Care Act.* Hamilton: Center for Health Care Strategies.