MEDICATION ADHERENCE AMONG THE ELDERLY: A TEST OF THE EFFECTS OF THE LIBERTY 6000 TECHNOLOGY

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Medication adherence is a formidable challenge for the elderly who may have several prescribed medications while dealing with limited incomes and declining health. The primary purpose of this study was to evaluate the Liberty 6000, an automated capsule and tablet dispenser that provides proper medication dosages and is intended to encourage and track medication adherence.

Seven focus groups were assembled; these comprised 49 men and women ages 65 to 98 years of Black, Anglo, and Hispanic descent who met the following criteria: living independently or semi-independently, had suffered one or more impairments, and were taking at least three prescription medications. Each focus group session lasted 90 minutes and was tape-recorded and transcribed verbatim, resulting in about 2,600 lines of text. Each question was designed to be open-ended to avoid introducing any bias that might influence the response.

The Health Belief Model conceptually guided the study that addressed perceptions of illness susceptibility and severity, barriers, benefits, and cues to action associated with medication adherence. Main benefits of taking medications included avoiding inherited illnesses (or tendencies for illnesses), and reducing illness symptoms. Barriers to taking medications included forgetting, dexterity problems, and high cost. Benefits of the proposed intervention included reminding, caregiver notification, and providing a printed log of medications taken and missed. Barriers associated with the Liberty 6000 included its relatively large size, the difficulties that confronted older adults
when loading the device, and its perceived cost. Using an adoption prediction model proposed a way to overcome barriers and encourage acceptance as well as a strategy to maintain acceptance over time. The model also can be used to evaluate a wide variety of medical devices for elderly people.

This study identified the advantages and disadvantages of the *Liberty 6000*. Findings also suggest areas for further investigation by the nursing community and healthcare policy makers in finding solutions to the myriad problems faced by older people in medication adherence.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>vii</td>
</tr>
<tr>
<td>Chapters</td>
<td></td>
</tr>
<tr>
<td>1. THEORY AND OVERVIEW</td>
<td>1</td>
</tr>
<tr>
<td>2. METHODOLOGY</td>
<td>36</td>
</tr>
<tr>
<td>3. FINDINGS</td>
<td>67</td>
</tr>
<tr>
<td>4. A PROPOSED ADOPTION PREDICTION MODEL, SUMMARY, AND CONCLUSION</td>
<td>112</td>
</tr>
<tr>
<td>Appendices</td>
<td></td>
</tr>
<tr>
<td>A. RESEARCH CONSENT FORM</td>
<td>137</td>
</tr>
<tr>
<td>B. SCRIPT OF VIDEO PRESENTATION OF FOCUS GROUP QUESTIONS</td>
<td>141</td>
</tr>
<tr>
<td>C. THE LIBERTY 6000</td>
<td>151</td>
</tr>
<tr>
<td>D. RECRUITMENT FORM</td>
<td>154</td>
</tr>
<tr>
<td>E. DESCRIPTIONS OF THE FOCUS GROUPS</td>
<td>157</td>
</tr>
<tr>
<td>F. TRANSCRIPTS OF FOCUS GROUP DISCUSSIONS</td>
<td>163</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>223</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Types of Facilities and Number of Participants from Each</td>
<td>43</td>
</tr>
<tr>
<td>3-1</td>
<td>Areas of Illness—Perceived Susceptibility/Severity to Life-Threatening Conditions</td>
<td>69</td>
</tr>
<tr>
<td>3-2</td>
<td>Perceived Benefits of Taking Medications</td>
<td>73</td>
</tr>
<tr>
<td>3-3</td>
<td>Perceived Barriers to Taking Medications</td>
<td>77</td>
</tr>
<tr>
<td>3-4</td>
<td>Cues/Mnemonics for Taking Medications</td>
<td>91</td>
</tr>
<tr>
<td>3-5</td>
<td>Benefits of Using the Device</td>
<td>95</td>
</tr>
<tr>
<td>3-6</td>
<td>Barriers to Using the Device</td>
<td>100</td>
</tr>
<tr>
<td>4-1</td>
<td>Benefits of a Course of Action (Existing and Proposed)</td>
<td>115</td>
</tr>
<tr>
<td>4-2</td>
<td>Barriers to a Course of Action (Existing and Proposed)</td>
<td>116</td>
</tr>
</tbody>
</table>
**LIST OF ILLUSTRATIONS**

<table>
<thead>
<tr>
<th>Page</th>
<th>Illustration Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Components of the Health Belief Model as Adapted ........................................ 10</td>
</tr>
<tr>
<td>2-1</td>
<td>Composition of Focus Groups by Gender, Race, and Age ........................................ 40</td>
</tr>
<tr>
<td>2-2</td>
<td>Relationships Among Variables Used in the Study ........................................ 50</td>
</tr>
<tr>
<td>2-3</td>
<td>Perceived Susceptibility/Severity ..................................................................... 52</td>
</tr>
<tr>
<td>2-4</td>
<td>Perceived Benefits of Medications .................................................................. 53</td>
</tr>
<tr>
<td>2-5</td>
<td>Perceived Barriers to Medications .................................................................. 54</td>
</tr>
<tr>
<td>2-6</td>
<td>Perceived Benefits of the Device .................................................................... 55</td>
</tr>
<tr>
<td>2-7</td>
<td>Perceived Barriers to the Device .................................................................... 56</td>
</tr>
<tr>
<td>2-8</td>
<td>Cues to Action .................................................................................................. 57</td>
</tr>
<tr>
<td>3-1</td>
<td>Components of the Health Belief Model as Adapted (same as Figure 1-1; repeated for reader convenience) ..................................................................... 68</td>
</tr>
<tr>
<td>3-2</td>
<td>Dependent Variable and Independent Variables ............................................ 109</td>
</tr>
<tr>
<td>4-1</td>
<td>Adoption Prediction Model .............................................................................. 113</td>
</tr>
<tr>
<td>4-2</td>
<td>Framework for Predicting Adoption .................................................................. 118</td>
</tr>
<tr>
<td>4-3</td>
<td>Approaching Acceptance by Improving Benefits ............................................. 120</td>
</tr>
<tr>
<td>4-4</td>
<td>Approaching Acceptance by Reducing Barriers .............................................. 122</td>
</tr>
<tr>
<td>4-5</td>
<td>Achieving Acceptance by Reducing Barriers (when existing adoption benefits are high) ........................................................................................................... 124</td>
</tr>
<tr>
<td>4-6</td>
<td>Achieving Acceptance by Overcoming Barriers .............................................. 126</td>
</tr>
<tr>
<td>4-7</td>
<td>Optimizing Acceptance Strategy ...................................................................... 128</td>
</tr>
<tr>
<td>4-8</td>
<td>Strategy to Maintain Acceptance ..................................................................... 130</td>
</tr>
<tr>
<td>C-1</td>
<td>The Liberty 6000 ............................................................................................. 152</td>
</tr>
</tbody>
</table>
CHAPTER 1
THEORY AND OVERVIEW

Introduction

Previous research has found that older people generally have more health problems that require drug consumption than do younger people. Americans over the age of 65 make up only 12% of the population, but they use more than 30% of all prescription drugs (Beers & Simon, 1996). The average elderly person uses 4.5 prescription drugs concurrently, in addition to two over-the-counter preparations (Beers & Simon). Research has shown that failure to take medications correctly often occurs when an individual takes more than three medications. The treatment of diseases and symptoms in older people today relies mainly on medical drugs. Williams says, “Adults over age 65 buy 30 percent of all prescription drugs and 40 percent of all over-the-counter drugs” (Williams, 1997, p. 16). The facts that 80% of elderly patients suffer from at least one chronic medical condition, and 50% suffer from two or more illnesses, help to explain their high prescription consumption (Kleinfeld & Corcoran, 1988). Typical ailments in this population include, but are not limited to, arthritis, hypertension, diabetes, osteoporosis, and coronary heart disease (Stewart, May, Moore, & Hale, 1989).

Elderly people face many obstacles that can prevent them from taking their medications. Williams says:

Arthritis, poor eyesight, and memory lapses can make it difficult for some older people to take their medications correctly. Studies have shown that between 40
and 75 percent of older adults don’t take their medications at the right time or in the right amount. (1997, p. 18)

A wide variety of technological solutions has been employed in strategies that address these barriers and mitigate the problems of nonadherence and adverse drug reactions. By logging on to www.epill.com, a person can see the comprehensive line of patient adherence products available, from pill bottle reminders to large medication alarm watches, to automatic medication dispensers. However, when one stops to consider the myriad factors that can affect an elderly person's ability to successfully follow a medication regimen, it becomes obvious that it is naive to believe that one solution could resolve all associated problems and contingencies. Only by thoroughly understanding the complexity of medical decision making that faces older people and the difficulties they can encounter when following medication regimens, will it be possible to design appropriate strategies and technologies to predict and improve medication adherence. To begin to address the complexity of the problem, it is useful to frame it within a theoretical context.

Adherence vs. Compliance

In articles from the early 1980s about patients and their medications, the terms "medication compliance/noncompliance" were most often used, whereas writers on the subject in the latter part of that decade and into the early 1990s used the terms "medication adherence/nonadherence." This shift, it can be argued, was indicative of the changing doctor/patient relationship. The notion of "compliance" suggested a medically-centered orientation: how and why people deviate from a doctor's orders. It was a concept developed from the doctors' perspective and conceived to solve the
provider-defined problem of "noncompliance." The assumption is that the doctor gives the orders, and the patient is expected to comply. The consensual model is aligned with Talcott Parson's perspective, where noncompliance is deemed a form of deviance, in need of explanation (Conrad, 1985).

The theoretical underpinnings of this shift in view from the patient as "subservient, passive, and obedient" (Stimson, as cited in Conrad, 1985, p. 30) to that of the patient who is an active agent, can be viewed from the modernist theory that favors agency in the structure-agency debate. Giddens says that as modernity takes hold, it undercuts the traditional customs and modes of social life. Individuals are forced to negotiate lifestyle choices and to make their choices within a structure that is at once both empowering and constraining (as cited in Cockerham, 2000). As the individual's role in health decisions becomes more participatory, the patient's knowledge, values, attitudes, and perception about his or her illness or therapy become significant factors within the changing social context.

This change in theoretical perspectives is reflected in the use of the term adherence, indicating the patient's participatory role in physician-patient interactions. It fueled the transition from the consensus view of professional-client, to patienthood and further, to personhood, emphasizing human agency or action, where the patient's view is central to the process of illness. Views regarding Parsonian professional dominance became socially suspect (Bury, 2000).

This shift in attention turns to the legitimate role of the active patient, so the concern with describing and focusing on the "problem patient" diminishes. Rather, the aim of the new research is to document the "comeback of the patient," where the
person/patient makes active decisions about the strategies to be adopted in fashioning a meaningful life (Bury, 2000). Frank suggests that the shift in attention is from the undesirability of illness to "being successfully ill," in which people live with illnesses creatively and meaningfully (as cited in Bury).

For the purposes of this present research concerning elderly people and their medications, the terms *adherence/nonadherence* have been used to mean the degree of success or failure with which an individual takes his or her medication(s) as prescribed.

**Modernity, Agency, and Elderly People**

Coming of elderly age within the modernity that Giddens describes makes the individual the "active social agent" in matters of health behavior. Responsibility for medical decision making relies mainly on patients' abilities to cope with the effects of illness, strategies, or actions to mobilize resources, both materially and socially, and how they choose to interpret their illness and symptoms personally and to others within their everyday course of living. While both younger and older adults assume this practice similarly, the older adult is presented with some specific challenges in becoming a "competent social performer" in matters of health behavior. Adherence with a medical regimen of any kind is often a major problem for older people when faced with a high prevalence of chronic disease and physical impairment, and these may hamper their efforts to achieve desired health outcomes.

Theoretical models from an array of disciplines have been formulated to identify which factors influence a person's adherence to a treatment regimen. They have been advanced from the perspectives of medicine, health psychology, and sociology. Medical
models, for example, provide insight into the physiological and pharmacological effects of medication on elderly people that must be considered when implementing strategies to reduce the rate of adverse drug reactions, hospitalizations, and deaths caused by inappropriate drug use. Factors considered by these models include the physiological processes of aging as related to cognitive decline, sensory impairments, and absorption and metabolism of medications, all of which make drug therapy unpredictable and require careful attention to drug dosing, administration, and monitoring.

Both health psychology and medical sociology share an early rejection of the biomedical model in the study of health and illness, advancing the view that health and illness are the result of a complex interplay of biological, social, and psychological factors (Umberson, Williams, & Sharp, 2000). However, the difference in the theoretical perspectives of these two disciplines which affect their orientation and empirical research, is that health psychologists are more interested in explaining the personal factors that contribute to an individual's health, while medical sociologists are more interested in explaining the social causes of group variation in health and how the social context shapes these individual-level variables (Umberson et al.).

Many of the theoretical models about patient adherence that have an application for clinical practice have origins in health psychology. Much of the research on psychological health behavior is concerned with health promotion through behavioral change—through reducing risk behaviors, improving adherence to a healthy lifestyle, and improving adherence to medical regimens (Umberson et al., 2000).

Sociological research on health behavior considers how various facets of the social environment contribute to, or deter from, certain health behaviors. Issues of social
support, self-care behaviors, physician-patient interaction, illness interpretation, and personal control all contribute to how different groups arrive at decisions to seek medical treatment and follow prescribed modes of care. Understanding how a group of individuals perceives health and illness can provide insight into how a member of the group engages in health behaviors.

The Health Belief Model

The Health Belief Model (HBM) attempts to predict health-related behavior in terms of certain belief patterns. It is one of the oldest health behavior change theories, conceptualized by Hochbaum and his colleagues in the 1950s to better understand the widespread failure of individuals to engage in many public health programs oriented toward disease prevention. The HBM was originally used to systematically explain preventive health behavior. It states that individuals will take health-protective action if they regard themselves as susceptible to the condition, if they believe it to have potentially serious consequences, if they believe that a course of action available to them would be beneficial in reducing either their susceptibility to, or the severity of, the condition, and if they believe that the anticipated barriers to (or costs of) taking the action are outweighed by its benefits. (Strecher & Rosenstock, 1997, p. 44).

The HBM provides insights into why people make health decisions and creates a process for encouraging change.

The components of the HBM, outlined below, will be used as the theoretical construct for addressing those factors affecting medical decision making by elderly people that may prove helpful in predicting medication adherence and the acceptance
of an intervention strategy to improve medication adherence outcomes. This investigation recognizes that personal medical decision making is influenced not just by the psychological tenets of the original HBM. This decision-making process goes beyond cognitive factors to encompass social factors such as a patient’s illness self-concept, patient-physician interaction, self-care behavior, and social relationships with caregivers and family members. The model assumes that the person has agency and that the person’s actions are in accordance with the five components of the HBM. For this project, the likelihood of the action’s being taken (self-efficacy) will be referred to as Adoption of Intervention.

*Perceived Susceptibility* is the individual's subjective perception of his or her risk of contracting a health condition (Strecher & Rosenstock, 1997). Perceptions of susceptibility may range from denying the possibility of contracting an adverse condition to believing that there is real danger of contracting an adverse condition or a given disease.

*Perceived Severity* addresses feelings concerning the seriousness of contracting an illness or of leaving it untreated, and the difficulties that an illness would create. The seriousness extends to the emotional and financial burdens of a disease or condition that might ensue. Threats of illness susceptibility and severity may be reduced by the medication’s ability to minimize the risk of hospitalization, stroke, or death due to inappropriate use.

*Perceived Benefits* is a dependence on the effectiveness of the various available actions in reducing the disease threat. Benefits resulting from following a medication regimen to control an illness or condition may be measured in terms of how well the
medication works to manage and control pain, the extent of the unpleasant side effects from taking the medication, and whether or not one can stop taking the medication if the illness’s symptoms go away. Other factors that individuals may consider as benefits include improvements in health and quality of life, and whether or not they will be looked upon more favorably by their doctors and other members of the healthcare community.

*Perceived Barriers* are negative aspects of a particular health action that may act as an impediment to undertaking the recommended behavior. Strecher and Rosenstock describe it as a "nonconscious" cost-benefit analysis, wherein the individual weighs the action's expected effectiveness against perceptions that the recommended behavior may include expense, unpleasantness, or inconvenience (Strecher & Rosenstock, 1997).

*Cues to Action* relate to the readiness to take action when “cued” by factors, external or internal, that instigate action. Cues in remembering to take medication may involve the experience of pain or the inclination toward pain avoidance, contextual cues, such as "it's time for breakfast," or a reminder by a relative or caregiver that it is time to take the medication.

*Adoption of Intervention* is the conviction that one can successfully execute the behavior required to produce the outcome. A lack of efficacy is viewed as a perceived barrier to taking a recommended action (Strecher & Rosenstock, 1997). Concerns about following a prescribed regimen may involve whether or not patients are capable of remembering to take the medications correctly, and whether or not following a regimen will allow patients to better manage their illnesses. Issues may also involve concerns
about patients’ giving up control over their medications, or whether or not they can be successful at adapting the regimen to their lifestyles and routines.

Support Variables are demographic, sociopsychological and structural variables that may affect an individual's perception and influence health-related behavior. I recognize that the original HBM has some shortcomings. One weakness is that its various components do not carry equal weight. For example, the perceived barriers component is more powerful than perceived severity (Rosenstock, Strecher, & Becker, 1994). Another weakness is that it does not take into account the possibility of a delay between when a decision to act is made and when the action is performed. While I was aware of the shortcomings of the original HBM, I decided to use the components of the adapted HBM, at least as a starting point for my discussion of individuals’ personal health care motivations. Throughout my discussion, I was cognizant of the weak points of the HBM and kept them in mind as pitfalls to avoid.

Figure 1-1 shows the relationships among the components of the Health Belief Model as adapted for this study.
In the above figure, DV stands for dependent variable, and IV stands for independent variable.

Effective interventions to improve medication adherence can be developed only to the extent that we understand the mechanisms underlying the behavior. One objective for this present research, then, is to examine the determinants of health behavior of older adults by employing the adapted HBM. A second objective, also with the use of the model, is to identify what barriers exist for elderly patients against both taking their medications and using medical devices to assist them daily toward increased independence and improved efficacy of self-care.
Medication Nonadherence in Elderly People

A frightening aspect of aging for most individuals is the loss of independence. The ability to comply with medication regimes is considered one of the six instrumental activities of daily living (IADLs), which measure whether a patient can continue independent living in the community or requires full nursing home care or supervised living arrangements. The difficulties that elderly people face in keeping track of the medications they have taken create concern for caregivers, family members, physicians, and pharmacists, who worry about the harmful effects that both overuse and underuse can have on health and functional ability.

An obvious aspect of a successful treatment in the care of the elderly adult is that the individual being treated must take his or her medication as prescribed. Medication nonadherence can take a variety of forms. In 1997, Park and Jones reported that individuals may not take their medications at all; they may omit some doses, they may take extra doses or extra quantities within a dose, or they make take it at improper times, in the wrong combination, or without following special instructions associated with the medication (Park & Jones, 1997).

Vast amounts of money are spent on drugs, and inappropriate pharmacotherapy increases other healthcare expenses as well. Nonadherence is a significant contributor to hospital admissions for older adults. U.S. public health records estimate that 125,000 deaths occur annually from the misuse of cardiovascular drugs alone, and that one in every two patients taking medication regularly makes errors sufficient to alter the drug's effect (Karden, 1988). Older people’s hospital admissions for acute care due to nonadherence account for 11.4% of all elderly people’s hospital admissions, and an
additional 16.8% are admitted due to adverse drug reactions (Park & Jones, 1997). A comparative study by Grymponpre reported that 19% of hospital admissions of older adults were drug-related admissions. Of these, a reported 27% were due to intentional nonadherence, and an additional 10% to inadvertent medication errors (Park & Jones).

The following discussion presents factors that affect medication adherence among elderly people. These factors could contribute to an understanding of how elderly people make decisions about their medications. Understanding these factors can provide a basis for achieving desired health outcomes.

Illness Representation

Many of the ideas in this section are derived from Stoller (1998). Age is a factor that influences illness representation among elderly people. People often fail to differentiate between aging and illness when describing symptoms. More than half (54%) of Stoller's respondents in a health diary study attributed one or more of their symptoms to normal aging, and 5% attributed all of their symptoms to aging. Another of Stoller's findings showed that a large majority (89%) of respondents reported a cause other than disease for one or more of their symptoms, and 16% attributed all of their symptoms to non-medical causes.

Illness interpretations among older individuals can be influenced by the seriousness or perceived threat of symptoms, interpretations as they relate characteristics to the individual's characteristics, and within the context of the health and illness that the individual has experienced during his or her whole lifetime. Any severe or quickly developing symptoms probably will be interpreted as indicating illness. Symptoms that cause pain, linger beyond the expected length of time, disrupt normal
routines, or that cannot be explained, probably will cause concern about the seriousness of the condition. Older people are inclined to treat those symptoms that cause pain, interfere with a desired activity, or may indicate a serious condition.

When symptoms cause severe pain or interfere with desired activities, elderly people are more inclined to use medication than when they experience less problematic symptoms. Correlates of self-treatment as factors in self-treatment strategies include "properties of symptoms," "attributions of seriousness," and "perceptions of health" at the time that the symptom(s) began (Stoller, 1998). Elderly people who believed their symptoms to be serious, or who were unsure of the seriousness of their symptoms, were more inclined to visit a physician about their symptoms than to try to treat themselves. However, when people attributed their symptoms to aging, they were apt to be more accepting and passive, often denying or minimizing any threat to their health, and waiting until their next scheduled appointment rather than seeking immediate medical attention.

Another aspect of illness that influences an older person’s behavior and the decision-making process is the range of responses to acute and chronic illnesses. It has been found that symptoms are interpreted differently, and the onsets of symptoms are interpreted differently, as well. Both acute and chronic illnesses have temporary expectations that are aligned to each attribute of the representation and to each procedure for avoiding or controlling the threat. People have preconceived ideas concerning how long it will take for a disease to develop and how long it will take for a treatment to be successful (Leventhal, 1998). As discussed above, the onset of severe symptoms elicits an immediate response to contact a physician as compared to
symptoms that are intermittent or non-specific. When suffering from acute illness occurs, people primarily focus on relieving symptoms.

Older people experience chronic illness continuously, and their response to treatment has been found to be more palliative than curative. Chronically ill patients develop strategies to treat their illness over a long period of time. During this extended experience, chronically ill patients gain knowledge about their conditions, including information about which medicines and procedures work best. Patients’ experience in dealing with their chronic disease over a long period of time can build confidence in their ability to manage the illness.

Cognitive Factors

Elderly people must make medical decisions more frequently than younger people because elderly people experience a disproportionate share of medical problems (Zwahr, 1999). Eighty-six percent of those over the age of 65 suffer from a chronic condition. Shaie and Willis report that health care for elderly people represents 30% of the aggregate expenditure for all health care and accounts for 40% of all physician visits (Zwahr).

Park identifies four attributes that are important in the process of decision making: 1.) memory, 2.) comprehension, 3.) reasoning ability, and 4.) working memory (Zwahr, 1999). A person's performance in decision-making tasks depends upon the level at which that person functions in these four areas. Earlier research shows that elderly people exhibit poorer performance than younger people in the areas of comprehension, reasoning ability, and perceptual speed (Zwahr). These cognitive factors affect patients’ ability to recall presented information and also may influence
their aptitude for making informed decisions regarding treatment. The literature indicates that, in general, older adults, because of their limited cognitive resources, seek less information concerning treatment alternatives. The literature also shows that elderly people are less likely to make complex comparisons and information evaluations on their own (Zwahr). According to Park, cognitive decline also has been identified as a reason that explains why older adults take less time to seek treatment for potentially serious symptoms. Elderly people act more quickly than younger adults to conserve limited emotional and physical reserves when addressing and worrying about health problems. Older adults, after being exposed to information upon which medical decisions could be made, exhibit less comprehension and memory retention than younger adults. On the other hand, in general, older adults have more awareness and extensive knowledge about their own chronic conditions than do younger adults (1999).

Older people bring to the medical decision-making process their own experience, familiarity, and information concerning medical situations; the orientation provided by this experience and familiarity is an important factor in their decision making (Zwahr, 1999). Their memory retention is enhanced if the new information builds upon existing knowledge. In instances where elderly people have a large amount of information concerning preexisting conditions, age may not be important if the information is presented in an explicit manner (Park, 1999).

According to Zwahr, elderly people call upon their stored knowledge about a particular illness or disease. In addition, they gather information from a variety of sources, such as their physicians, family, and friends. They integrate this knowledge and form an internal cognitive representation that can impact the decisions they make.
about medical treatment. The representation can include information related to the name of the illness and beliefs about its length, the consequences of the illness, and the illness's causes and controllability. Even though the cognitive representation can contain a great many inaccuracies, it does allow people to cope with the disease and come to terms with it. After a person develops a coping strategy, that person is continuously acquiring new information and updating his or her representation. The representation, in a continuing dynamic process, then drives future coping and regulating strategies. At this point, treatment decisions can be made quickly and without additional information about possible alternative treatments (Zwahr, 1999).

Illness and Self-Concept

Illnesses that are very long-term can influence a patient's self-concept. Ever-present chronic conditions become incorporated into one's identity. This intrusion of illness into a person's self-concept mirrors the intrusion of the disease itself and the management regimens into the patient's everyday life. A patient's ability to organize and contain this daily intrusion so that it is no more disruptive than necessary, becomes a major goal. According to Belgrave, restrictions of daily life reduce the opportunity to construct a valued self and lead to all-consuming focus on illness and concern with the self as lost interests are not replaced (Stoller, 1998). Thus, it is not so much the presence of the illness that undermines self-esteem, but rather the inability to contain health problems and the failure to demonstrate competence and independence. The illness then becomes the person's all-consuming focus.

When designing medication adherence programs or assistive devices for elderly people, issues that are relevant to successful design and implementation involve the
numerous factors discussed above. Park suggests that there are three key constructs that predict medication adherence: 1.) beliefs about illness and the patient's representation of his or her illness, 2.) the patient's cognitive function, and 3.) cues or strategies used by the patient to enhance behaviors that minimize present or potential health risks (Fisk & Rogers, 1997).

A patient's beliefs about illness, medication, and himself or herself can influence the patient’s medication adherence. A study by Morrell, Park, and Kidder found that patients with hypertension who believe that they are unlikely to get sick in the future are more likely to be nonadherent (as cited in Park & Jones, 1997). In addition to the limitation on a person’s activities and lifestyle caused by the illness itself, the effectiveness of a drug, along with any side effects, is hypothesized to shape an individual's perceptions and beliefs about the illness. If a person denies the illness, or if the medication is perceived as ineffective, nonadherence is probable, despite the presence of symptoms (Park & Jones).

Patient-Physician Interaction

According to Gould, the interaction between patient and physician is another major factor in the older adult's medication adherence process. When faced with complex medical and treatment decisions, older patients often rely heavily on their physicians out of concern that their own decision-making skills are diminishing (1999). Pierce suggests that patients often favor the treatment alternative that their physicians favor (as cited in Zwahr, 1999). They are also influenced by the physician's presentation and the amount of information the physician provides. Physicians may provide too little information, or too much. For example, in an attempt to reduce cognitive overload, a
doctor may provide too little information (Zwahr). Typically, patients desire more information than they receive. A study by Storic, Fischoff, and Lichtenstien warns that increasing the amount of information can increase the variability of response, decrease the quality of the choices, and provide uncalled-for confidence in the option that has been selected (as cited in Zwahr).

Pierce suggests that the amount of information may not be as important as the emotion (positive or negative) with which the information is presented (as cited in Zwahr, 1999). Many patients will avoid options that are presented in a negative light in order to avoid any unpleasantness, so they may miss information. The physician's interpersonal, and communication, skills in presenting information then become a major element in the patient's perception of the relative risks of various options (Zwahr).

Gould suggests that the physician's mastery of interpersonal skills (once known as "bedside manner"), as reflected in the amount of respect, warmth, friendliness, empathy, and concern shown to the patient, has been shown to have a positive impact on the patient's adherence to treatment. Physicians should take into account the presence of cognitive decline and avoid information overload (1999). In addition, they should be aware of the influence inherent in the manner in which the information is presented, as well as the setting, and the substantial impact that these factors can have on their elderly patients.

In a medical setting, the activation of an aging stereotype could dramatically affect the representation of a patient's health, demeanor, and subsequent decision making (Park, 1999). According to Gould, cognitive studies have shown that what is known as "over-accommodative speech" enhances memory recall. Such a speech
pattern is characterized by a slow rate of delivery, increased loudness, exaggerated use of pitch, repetition, and simplification of grammar and vocabulary. Elderly patients, however, dislike such a style because it *gives them a deprecating feeling*. Although a natural speaking style contributes to a more positive relationship, it is not as effective in conveying understanding and recall of medical regimen, as is the otherwise less desirable "over-accommodative" style (1999).

Gould says that a large number of studies show that physicians have relatively negative opinions regarding their older patients. The Geriatric Interaction Analysis Survey, which rates behavior of both physicians and patients, has found that physicians are less patient, less egalitarian, and less engaged with older patients than with younger patients. Therefore, during medical instruction or presentation of information by the physician to the patient, the automatic activation of an aging stereotype has a definite impact on both the cognitive as well as the subjective component of the decisions made by elderly patients (1999).

**Self-Care Behavior**

Self-care behavior influences medical decision making. The self-care approach includes a set of behaviors that elderly people can use to counter ageist attitudes that they encounter when dealing with healthcare professionals. Haug discusses the satisfaction that an elderly person can derive from "not having to lean on a physician, particularly one who discusses complaints as due to old age" (cited in Stoller, 1998, p. 47). An older person’s feeling of control, mastery, and competency can be reinforced when the person learns to master self-care strategies for chronic disease and to function despite a disability. As people develop self-care strategies, they become less
dependent on formal health care. By managing a treatment regimen, the elderly people can assert control over their illnesses and health and increase well-being.

An individual's personal profile and sociocultural context are major determinants in self-care practices, which can contribute to success or failure in dealing with health risks late in life. These characteristics include age, the person's own perception of his or her vulnerability to disease, and the cultural definitions and social interactions that develop around illness. One basic assumption of Mechanic's in the literature on illness behavior is that the experience of illness "is shaped by sociocultural and other social psychological factors irrespective of their genetic, physiological and other biological bases" (as cited in Stoller, 1998, p. 24).

An individual's belief that he or she can manage an illness may be a major underlying construct in an appropriate illness representation and an effective and successful medication adherence. A study by Rice and Okun found that elderly patients were likely to recognize and recall medical information consistent with their beliefs about their medical conditions. It also found that an important part of educational interventions consists of learning about a patient's prior beliefs about his or her medical conditions (as cited in Park & Jones, 1997). This knowledge can help researchers to identify accurate and inaccurate information that the individual may retain, and to target incorrect beliefs about the illness so that new, correct information can be better remembered (Park & Jones). In a study by Morrow, which examined ways to help elderly patients effectively recall proper medication dosing, it was found that elderly people, in fact, have a preference about the order in which information about their medications is presented. Taking medication was found to be a familiar task and, therefore, knowledge of how
information is anticipated could help improve instruction recall. For example, when the medication's name was provided, followed by the dosage requirements and then by possible side effects, instructions were recalled more accurately (Park & Jones).

Cues as Factors in Medication Adherence

The HBM includes a component referred to as "cues." Cues act as reminders to reinforce the healthful behavior of the individual. Cues, known more specifically as contextual or event-based cues, are tied to what cognitive researchers call "prospective memory": remembering to perform planned actions in the future. Park and Jones say that prospective memory tied to a contextual cue or event (such as taking medication with breakfast) does not appear to decline with age as compared to prospective memory that depends on a response that must occur at a specific time (1997).

Park and Jones say that cues can be categorized as internal or external. An internal cue can occur with some illnesses. The internal event-based cue of joint pain from arthritis reminds the subject to perform some ameliorating health action, such as taking medication (1997).

According to Park and Jones, an external cue can be social support, such as the support of a family member, and it has a strong effect on health behavior. Partners play a role in reminding patients to take their medications: patients who live with a spouse, partner, or other family member exhibit a higher rate of medical adherence than those who live alone. Studies of women seeking cancer treatment show that those who live with someone are more likely to accept toxic treatment than those who live alone (1997). In another study, Clark found that older people who smoke were more likely to seek out smoking cessation programs if a family member wanted them to quit smoking.
(as cited in Prohaska, 1998). According to Park and Jones, it is believed that the presence of another person may help to shape an illness representation consistent with a desire to adhere. Just the fact that the patient's partner or family member is familiar with the patient's illness representation may, in itself, be sufficient incentive to keep the patient adherent.

Park and Jones say that an individual chooses to be either adherent or not; the choice probably depends upon the individual's beliefs about the illness and that individual's belief about the degree of success of a particular medication for treatment. For example, patients will not take medication that they believe is ineffective, or they may decide to use a medication only when symptoms occur. Adult patients, particularly those with chronic conditions, struggle to regulate their lives and maintain control. Thus, the taking of medication frequently is governed by the extent to which it makes them feel dependent on some external factor. Zola says that taking one's medicine is not "the natural thing," and that most patients look upon most of their medical treatment as intrusive, unwanted, and disruptive (Zola, 1986). Within the context of such a set of beliefs that can have a detrimental impact on the health of the individual, social support can moderate health threats. Those in the position of support often are able to understand the variety of beliefs held by elderly patients and to recognize that a patient's illness representation is dynamic rather than static, and that it may change over the course of the illness.

A well-noted general problem of nonadherence to medical recommendations is the low rate of adherence to adaptive device prescriptions (Lubrosky, 1993). An adaptive device, or assistive device, is one that reduces functional limitations resulting
from physical, sensory, or cognitive impairments (Fernie, 1997). Even when benefits are
definite and pronounced, surveys have shown that there are high rates of abandonment
of adaptive equipment soon after it is prescribed. The rate of abandonment among
elderly people ranges from 50 to 60% (Lubrosky). Gitlin found that, in elderly
populations living in the at-large community, between 2 and 13.7 devices are at use in a
typical home. Patients who have vision impairments reported high device use rates,
while those with cognitive impairments reported low use rates. Patients usually accept
or reject a device immediately; if they accept it, they tend to use it regularly. Very few
use such a device on an occasional, or infrequent, basis (1995).

Currently, no medication adherence aid on the market adequately assists a
substantial percentage of the nation's 28 million elderly people. The magnitude of the
problem of medication nonadherence is rampant in many different subpopulations of the
chronically ill besides elderly people, which include diabetics and HIV/AIDS patients,
and elsewhere where the key to maintaining a healthy condition is strict adherence to
medication regimens. The shift in the practice of medicine from acute to chronic
treatment of illness has generated a vast response by device manufacturers to produce
devices that can mitigate the barriers that individuals face in meeting their medication
regimens.

The Liberty 6000: A Medication Adherence Solution

A grant from the National Institute on Aging, a division of the National Institutes of
Health, funded the development and clinical trials of an Automated Home Tablet and
Capsule Dispenser, the Liberty 6000 (Shaw, 1992; see Appendix C). The concept of,
and design for, the device were developed by Thomas Shaw, an engineer at
Checkmate Engineering in Lewisville, Texas. The Liberty 6000 was proposed as an intervention strategy to prolong the independence of elderly people. The dispenser was designed for use by the elderly population, living on their own, to safely self-administer their medications with the goal of reducing medication errors and improving adherence. The Liberty 6000 solves these problems by providing accurate dispensing of each medication at the prescribed time and dosage, in addition to making precise electronic loggings of doses of medications taken or missed.

Device Description

The designer of the Liberty 6000 based the strategies for its design on the portions of the adherence literature that addressed the complexity of barriers that the chronically ill older adult faces in self-administering medications. From the technological standpoint, the designer focused on combining mechanical delivery with emerging integrated computer chip technology. Physical barriers due to chronic illness found to create obstacles in properly taking medications include those that impact motor skills, visual acuity, hearing, and cognitive processing; sometimes these barriers have a combined impact. These conditions are addressed extensively in the adherence literature as major impediments to medication adherence among the elderly population and are discussed briefly below:

Dexterity

Dexterity is affected by movement limitations resulting from arthritis, which affects 48.3% of the nation's elderly people. Loss of grip strength results from loss of muscle mass as well as from the pain experienced from arthritic joints. Several
researchers have found that older adults have difficulty in opening containers with childproof lids.

Vision Impairment

Vision impairment affects nearly 90% of the nation's over-65 population, due primarily to increases in the chronic conditions of glaucoma, cataracts, and color-blindness that occur with increasing age (Moon, 1996). These changes result in a number of difficulties for older people, including increased sensitivity to glare, difficulty focusing on near objects, loss of contrast sensitivity, and diminished color vision. This creates difficulty for older people in reading prescription labels or in making color or shape discriminations among medications. The Liberty 6000 overcomes these obstacles by minimizing the need for handling and sorting out of medications. The medications are loaded into separate cartridges at a minimum of once per week and programmed to dispense the correct number of pills or tablets at the prescribed times.

Hearing Impairment

Hearing impairment can interfere with attempts to inform older adults about the proper use of medications. The National Center for Health Statistics reported that approximately 30% of the population age 65 or over suffer hearing impairment (Havlik, 1986).

Memory Impairment

It has been estimated that 10% of the nation's elderly people suffer from dementia (Stewart et al., 1989). According to Park, to take medications properly, individuals must be able to comprehend instructions concerning when to take them, to integrate schedules for multiple medications, to remember the medication schedule
once it is integrated, and to remember to take the medications at the appointed times (Park, 1999). These cognitive components of medication adherence are affected as working memory and long-term memory decline with age.

The design of the *Liberty 6000* comprehensively addresses the functional impairments mentioned above. It is easily operated by elderly people and handles up to six different medications simultaneously, requiring no visual acuity on the patient's part and no more dexterity than is necessary to pick up a pill. It can hold up to a week’s supply of medications, programmable at independent intervals for prescriptions taken one to four times daily. The device eliminates pill counting by the patient and prevents overdosing by limiting access. Patient reminders include house-wide visual and audio alarms. It also provides complete recordings of medications dispensed and missed, yielding detailed information about patterns of medication-taking behavior over time.

The developer of the *Liberty 6000* also addressed the problem of the harmful effects that medication overuse and underuse can have on health and the functional ability of the older adult. Jernigan reports that overuse and underuse are of particular concern for older adults, not only because of the high medication usage by this age group, but also because older adults are considerably more susceptible to side effects and drug interactions from medications than younger adults, since medications metabolize much slower in older people (Park & Jones, 1997).

The engineering strategies employed by the developer of the *Liberty 6000* to improve adherence were designed to reduce the physical barriers confronting older people in taking their medications that are related to declines in the sensory functions associated with normal aging as well as chronic illness. Complications due to
impairments from single or multiple conditions among older people are significant factors in medication nonadherence. The following is a description and the results of clinical trials of the Liberty 6000 upon which the current research is based.

Clinical Study and Findings

The purpose of the grant was to produce a small-scale prototype of an automated medication-dispensing and adherence-logging device, and to test it in a clinical setting. The research team included a geriatric physician, a research consultant, a geriatric nurse practitioner, a pharmacist, and a group of medical students hired to conduct patient visits. Patient testing was under the direction of the geriatric physician, and test data were compiled under the supervision of a geriatric nurse practitioner. It was also the nurse’s responsibility to ensure that no interim problems in the patients’ conditions occurred that would demand medication supervision alternatives. The project pharmacist provided all prescribed medication to be used by the patient-subjects during the testing phase. The value of having just one physician and one pharmacist involved in managing the prescriptions provided for a complete log of all medications disbursed to, and dispensed by, each patient.

Design

The testing and methodology were designed and supervised by a consultant for gerontological research. The project employed a quasi-experimental, multiple-group-time-series design. The testing included subjects from four groups as their own control and a fifth group as a randomly assigned control group, as suggested by Campbell and Stanley (1963). The design was a hybrid version of Campbell and Stanley’s true experimental Design 4 (Pre-test/Post-test Control Group Design) and the quasi-
experimental Design 7 (Time Series). The five groups consisted of the following: 1.) 20 arthritic patients; 2.) 20 vision-impaired patients; 3.) 20 hearing-impaired patients; 4.) 20 dementia patients, and 5.) 20 control subjects. The subjects were not randomly selected for the research because they came from the patient population of the Geriatric Assessment Program (GAP) at the University of North Texas Health Sciences Center. In the GAP clinic, nearly 60% of the client population is female; 70% White; 20% Black, and 10% Hispanic. The patients were selected on the basis of their conditions, as described in groups 1 through 4, above, and the likelihood that they would benefit from the use of the Liberty 6000. Variability within each group was controlled by eliminating subjects who, prior to testing, had either “no” or "complete" adherence. "No" or "complete" adherence was defined as those individuals with adherence records outside the normal range of adherence for that age group at a 95% or greater confidence level.

Methodology

Subjects were measured weekly for adherence during the pre-test, treatment, and post-test phases. Pre-test adherence data were collected from subjects in the experimental and control groups during week 1 to establish a baseline, and then in week 2 and week 4 prior to the treatment phase. At the beginning of week 5, the Liberty 6000 was installed in the subjects' homes, and adherence data were collected from subjects in both the experimental and control groups at the end of weeks 5 through 12. At the end of week 12, the dispensers were removed from the homes of the subjects in the experimental groups, and post-test adherence data were collected from the subjects at the end of weeks 14 through 16.
Measures of adherence were based on: 1.) weekly interviews with patients (i.e., direct questioning); 2.) manual pill counts (weekly physical counts of tablets and capsules remaining in vials during the pre-test and post-test phases); 3.) examination of the log tapes provided by the dispenser during the 8-week treatment phase; 4.) weekly interviews with caregivers of the 50 patients with home assistance; and 5.) clinical evaluations based on physical exams. Questionnaires with open-ended and closed questions were used to evaluate the subjects’ responses to the Liberty 6000 during weeks 2 and 4 of the pre-test phase, weeks 6, 8, 10, and 12 of the treatment phase, and weeks 14 and 16 of the post-test phase.

Questionnaires were also developed for the caregivers of half of the subjects in each category; the questionnaires addressed adherence and quality of life of both the subject and the caregiver. Caregivers were questioned twice during the pre-test phase and twice during the post-test phase about adherence and quality of life of both the subject and the caregiver. During the treatment phase, the caregivers were questioned at the end of weeks 6, 8, 10, and 12 about their opinions concerning how the Liberty 6000 may have been affecting these perceptions.

Each patient and caregiver of the 50 subjects received a $40 monthly participation stipend, and prescriptions were provided at cost plus a small handling fee. Patients and caregivers signed informed consent forms. Potential physical risks to the patients included over- or under-medication during the first few weeks of the trial phase, and increased drug toxicity resulting from non-compliant patients’ beginning to take their medications as prescribed. There were no physical risks to the caregivers in the study.
The working hypothesis for the evaluation was that adherence with prescribed medication regimens would increase for the experimental group with the introduction of the dispenser in week 5, remain stable with high adherence during the 8-week treatment period, and then return to pre-test levels during the 4-week post-test period. The first control variable in the experimental group was the subjects' major medical condition (i.e., arthritis, hearing impairment, visual impairment, cognitive impairment), and the second control variable was whether or not the patient required a caregiver. It was further hypothesized that the dispenser would be effective for patients with any of the four major medical conditions, and that the dispenser would be effective in increasing adherence among subjects both with and without caregivers.

Data

Complete count data were obtained on 111 prescription medicines taken by 32 subjects in both the experimental and control groups. The dependent variable in the analyses, adherence ratios, was the number of pills taken in relation to the number of pills prescribed during the time period. A perfectly compliant patient/subject would have a ratio of 100. A ratio of over or under 100 indicated the subject was taking too many medications or too few, respectively.

Results

Ratios from subjects in the experimental groups combined indicated increased adherence after the Liberty 6000 was introduced. The average adherence ratios remained within 10% of perfect adherence for the remainder of the study. Analysis of variance with repeated measures (ANOVA) confirmed a statistically significant trend over time in the adherence ratios for all experimental subjects. The t-tests revealed
statistically significant variation in adherence ratios between weeks 4 and 5, and reflected the trend toward increased adherence from the end of the pre-test to the introduction of the dispenser. This analysis confirmed that the dispenser was effective in increasing adherence with medication regimens.

Controlling for major medical conditions and including the control group, ANOVA confirmed a statistically significant trend in adherence ratios. Only the hearing-impaired showed no statistically significant time trends when analyzed separately. Among the experimental groups, the subjects most cognitively impaired were the least compliant during the pre-test period and were helped most by the introduction of the dispenser. After the introduction of the dispenser in week 5, their average adherence ratio dropped from 322.5 in week 4 to 100.1 in week 5.

Analysis

In the analysis of findings, experimental subjects who had no caregiver were compared with the experimental subjects who had caregivers. Adherence ratios revealed that the subjects with no caregivers were a remarkably compliant group, never more than 10% under- or over-compliant in any phase of the evaluation. In contrast, the subjects with caregivers were found to be more than 10% out of adherence during the pre-test phase, and they became significantly more compliant with the introduction of the dispenser. The subjects who required caregivers would be expected to be more frail than those who did not require caregivers and, therefore, to have more trouble with medication adherence.

Analysis of the Liberty 6000’s effect on caregiver stress confirmed that the amount of worry they reported decreased from the pre-test to the treatment phase, and
then increased during the post-test phase. The caregiver was under less stress when he or she had the Liberty 6000 to dispense the prescribed medications at the appointed times. ANOVA showed that this trend was significant. A second variable was a 21-item index of caregiver burden with a range of possible values on the index of 0 to 84. ANOVA confirmed a statistically significant time trend. Data and t-tests for weekly changes in caregiver burden revealed that the means fluctuated during the pre-test and treatment phases, but increased significantly in week 14 when the dispenser was removed. Once caregivers had become comfortable with the subjects’ use of the dispenser, its removal significantly increased their burden of stress.

Discussion

Two focus groups were conducted upon the completion of the clinical trials: one included patient-subjects with and without caregivers, and the other with caregivers. Caregivers identified those features of the Liberty 6000 that prevented access to medications at times other than dosage at the preset programmed times, and commented that the device's recording of the time at which the dispensed medication was taken or missed helped to ease caregiver burden. They indicated that they felt freed from their sole reliance on the patient's self-report and released from the role of human alarm clock for the elderly patients in their care.

Patient-subjects expressed a sense of dependency on the machine, and showed regret, some to the point of tears, when the device was removed at the conclusion of the treatment phase. When asked about an appropriate name for the Liberty 6000, patients agreed that "The Boss" would be a very good name because, as one woman put it, "It tells you what to do and when to do it." Patients without caregivers also felt that
their quality of life had increased because they were able to pursue their interests and activities free from having to remember which medications to take and when to take them. A wheelchair-bound woman commented that the machine freed her of her preoccupation with her insulin regimen because it reminded her when to take her medication, allowing her the freedom to focus her attention on her ceramics hobby. Patients and caregivers both expressed frustration that such devices were not available.

Most of the subjects wanted to be compliant; however, during the pre-test it was apparent they did not want to give up control over their medications. It was found that some of the subjects in the study were not receptive to a "brown bag inventory" when asked to hand over their medications for manual pill counts during the pre-test. Often they would gather them up from a variety of stored caches in shoe boxes, purses, pockets, and otherwise empty sugar bowls. Their reluctance to turn over their medications indicated a distrust of having their medications inaccessible to them. Another indication of this control issue, and a seeming distrust of the technology, occurred upon examination of a machine’s electronic log. From a weekly log, it was discovered that one machine had been tampered with, i.e., someone had lifted the lid to remove the contents from the wheel.

As under-compliant subjects in the study became more regular about taking their medications by using the device, their reactions to the medications required action on the physician’s part to decrease dosages. What became apparent was that a patient could become over-compliant as a result of becoming adherent to a medically-prescribed regimen.
Results of the clinical trials of the Liberty 6000 revealed that the use of the dispenser achieved improved medication adherence rates among its users, and aided those individuals faced with both physical and sensory impairments in taking their medications correctly and on time. The Liberty 6000 tackled these concerns by providing accurate dispensing of each medication at the prescribed time and dosage, in addition to making precise electronic recordings of medication doses taken and missed. The use of Liberty 6000 also contributed to the reduction of caregiver burden and worry over medications.

Basis for Continued Research

Attention to overcoming the mechanical and physiological barriers preventing older adults from adhering to their medication regimens is not the sole answer. Device utilization is a multi-layered phenomenon, extending beyond the mechanics and fit of the devices, and it cannot be treated as independent from social consequences. The decision by an older adult to use a device such as the Liberty 6000 for taking medication must be considered within the context of the individual's adherence in regard to medication-taking practices and behaviors. It would be an impossible task to develop a product as a means for improving medication adherence if there were no effort to understand why an individual chooses whether or not to take medication.

Little work has been done to conceptualize medication-taking behaviors from the patient's perspective. The general label of "adherence" tends to foster a unidimensional view of drug use behavior resulting in the loss of vital patient information (Brown & Segal, 1996). The patient-centered approach, however, offers a multidimensional context with respect to health behaviors of elderly people that lie outside the realm of
quantification, namely: cognition, physician-patient interaction, and illness experience, as well as both formal and informal networks of social support that older adults come to rely upon.

The application of the Health Belief Model can provide a useful framework in identifying those variables considered by elderly people in their risk/benefit assessment of certain prevention strategies and their commitment to them. Recognition by developers of these characteristics and how they may influence the circumstances under which patients will accept or reject the product (i.e., the optimal combination of personal and technological assistance) is essential for developing a clear and unbiased approach toward the incorporation of technology in assisting elderly people.

Effective approaches hold the potential to significantly affect morbidity and mortality in patients, and can significantly help to decrease health costs (Johnson, Williams, & Marshall, 1999). As technology continues to play a role in the enlightened, economical, and humane care of older people, successful solutions can be derived if social scientists and developers can pool their knowledge of how best to implement them among social groups and in individual cases.
CHAPTER 2

METHODOLOGY

Introduction

Even after nearly two decades of dedicated research into the problems of medication adherence among older people, this growing segment of the population continues to experience more adverse drug events than any other age group because elderly people are exposed to a greater number of medications. Social science researchers have called this phenomenon “the other drug problem” and have called for a multidisciplinary approach on the part of manufacturers, social scientists, and patients/consumers to find practical, achievable, and effective strategies and solutions to prevent medication errors and the complications associated with them.

Conducting focus groups involving elderly participants can provide the opportunity for an in-depth inquiry using a patient-centered approach to issues of medication adherence so that the appropriateness of strategies for improving adherence can be assessed. The scholarly development of group interview techniques within the social sciences has lagged behind the rapid popularization of this method because social scientists are in disagreement about the way in which qualitative work should be conducted (Coreil, 1995). Furthermore, the inclusion of elderly people as members of focus group discussions has not occurred often because of the uncertainty about whether such individuals would interact effectively and whether their disabling conditions would be too great for the method to be feasible. Quine and Cameron say:
Focus groups have been used across a wide age range from young children to middle age, but have been reported infrequently with elderly people. Indeed, two recent textbooks on aging, which describe research methods in gerontology, do not include focus groups in the methods described.

The use of focus groups with disabled elderly (75+ years) seniors has not been reported. This could be because researchers consider that (even after the exclusion of elderly people with cognitive disabilities), associations with aging (mobility limitation, visual and hearing impairment) are too great for the method to be feasible. It may also reflect uncertainty that such people would interact effectively as members of a focus group. (1995, p. 454)

Qualitative research involving elderly people and their commitment to device usage can help to provide insight for researchers about what factors influence why people may or may not be inclined to use assistive devices, even when the need is overwhelmingly obvious.

Qualitative Research Investigation Overview

The qualitative research investigation employed a focus group designed to gather qualitative data on the acceptance of the Liberty 6000 as a way of assisting elderly people in taking their medications. The Principal Investigator (PI), acting as moderator, gathered information by listening to the participants express their feelings and perceptions about their medications, and ponder how these perceptions govern their use and guide their considerations and concerns about using the Liberty 6000 in their medication practices. Questions were designed to learn about existing practices involved in taking medications, how successful they are, and what the participants
believe are the advantages and disadvantages of using such a device in their homecare setting. Open-ended questions established a general direction for the interview while offering opportunities for participants to direct the conversation to areas of specific concern to them.

Discussions among participants provided clues to the potential success or failure of the Liberty 6000's implementation. Findings have helped to determine if the Liberty 6000 is a suitable intervention strategy to improve the medication-taking practices of elderly people who are living semi-independently or independently within the community. Other ideas have come to light that can enhance acceptance and use of the technology's potential for preventing medication errors that have been found to be applicable to the broader population of potential device users. The data collected provided valuable insight into how older adults manage their medications to receive the greatest benefit from them, and whether or not they think the dispenser demonstrated features that could provide them with additional benefits beyond what they now have. Findings from the study also have contributed to suggestions for device improvements, ways to make the device more affordable to larger segments of the elderly population, and direction for future research to gather the opinions about the device from those individuals who serve as caregivers to older adults in both formal and informal care settings.

*Study Design*

Focus groups are an accepted method of qualitative data collection in health research when the intent is to gather data on a specific topic generated from a wide range of experiences and opinions expressed by many and representing a collective
view. In the study of medication adherence, focus groups can offer a fresh look at people’s understandings and belief systems and their effect on adherence. Probably the single most powerful advantage of the focus group over the individual survey approach is the benefit of "group synergy," where the results become more than the sum of the individual experiences, allowing the investigator to capture the dynamic nature of group interaction (Krueger, 1994).

To be able to maximize these advantages, the most suitable conditions were sought in order to facilitate an active discussion and encourage participants to freely engage in dialogue. With respect to both the involvement of older adults and the sensitive and personal nature of the subject dealing with health matters, it was important to take appropriate measures to create a setting that was conducive to the sharing of views and opinions, where individuals would feel unthreatened and not have concerns about confidentiality. The traits and characteristics of the older population targeted for this study also had methodological implications for the design, planning, and running of the focus groups.

As mentioned above, the existing literature on using elderly people as participants in focus groups raises concerns that impairments associated with age-related declines in sensory, perceptual, cognition, and communication abilities, may present challenges that are too great for focus group methodology (Quine & Cameron, 1995). Findings from these studies relevant to the present research investigation’s methodology were taken into account in the planning and formulation of the research. Solutions for minimizing their effects on the research process and outcome are included in the following discussion of the executed plan for this qualitative study.
Sample and Recruitment

The research investigation was conducted between August 2003 and January 2004. The study was conducted using seven focus groups from which information was gathered, transcribed, analyzed, and interpreted to shed light on the perceptions of older adults about using the Liberty 6000 to dispense their medications. The total number of participants was 49. The group sizes ranged from 5 to 10 participants and included residents living either independently or semi-independently in a home setting or residential-group care setting. Figure 2-1 shows the composition of the focus groups by gender, race, and age.

**Figure 2-1: Composition of the Focus Groups by Gender, Race, and Age**

Every attempt was made to stratify groups by age, race, ethnicity, and socioeconomic status. The study requested men and women age 65 years and older; of Black, Anglo, and Hispanic descents; who suffered from one or more impairments.
relating to tactile, memory, hearing, or visual acuity; and who were taking three or more medications on a daily basis. However, since the primary objective in the recruitment process was to find those participants who were most likely to benefit from the use of the Liberty 6000 device in their daily medication practice, this study was neither a representative nor random sample of the population of older disabled adults.

Forty-seven percent of the participants were 65-74 years old, 31% were aged 75-84, and 22% were over 84 years old. Sixty-five percent of the participants were women, and 35% were men. Sixty-five percent of the participants were White, 24% were Black, and 12% were Hispanic. (The latter figures do not add to 100% because of rounding.)

While the elderly population is not a homogeneous group, there was an opportunity to select individuals with common characteristics for this study. These characteristics include similarities in kinds of chronic conditions that they have learned to manage on a daily basis and that dictated similar experiences in terms of the number and kinds of medications prescribed, as well as the barriers or concerns they face in meeting their medication regimens. These findings are examined extensively in chapter 3. Other common characteristics included living arrangements: whether they are living in their private homes, in retirement communities or nursing homes, and whether or not they have caregivers. While participants were not asked directly about whether or not they lived alone, throughout the discussion living arrangements were made known by about 38 of the 49 individuals. We learned that eight of these 38 participants were married and living with their spouses; of the remaining 30 whose living arrangements were known, three lived with a family member other than a spouse, and eight resided in an assisted-care facility where they were cared for by nursing staff. Seventeen of those
living independently resided in rent-controlled apartment units targeted for elderly residents on fixed incomes. The remaining 24 lived in private residences and retirement communities. Shared characteristics led to shared experiences, which generated a familiarity that formed bonds for discussion and exchange similar to that found among individuals who have known one another for quite a while. Researchers find that people are more willing to disclose information about themselves to a group of people who resemble them in various ways than to a group that differs from them (Krueger, 1994).

Recruitment of Subjects

The recruitment technique in gathering individuals was purposive sampling. Participants were recruited by contacting directors of residential facilities and senior centers that served elderly clientele. In one instance, the Principal Investigator (PI) presented the study and the need for participants to Elderly Service Providers of Denton County (Texas), an association of directors of elderly service provider organizations. Copies of the flyer describing the study, a copy of the consent form, and a sample letter of support were subsequently emailed to each facility director who had expressed interest in recruiting volunteers for the study. Table 2-1 lists the locations and types of facilities where the focus group meetings took place. Fictitious names have been substituted for the actual names of the facilities. A detailed description of the residence and socioeconomic status of the members in each facility is in Appendix E.
# Table 2-1: Types of Facilities and Number of Participants from Each Group Identification

<table>
<thead>
<tr>
<th>Group Identification</th>
<th>No. of Subjects</th>
<th>Type of Facility</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherry Hill Apartments</td>
<td>9</td>
<td>Senior residence independent residential units</td>
<td>Southwestern U.S.</td>
</tr>
<tr>
<td>Meadows House</td>
<td>8</td>
<td>Private assisted-living residential facility</td>
<td>Southwestern U.S.</td>
</tr>
<tr>
<td>Township Senior Community Center</td>
<td>10</td>
<td>Community center</td>
<td>Southwestern U.S.</td>
</tr>
<tr>
<td>Greater Senior Community Group</td>
<td>6</td>
<td>Community center</td>
<td>Southwestern U.S.</td>
</tr>
<tr>
<td>Plantation Manor</td>
<td>5</td>
<td>Senior residence independent residential units</td>
<td>Southwestern U.S.</td>
</tr>
<tr>
<td>Magnolia Retirement Community</td>
<td>6</td>
<td>Private independent living residence</td>
<td>Southeastern U.S.</td>
</tr>
<tr>
<td>All Saints Baptist Church</td>
<td>5</td>
<td>Baptist church</td>
<td>Southeastern U.S.</td>
</tr>
<tr>
<td><strong>Total Number of Subjects</strong></td>
<td><strong>49</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The directors and staff of each of the facilities assisted the PI with recruiting in a variety of ways. The initial contacts with potential participants at the Cherry Hill Apartments, the Plantation Manor, and the Meadows House, were made by the directors of the facilities, who gathered names and telephone numbers for the PI. To recruit participants from the Township Seniors Community Center, the PI visited the center located in a primarily White middle-to-upper class suburban residential area. Together, the PI and the senior activities program director spoke with individuals that the program director thought might meet the eligibility requirements and be willing to participate. The PI arranged to present a description of the study to the members who normally convene for social events and special programs. It was felt that if the focus groups could be scheduled to coincide with regularly-scheduled meetings at the center,
then individuals might be more inclined to participate. If focus group sessions were scheduled on the same day that prospective participants already would be visiting the center, this would eliminate an extra trip. It was felt that motivation to attend might be improved by knowing that the commitment to participate was limited in time and scope.

Contacting the Greater Senior Community Group, another community center offering programs to low-income seniors, led to the assistance of a student intern on the staff who made the initial contacts with the clientele and collected the names and telephone numbers for the PI. The PI also was invited to give presentations about the study at residence hall meetings at the Plantation Manor. If individuals could be recruited from a single community, the issues of transportation to the meeting place would be resolved more easily. Such facilities also usually had well-lighted, unobstructed closed meeting rooms that could provide a familiar, relaxed, informal, neutral, and quiet setting, and that were well suited for anyone with special mobility needs. After the presentation, recruitment forms were made available at the facilities. Potential participants completed the forms and returned them to the facility directors. Each participating facility director provided the PI with a letter of support enabling the PI to contact potential participants, and also offered a meeting room in the facility for conducting the sessions.

Five of the seven focus groups took place in the Southwestern region of the United States. In early January 2004, sessions were conducted at the Magnolia Retirement Center and All Saints Baptist Church (in the Southeastern United States) enabling the PI to fulfill the demographic diversity she sought since she was unable to arrange for sessions locally that included White and Black males over 65 years of age;
these were needed to balance the demographics. A family member of the PI, residing at
the Magnolia Retirement facility, facilitated the initial contact with two groups of
participants: one group of White males from the Magnolia Retirement Community facility
and one group of Black males from the All Saints Baptist Church.

Several other community centers were contacted, as was a retirement facility
with a large male population. These either never responded or were unable to provide
interested parties. A local pharmacist offered to display flyers advertising the study to
his elderly clientele; however, no responses were returned. The PI initiated numerous
discussions and meetings with a pastor of a church with a primarily Black congregation,
but this effort to recruit individuals proved fruitless.

The PI called each individual from the Cherry Hill Apartments, the Plantation
Manor, and the Greater Senior Community Center who had expressed interest in
participating in the study to determine whether or not the individual met the criteria of
age, gender, ethnicity, and number of prescription medications taken. Once qualification
was determined, participants were informed of the time required (approximately 2.5
hours) and the stipend ($40), and were informed that refreshments would be served
after the session ended. After asking if the potential participant had any questions, the
PI ended the call by stating the date, time, and place to meet for the study. The PI
called to remind participants two days prior the session that they were to attend. The
directors of these residential facilities assisted by posting flyers as a reminder about the
meeting.

When prospective subjects for all groups arrived at the meeting place, the PI and
assistant moderator reviewed with them the purpose of the study and reviewed the
informed consent forms with each of the individuals to make sure they understood the intent of the study and what they were being asked to do. Once the procedures had been explained, the PI and assistant asked the individual to explain to them what the individual understood. No prospective participant was turned away because of ineligibility, or for any other reason.

Research indicates that incentives such as remuneration and refreshments have little effect when circumstances beyond an individual's control prevent attendance. Among this generation of participants, particularly, events such as illness and doctor appointments can be barriers to attendance and were taken into account when recruiting. There were only two instances that arose in the course of this study in which individuals who said that they would participate were unable to attend because of such a conflict. Morgan recommends over-recruiting by 20% to allow for people who will not show up, particularly in the case of elderly and disabled elderly people and their caregivers (Barrett & Stuart, 2000). What we encountered, rather, were instances where participants had to leave the sessions early because of transportation issues but still received their remuneration for the time they did participate, and their absence did not noticeably affect the dynamics of the group discussions.

Session Arrangements and Participant Screening

Research indicates that difficulties associated with age-related declines in the areas of cognition and communication abilities will influence and determine the duration of the session. Likewise, it will influence and determine the most suitable physical setting, down to the lighting and seating arrangements. In choosing a location in which to conduct the focus group, it was important to select one that facilitated discussion.
Age-related deficits in focusing attention, attention span, and in speech and auditory function can be accommodated in an environment that is free from both audio and visual distractions.

The locations for the focus groups were determined primarily by where the participants resided. The settings in all cases were easy to find and easily accessible, so, regardless of whether the participants knew one another, the setting itself fostered a sense of familiarity and comfort. The sessions held at the Cherry Hill Apartments, Plantation Manor, and Meadows House were conducted in community rooms at the respective residential facilities. The session at the Magnolia Retirement Community facility took place in the home of the PI’s family member who was instrumental in recruiting potential participants from the residential community in which she lived. The family member was not present during the session. The other session, at All Saints Baptist Church, consisted of a group of Black males recruited from the church’s congregation and was held in the church’s boardroom. The sessions conducted at the community centers were held in the senior centers’ meeting rooms.

Sessions were scheduled to mesh with each facility’s mealtime, either before or after the meal. The groups scheduled after the noon meal were provided with refreshments following the session. In the summer, sessions were scheduled in early afternoon to accommodate participants who wanted to get their errands done earlier in the day before the heat made it difficult for them to be outside.

At each session, tables were arranged in a U-shape, around which were straight-backed, cushioned chairs. Two video cameras on tripods were used to record the audio output from the discussion and were arranged so as not to focus on any one participant.
The cameras remained stationary throughout the session. The *Liberty 6000* pill dispenser was placed on a smaller table in the center of the U-shaped arrangement. Samples of commonly available pillboxes were placed on the tables so that they could be easily referenced by the participants during the discussion.

**Issues of Safety and Confidentiality**

Prior to the session, the PI, along with the assistant moderator, met one-on-one with each of the participants to discuss the consent form, explain the purpose of the study, and to obtain signed forms from each participant (See Appendix A). The consent form explained that there were no inherent health or physical risks to those who chose to participate in the focus group study. They were advised that they could withdraw from the discussion at any time without prejudice, penalty, or loss of benefits, and still receive their stipend for participating. Participants were also told that they were under no obligation to purchase the device, nor were they promised the use of the device at any discount as a result of their participation. These measures were taken to control biased response and to control for reliability and validity testing. Records were kept confidential between the research personnel and participants. The results of the discussion were compiled in a manner that made it impossible to identify any single individual's responses in the study results. Each participant was identified by number from a table diagram that had been drawn by the assistant moderator to record the seating arrangement. During transcription, the PI used the identifier *FocusGroup+seatplace+gender+ethnicity+age*, to correspond the recorded statements with the speaker. For example: a comment made by a White woman, age 68, from the Cherry Hill Apartments, sitting 4 seats to the left of the PI, was coded as CH4FW68.
While videotaping was used as an aid in the transcription process, the tape(s) were made available for review only by the researcher for the purpose of making a transcript of the discussion, after which the tape(s) were erased. After the transcription process was completed, for ease of reference, each alphanumeric code was replaced by a fictitious name. The real names of the participants were not used; this was done to protect the confidentiality of the participants’ personal medical information.

These one-on-one conversations with the participants were used as “icebreakers” for the PI and assistant moderator and an opportunity to ascertain who among the participants were dominant talkers, shy people, and ramblers, so that they could be seated at appropriate locations in relation to the moderator, as suggested by Barrett and Kirk (2000). Special needs of the individual, such as wheelchair or walker accessibility were also noted. If hearing appeared to be difficult for a participant, plans were made to seat the individual close to the PI (who acted as moderator).

Participants were asked how they preferred to be addressed and were provided nametags so that they could be readily addressed by name. The moderator also wore a nametag.

After signing the consent form, each participant was invited to take a seat in the meeting room. Once everyone had entered and was seated, a “Do Not Disturb” sign was posted on the door to minimize distraction from extraneous sources. To avoid fatiguing the participants, and to avoid conflicts with their scheduled activities, every effort was made not to extend the sessions beyond the 90 minutes allotted for the discussion.
Variables

There were one dependent variable, six independent variables, and four support variables associated with this study, as illustrated in Figure 2-2.

Figure 2-2: Relationships Among Variables Used in the Study

Relationships Among the Study Variables

**Dependent Variable**

The dependent variable is the adoption of intervention of the older adult using the device. Can a patient successfully execute the behavior required to produce the outcome? Adoption of intervention will be measured by: 1.) whether or not taking medications helps the older adult manage his or her illnesses, and 2.) whether or not the use of the machine will aid the participant in taking medications correctly.
Independent Variables

The following are the independent variables along with the questions and prompts that were used to measure the variables, and some examples of verbatim responses made by participants as indicators of the variables being measured. The page number that follows each response indicates where in Appendix F the response can be read in context. (Appendix F is the transcript of the focus group tapes.)

Discussion of Independent Variables

The questions and prompts were used to evoke responses from the participants. The questions were open-ended by design, and therefore they elicited responses by the discussion groups to a number of the variables, not always in a straightforward one-to-one fashion. Since many of the questions were open-ended, the responses(s) elicited might be about either benefits or barriers; it was impossible to tell in advance what types of responses would arise. Each question was designed to be open-ended to try to avoid having the question introduce any bias that might influence the response. Because of the conversational nature of open-ended questions and the complex dynamics of focus group discussions, in some cases a response was more closely related to an earlier question than to the question that immediately preceded it. In those cases, the PI paired the response with the appropriate question, even though it did not immediately precede the response.

The name of the variable, some associated questions, and the responses to measure the variable are grouped in the following figures:
Figure 2-3: Perceived Susceptibility/Severity

Variable

Perceived susceptibility/severity to a worsening condition that may result from not taking medication properly

Key Questions and Prompts

“How do you remember to take your medications?”
“What are some of the difficulties you have in taking your medications?”
“Do you ever take a break from your medications?”

Responses

“Well, I take Coumadin . . . every day . . . because if I leave it off, I take the chance of having a blood clot go to my heart [Kate, White female, age 74, Appendix F, p. 167].

I have some problem with my blood pressure, because once it gets out it is very difficult to get it regulated back [John, Black male, age 69, Appendix F, p. 222].

But our family history is strokes, so I will probably go ahead and have one anyway. If you want to be a bona fide member of this family, you have to have a stroke [John, Black male, age 69, Appendix F, p. 214].

I am real close [in age] where my mother was when she died, but I am not even about to approach my father’s age. . . . If he hadn’t had a fall. . . . he’d probably bury me [John, Black male, age 69, Appendix F, p. 216].

He [Henry’s father] had a massive stroke. So, it always worried me until I got past 54, was I going to die? Because I knew I had blood pressure problems [Henry, Black male, age 69, Appendix F, p. 216].

I will try to get my appointment for an examination in the morning when my blood pressure is very good, but when I schedule them for the afternoon after work . . . [Ben, Black male, age 67, Appendix F, p. 215].
Figure 2-4: Perceived Benefits of Medications

Variable

Perceived benefits of taking medications to control susceptibility/severity to a condition

Key Questions

“What are the benefits from taking your medications?”

“Do you ever take breaks from your medications?”

Responses

We keep ourselves medicated in order to keep us healthy [Heather, White female, age 73, Appendix F, p. 196].

I despise taking all those pills, but they are a necessary evil, a necessary evil—they keep me going—I presume [John, Black male, age 69, Appendix F, p. 216].

I never take a break from my medicine. . . . I want to be independent as long as I can [Norma, Hispanic female, age 69, Appendix F, p. 189].

Talking about insulin. It’s a matter of discipline. On one examination my sugar was in such good [shape]. And if I had lost some of my weight she could drop my doses down [Ben, Black male, age 67, Appendix F, p. 217].

So I spent a month in the V.A. hospital. And I was told that I would not be off insulin for the remainder of my life. And that was in February, and by September I was off the medicine [Henry, Black male, age 69, Appendix F, p. 217].

Because if you don’t take your medicines on time, you lose a minute—a minute of your life. I am very thankful for my medicines all the time [Norma, Hispanic female, age 69, Appendix F, p. 191].
Figure 2-5: Perceived Barriers to Medications

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived barriers to medications</td>
</tr>
</tbody>
</table>

Key Questions and Prompts

“What are some of the difficulties you have in taking your medications?”
“Does the price of medication present a problem to you?”
“Do you have difficulty opening bottles?”
“Do you feel that medication controls your life?”
“Does taking your medication interfere with any of your activities?”

Responses

_To remember to take my pills is my problem_ [Jean, White female, age 76, Appendix F, p. 164].

_I make the sure the tops are on but not tight where I can’t open it_ [Myra, Black female, age 86, Appendix F, p. 188].

_I would forget to reorder my prescriptions_ [Janet, White female, age 76, Appendix F, p. 181].

_I tried it [writing it down], but it don’t work_ [Al, White male, age 70, Appendix F, p. 164].

_I don’t have sensitivity in my hands, and sometimes the medicine falls out_ [Norma, Hispanic female, age 69, Appendix F, p. 188].

_Paying for it [the medicine] is a problem_ [Jean, White female, age 76, Appendix F, p. 166].

_I have trouble swallowing that potassium_ [John, Black male, age 69, Appendix, F, p. 214].

_On medicine I take is for arthritis, and if I take too much of it, it makes me kind of sick_ [Beatrice, White female, age 77, Appendix F, p. 164].
Figure 2-6: Perceived Benefits of the Device

Variable
Perceived benefits of the device

Key Questions and Prompts

“What do you think would be the advantages of using the Liberty 6000 to take your medications?”
“Do you like the way the device looks?”
“Do you think the notification to a caregiver would be helpful?”
“Do you think this machine would be freeing?”

Responses

I would be able to take my medications on time every day and wouldn’t have to worry about whether I took it or didn’t take it. It would be great. It would give me a peace of mind about my medications [Minerva, Hispanic female, age 72, Appendix F, p. 170].

Well, I think it would be wonderful for anyone who forgets their medication; I think it would be great [Kate, White female, age 74, Appendix F, p. 172].

It is very important that it sounds and tells also when you have to take your medication [Delores, Hispanic female, age 74, (as translated by Norma), Appendix F, p. 192].

The light and alarm is a very good feature. I could use it like an alarm in the morning [Herman, Black male, age 69, Appendix F, p. 198].

I think it [the machine] is fantastic, especially for elderly people. Their children won’t have to worry about overdosing or when they are missing their tablets [Janet, White female, age 86, Appendix F, p. 182].

I can certainly see how it can keep some patients from overdosing [Heather, White female, age 73, Appendix F, p. 198].

I think the information would be helpful to the family or the caregiver, the doctor, I really do [Doris, White female, age 66, Appendix F, p.200].

If it would keep you out of the nursing home, I’d go for it [Beatrice, White female, age 77, Appendix F, p. 169].
Figure 2-7: Perceived Barriers to the Device

Key Question

“What do you believe are the disadvantages of the machine?”

Responses

Most of the patients here would not know how to use it [Caroline, White female, age 83, Appendix F, p. 177].

Well, you heard several of us say that the money we pay out for our medications is a problem, so to buy a machine like that on top of not hardly being able to hardly afford the medicine, would be a problem in my thinking [June, White female, age 77, Appendix F, p. 169].

You don’t need one that big for an individual use [Jewel, White female, age 77, Appendix F, p. 183].

My problem is—what I worry about—is when the drawer comes out and is ready to take the pill, I have two little granddaughters that are with me, and I would worry if it were opened [Adelle, White female, age 76, Appendix F, p. 182].

People with rheumatism would have a problem. Someone would have to load these [Rachel, White female, age 86, Appendix F, p. 176].

I don’t have enough medications. But I don’t forget mine [Arthur, Black male, age 69, Appendix F, p. 198].

I didn’t learn to type in school, and I don’t use a computer, so for some people it could be confusing. It could scare you [Hazel, Black female, age 68, Appendix F, p. 199].
Figure 2-8: Cues to Action

Variable

*Cues to action* associated with helping one to take medication

Key Question

“How do you remember to take your medications?”

Responses

*I have my medicine lined up on my dresser, and I remember to take them* [Myra, Black female, age 86, Appendix F, p. 187].

*I have three pillboxes and fill them up. I stick my toast in the toaster, and I start taking my pills. I set them up three weeks in advance* [Janet, White female, age 86, Appendix F, p. 179].

*They give me mine. They order the medication so I don’t have to worry about doing that. They dispense it morning and night* [Marylin, White female, age 65, Appendix F, p. 173].

*My body tells me, “You didn’t take your medicine.” Arthritis pain tells me that I didn’t take my medicine* [Al, White male, age 70, Appendix F, p. 166].

*I absolutely forget my evening medications, and you get home and relax and then acid reflux starts reminding me* [Heather, White female, age 73, Appendix F, p. 199].
Support Variables

Support variables include the demographic, sociopsychological, and structural variables that may affect an individual’s perception and influence his or her health-related behavior. The variables identified in Figure 2-2 (page 50) that could affect the independent variables include age, race, gender, ethnicity, and socioeconomics.

The Discussion Format

Once the groups were assembled and seated in the meeting room, the PI welcomed everyone and thanked them for their time and willingness to participate in the discussion. The goal of the key questions and prompts used by the PI in leading the discussions was to gather data from the participants in order to determine if they thought the Liberty 6000 pill dispenser could be a useful device in helping them self-administer their daily medications.

Key questions were used to probe for the strategies that the participants were already using to follow their prescribed medication regimens, and what they believed were the advantages and disadvantages of their strategies. The functionality of Liberty 6000 was then demonstrated to them, after which they were asked to comment on how useful the device would be in assisting them in taking their medications. Some of the key questions were accompanied by a set of “prompts” when necessary to help facilitate discussion, but were not intended to lead participants to respond in any particular way.

Due to the working memory limitations of many elderly people, the questions were designed to be short, using simple language, and concerned one issue only so that they could be best communicated and understood. It was paramount to keep the
questions simple and to avoid those that have multiple interpretations or would introduce any ambiguity. It was a concern that participants might forget the question if it was too complex. Caution was taken in using examples for cueing purposes. While the moderator did not want to bias the response by providing samples of responses, cues, or prompts, were used as probes only after the participants had given some insights (Krueger, 1998, Kit 3). In this way, the prompts helped to expand the conversation.

Another way used to facilitate the discussion was to have on display a variety of devices that participants found familiar, because they either were currently using them or had experience using them in the past. Having the devices displayed facilitated their reference to them and eliminated the need to describe them to others and thus lose momentum. Older people, as is documented in the literature, sometimes have difficulty recalling words that appropriately convey what they wish to express. Therefore, having a device at hand not only expedited any reference, it provided participants with the ability to show how they use it. Also, by allowing the participants to handle a particular device, the moderator could observe any difficulty experienced with a feature of the device, even if it was not verbally expressed.

The key questions also served as icebreakers. The PI felt that this would be an effective way to get everyone involved in the discussion, since everyone would have something to contribute.

Ending Questions

After all of the key questions were asked and discussed, the PI (moderator) briefly summarized to the group the major points that arose during the discussion. Each participant was asked if the summary accurately reflected the discussion. This gave the
participants a chance to review what had been said and to make any additions or modifications. The final questions also asked explicitly if they had anything else they would like to contribute.

Validity

Focus groups claim high face validity, due largely to the fact that responses and explanations come directly from clients and not from secondhand summaries, thereby offering immediate validation of information by members of the group (Gray-Vickery, 1993). However, the validity and reliability of data gathered from focus group discussions depend on procedure as well as context (Krueger, 1994). These concerns were taken into account in the way focus group questions were written and presented, and by the moderator’s conscious focus on maintaining objectivity and consistency in the presentation of topics within a group as well as across several groups.

Maintaining consistency in questioning throughout the series of focus group sessions was necessary to ensure the validity of the data. Every attempt was made by the PI for the questions from group to group to remain consistent since the PI did not know if similar findings would result from group to group. There were instances where the wording of questions changed but still retained the equivalent meaning. Paraphrasing was at times necessary if the original question was met with silence, or when participants talked but were not addressing the question.

The key questions used in the study were pre-tested prior to the first focus group interview to add validity through the development of a videotape. Immediately following each question, a series of actors provided responses to the questions. Asking the questions aloud helped to determine whether the question flowed, if it was awkward-
sounding, or if the emphasis was appropriate. During question development, care was taken to avoid complexity and incomprehensibility.

The selection of actors for the video was based on the sample’s characteristics of the potential group participants. All of the actors were over 60 years of age and included two White males, one Black male, one White female, and one Hispanic female. All of the actors signed release forms and were compensated monetarily for their time. Prior to the taping session, each actor was informed about the purpose of the video and was shown a demonstration of the Liberty 6000. Each actor was provided a script that included the key questions and a variety of responses from which the actor could choose. The responses were based on findings from the adherence literature and served as discussion points for the actors. (See Appendix B for the script of the videotape.)

The purpose of the videotape was to ensure that the questions were clearly presented the first time, and to maintain consistency across group discussions. The videotape was also intended to help minimize delayed responses and to keep the discussion on course. The use of video was intended to help individuals remain better focused on the specific topic of conversation.

However, after initial conversations with the participants while they completed the consent forms, it appeared to the PI that it would not be difficult to engage the participants in discussion about their medications or the Liberty 6000 pill dispenser and that they would not need much prompting. Further, it was thought that the video might have some negative impacts on the group: 1.) the comments on the video might influence the comments from the group and give the impression that the PI was
prompting them for the “right answers”; 2.) the video might be seen in a condescending light by implying that the participants were not capable of coming up with their own thoughts and ideas drawn from their personal experiences; and 3.) presenting the videotape would require the session to extend beyond the length of time that the participants could remain comfortable and attentive. Therefore, in an effort to maintain the reliability of the data across groups, the prepared video was not used during any of the sessions.

The moderator, who was also the PI, had two objectives: to maintain control and to remain objective. The moderator's control over the sessions ensured that the discussions stayed on target and that the information gathered met the research objectives. The moderator remained objective with respect to the topics, and this ensured that the data was unbiased. The degree of success attained in meeting these objectives increased the degree of validity and reliability of the data in the final analysis.

How to deal effectively with communication and attention deficits among a group of older participants while exercising control over the discussions was of primary concern. Laboratory studies have shown that aging is associated with increased difficulty in sustaining attention and performance over long periods of time. It is up to the moderator to make his or her control unobtrusive so that it provides an atmosphere that promotes free-flowing dialog while preventing participants' attention from being diverted. Another advantage for keeping the discussion on course was to render more easily a thorough description and interpretation of the resulting data. The moderator's efforts to keep the discussion moving also reduced the chance of the participants' losing interest and becoming fatigued through a lengthy session.
A big challenge for the moderator was the ability to remain neutral while actively involved in the research investigation. The moderator made every attempt to display both tolerance and respect for the participants, and to exhibit interest both in the participants and their viewpoints, regardless of their experience, orientation, or bias.

Discussion of medical conditions can be quite personal in nature. The moderator did everything possible to help generate a setting that was conducive to discussions of matters that are usually shared only among close friends and family members, and quite possibly sometimes not shared even with physicians. Even the most skilled and tactful moderator, in asking certain kinds of questions, risks rejection or refusal from participants, but the moderator must remain resilient. So while the moderator found some viewpoints of participants vastly different from her own, care was taken to suspend personal views and remain emotionally neutral, and to be diligent in seeking out the perceptions of the group participants.

The test of validity of focus group questions was found to be high when the responses across focus groups to the question asked became predictable, or when the response had reached what is known as "theoretical saturation."

Reliability
The following methods were employed to aid in ensuring data reliability:

- Question sequence
- Electronic data recording
- Participant verification
- Debriefing session
Sequencing the questions used to conduct the group discussions allowed for maximum insight into the topic as well as to ensure reliability. Questions proceeded from those that concern present medication-taking habits and behaviors to those that solicit more in-depth information, and the specifics about the benefits and disadvantages of using the Liberty 6000.

The use of electronic data recording (audio and video) enabled the PI to reconstruct critical elements of the focus group discussion. If a question arose during videotape transcription, the audio recording served as backup documentation and was used as a reference for clearing up any confusion or error.

Participant verification, ensuring that the participant had adequately understood the intent of the question, was implemented by providing each individual an opportunity to offer a summary statement or to respond to a summary of key points while still in the group setting.

To avoid the effect of timing on the reliability of the information, debriefing sessions took place between moderator and assistant immediately after each focus group in order to recall and capture first impressions, and to contrast findings from earlier focus group sessions while this information was still fresh in their minds. The sense of the group, the mood of the discussion, and the eagerness of some participants when sharing their ideas, are not captured on tape, and they are the impressions that are first to fade with time.

Transcribing and Analyzing Focus Group Results

Data transcription and the processes to begin data analysis occurred simultaneously. The PI transcribed the discussions from each of the seven 90-minute
focus group sessions into Microsoft Word document files. This software was selected because of its sorting and word search functions for use in categorizing and counting words and patterns of words during the analysis of the data. The process generated 59 pages containing about 2,600 lines of text. The videotaped recording of each group session was typed into a script format. All comments were typed word-for-word, sequentially as they occurred in the dialog. Each line of transcribed text was associated with the unique identifier for that individual (i.e. CH4FW86). The moderator’s questions and prompts were also transcribed in the places in which they occurred within the discussion. All seven transcriptions are included in Appendix F. In the process of transcribing, the PI also typed (and placed in brackets) her observations such as the inflections in the individuals’ voices if the tones conveyed feelings such as frustration, satisfaction, sarcasm, or humor. Comments that were made as asides or between participants also were transcribed wherever they occurred. The PI also noted gestures that participants made with ones’ hands, eyes, heads, etc. to emphasize a point.

As was previously mentioned, The PI noticed while transcribing that in many instances the comments did not relate to the most recent prompt or question, but rather to an earlier question. Therefore, during the analysis of the data, the PI sorted the lines of the transcript so that all statements for a particular individual could be grouped together. This action was taken to identify whether there was a relationship between the number of times an individual stated the same point (possibly for emphasis) and its importance. One problem encountered with this process, however, was that in most instances the statements lost their relevance when taken out of their original context within the flow of the dialog.
Analysis of focus group data was accomplished by comparing and contrasting data to find common patterns. The PI’s primary task was to identify those opinions, ideas, and feelings that were repeated and were common to several participants, even though they were expressed in different words and styles (Krueger, 1998, Kit 6). To accomplish this objective, during the transcribing process the PI kept a list of words that were often repeated or similar in meaning and that denoted positive or negative feelings or impressions about issues being discussed. In analyzing the data, the PI performed word searches, and word counts to help categorize the data by benefits and barriers as they related to either taking medications or using the device. This grouped data was used to construct the tables of independent variables in chapter 3.
CHAPTER 3
FINDINGS

Introduction

The proposed research investigation discussed in chapter 2 was conducted between August 2003 and January 2004. The study was conducted using seven focus groups from which information was gathered, transcribed, analyzed, and interpreted to shed light on the perceptions of older adults about using the Liberty 6000, an automated medication dispenser designed to help older adults take their medications. Descriptions of the groups and the group participants are provided. The data collected provided valuable insight into how older adults manage their medications to receive the greatest benefit from them and into whether or not they thought that the dispenser demonstrated features that could provide them with additional benefits over what they were doing on their own.

Findings from the study also brought to light factors that may prove useful in generally predicting device use among an older group of adults. Those factors include how issues such as illness perception, severity of conditions, and the benefits of taking medication can serve as motivators to device use, and whether participants feel that the benefits outweigh the barriers to device use over current self-care or assisted practices in achieving improved medication adherence outcomes and contribute to their overall welfare. Findings from this investigation may provide a useful set of indicators for other device developers by which they can gauge design and performance considerations to assist older adults in their daily living.
Variables

The discussion of the findings is based on the variables identified below, along with a graphic representation of the relationships among the variables. Figure 1-1 of chapter 1 is repeated here (as Figure 3-1) for ease of reference. A discussion of the variables follows.

Figure 3-1: Components of the Health Belief Model as Adapted

In the above figure, DV stands for dependent variable, and IV stands for independent variable.
Independent Variables

Perceived Susceptibility

Table 3-1 identifies areas of illness susceptibility/severity as mentioned by the participants in the course of the focus group discussions.

Table 3-1: Areas of Illness—Perceived Susceptibility/Severity

| Factors                      | White Male | Black Male | Hispanic Male | White Female | Black Female | Hispanic Female | Total | %   |
|------------------------------|------------|------------|---------------|--------------|--------------|----------------|-------|
| **Serious Illnesses**        |            |            |               |              |              |                 |       |
| Diabetes                     | 0          | 2          | 0             | 0            | 1            | 1              | 4     | 12.1|
| Circulatory                  | 2          | 4          | 0             | 4            | 1            | 2              | 13    | 39.4|
| Sensory impairments          | 1          | 0          | 0             | 2            | 0            | 0              | 3     | 9.1 |
| Respiratory                  | 0          | 0          | 0             | 0            | 0            | 1              | 1     | 3.0 |
| Digestive                    | 0          | 0          | 0             | 1            | 0            | 0              | 1     | 3.0 |
| **Sub-totals**               | 3          | 6          | 0             | 7            | 2            | 4              | 22    | 66.6|
| **Medication Errors**        |            |            |               |              |              |                 |       |
| Overdose                     | 0          | 1          | 0             | 0            | 1            | 1              | 3     | 9.1 |
| Adverse meds interaction     | 0          | 0          | 0             | 1            | 1            | 0              | 2     | 6.1 |
| **Sub-totals**               | 0          | 1          | 0             | 1            | 2            | 1              | 5     | 15.2|
| **Other**                    |            |            |               |              |              |                 |       |
| Inherited illnesses          | 0          | 2          | 0             | 2            | 0            | 1              | 5     | 15.2|
| Work-related stress          | 0          | 1          | 0             | 0            | 0            | 0              | 1     | 3.0 |
| **Sub-totals**               | 0          | 3          | 0             | 2            | 0            | 1              | 6     | 18.2|
| **Totals**                   | 3          | 10         | 0             | 10           | 4            | 6              | 33    | 100.0|
Approximately 67% of the responses indicated that participants’ areas of susceptibility were related to controlling the severity of symptoms related to blood pressure, diabetes, and the pain and discomfort stemming from arthritic conditions. Among the factors contributing to feelings of susceptibility were the experiences of letting the symptoms of a condition go untreated. Henry, a 69-year-old Black male from All Saints Baptist Church, commented about the frightening consequences of leaving undetectable symptoms untreated:

Blood pressure may be out of whack, is a bit more silent and secret. Some years back, when I first had to really bother with my blood pressure, my doctor asked me, “Did you have … last night.” You are operating at stroke level. And that’s scary. So then we got in the process of rearranging some of my medications….He didn’t know why my blood pressure was erratic, but the combination I have is working quite well. [Henry, Appendix F, p. 215]

John, age 69, from the same group, commented about feeling “special” that his blood pressure was under control:

I have some problem with my blood pressure, because once it gets out, it is very difficult to get it regulated back. But it has been regulated for over two years … so I feel real special. I finally got the right combinations. [John, Appendix F, p. 222]

Kate, 74, expressed her susceptibility to a life-threatening illness from going without medication in this way:
Well, I take Coumadin, and boy that’s one you have to take every day, well at least I do, because if I leave it off, I take the chance of having a blood clot go to my heart. [Kate, Appendix F, p. 167]

The above comments from the focus groups show that some participants were very concerned about taking medications properly to reduce or control the severity of symptoms of chronic or acute illnesses.

Fifteen percent of the comments attributed participants’ susceptibility to illness to the effects of improper use of their medications. In particular, they felt at-risk to life-threatening consequences resulting from overdosing, drug interactions, and from failing to follow the scheduled prescribed regimen. Ethel, 80, a Black female from the Greater Senior Community Group, described her fear of hallucinating from mistakenly taking a combination of medications:

When I took the medications together. . . I was seeing things that weren’t there. . . . Well, to tell you the truth, I run back out the door and I knocked on my neighbor’s door, and asked [her to come to my house with me. She assured me that there was nothing unusual.] It was real scary. [Ethel, Appendix F, p. 191]

Herman, a Black male, age 69, also discussed the problem of taking too much medication.

The doctor said that if you forget, just leave it alone and start over the next day. . . . Most of the time I do that. [Herman, Appendix F, pp. 201,195]

Beatrice, a White female, age 77, expressed her concern about taking one of her medications improperly:
One medicine I take is for arthritis, and if I take too much it makes me kind of sick… The others, well, I guess if you took too much of the other they would become toxic, but that one alone becomes very toxic. [Beatrice, Appendix F, p. 164]

The above comments illustrate the concerns that some participants had about their vulnerability to life-threatening consequences of trying to manage their medications on their own the best way they knew how.

Perceived severity of the symptoms of illness also affected the ways participants took their medications. Betty, age 77, and Jean, age 76, two White females from the Cherry Hill Apartments group, reported that they took their medications to control their blood pressure only when they experienced symptoms:

I know when my blood pressure is up. I had a doctor tell me that, no, you can’t tell when it is up, but I can tell when mine is. [Betty, White, 77, Appendix F, p. 167]

Instead of taking a whole one, I take half and so it lasts two days instead of one. And that way it works pretty good. Like your blood pressure, you know, you can tell when your blood pressure is getting up, you can go have a “hissy fit” or go take another pill. [Jean, White, 76, Appendix F, pp.166-167]

If symptoms were not present, these women felt that their conditions were under control. Despite warnings from their physicians or dosage requirements, these women made their own health decisions by taking their medications only in response to symptoms.
Perceived Benefits of Taking Medications

The major reasons that were stated about the importance of taking medication properly are identified in Table 3-2:

### Table 3-2: Perceived Benefits of Taking Medications

<table>
<thead>
<tr>
<th>Benefits</th>
<th>White Male</th>
<th>Black Male</th>
<th>Hispanic Male</th>
<th>White Female</th>
<th>Black Female</th>
<th>Hispanic Female</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid inherited illnesses</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>30.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid hospital/nursing home</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>2</td>
<td>8.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce symptoms</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>34.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep health &amp; independence</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultimately reduce medication need</td>
<td>1</td>
<td>2</td>
<td></td>
<td>4</td>
<td>3</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>0</strong></td>
<td><strong>13</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>23</strong></td>
<td><strong>99.9</strong></td>
</tr>
</tbody>
</table>

The two top categories of responses were: 1.) to reduce the symptoms of illness (34.8%); and 2.) to prevent susceptibility to an inherited disease (or tendency for a disease) that they had witnessed a family member suffering from. (30.4%) A childhood memory for Henry, 69, involved the circumstances under which his father died when Henry was just a boy; this served as a constant reminder for him to commit to taking his medications regularly:

So, it always worried me until I got past 54, was I going to die? Because I knew I had blood pressure problems, but I was so apprehensive about would I live beyond 54…. I tried to be as aware of the blood pressure as I could. But I worked hard like my daddy, and I ate a lot, so it was just a thing in my mind. [Henry, Black male, age 69, Appendix F, p. 216]
Norma, a 69-year-old Hispanic woman, mentioned that her dependence on medication and its significance in her life was influenced by having been a caregiver to both her father and mother-in-law and watching them deteriorate from illness.

My father, when he got old, he got Arterial Sclerosis and my mother-in-law got Alzheimer’s. And it was terrible to see how they are going down, down, every time, every time. But they had me. But me, I don’t have anybody. [Norma, Hispanic female, age 69, Appendix F, p. 189]

The above two participants were intent upon taking their medications properly because they had watched the suffering of their family members, and they wanted to avoid having to suffer from illnesses that they had possibly inherited a tendency for. For Norma, taking medications properly was synonymous with avoiding the debilitation and dependency she had witnessed among those closest to her.

John, a Black male, age 69, disliked having to take medications, but he acknowledged their importance to his health:

I despise taking all those pills, but they are a necessary evil, a necessary evil—they keep me going—I presume. I’ve kept my power of the divine, but I think that the power of divine would let me in bed if I didn’t take my medications. [John, Black male, Age 69, Appendix F, p. 216]

For Ben, a Black male, age 67, the benefits of medication were realized through a process of self-regulation:

Talking about insulin, it’s a matter of discipline. On one examination my sugar was... good. And if I had lost some of my weight she could drop my
doses down. So right now I’m going through some self-discipline . . . and will see
what is going to work out. [Ben, Appendix F, p. 217]
The merits of medication-taking as expressed above indicate the intangible benefits as
they relate to patient-oriented values such as personal independence, self-reliance, and
self-regulation.

One benefit for three participants was the hope that their conditions would
improve to the point that someday they would no longer have to take their medications.

I actually got cut down on one last week. . . . [sounding quite proud]. [Doris, White
female, age 66, Appendix F, p. 199]
I’d like to cut down on my medication, and then I went out there [to the doctor],
and I wound up getting some more. [Herman, Black male, age 69, Appendix F, p.
199]
So I spent a month in the V.A. hospital. And I was told that I would not be off
insulin for the remainder of my life. And that was in February, and by September I
was off the medicine. [Henry, Black male, age 69, p. 217]
The above comments show that some participants were willing to take their medications
as prescribed in the hope that eventually they would be able to discontinue taking them.

A sense of self-reliance was also synonymous with the benefits of taking
medications. For Norma, 69, taking them meant having control over her life and the
ability to live on her own and not be a burden to anyone:

I never take a break from my medicine. Because I am alone, and I have to
depend on my brain. . . . And I am completely alone all the time. And so I told my
daughter the day that I [lose my senses] or don’t become clear or whatever, you
take me and put me in a home. I'm clear about this....I want to be independent as long as I can. [Norma, Hispanic female, Age 69, Appendix F, p. 189]

Heather, 73, commented:

We keep ourselves medicated in order to keep us healthy. [Heather, White female, age 73, Appendix F, p. 196]

Heather went on to say:

I think it's important that people our age keep active, not only in walking, but I found something my 94-year-old aunt taught me, that you keep your mind busy. If you don't use it, you lose it, and I think that her attitude has been a big impression on me. [Appendix F, p. 196]

The above comments suggest that the role that medication plays in one's advanced years is only one aspect of improving the quality of life. While medication may make a person physically able, it is also up to individuals to use their own initiative to continue to enjoy life’s pleasures.

Perceived Barriers to Taking Medications

Table 3-3 identifies areas of difficulty in taking medications encountered by participants, by race and gender.
Table 3-3: Perceived Barriers to Taking Medications

<table>
<thead>
<tr>
<th></th>
<th>White Male</th>
<th>Black Male</th>
<th>Hisp. Male</th>
<th>White Female</th>
<th>Black Female</th>
<th>Hisp. Female</th>
<th>Totals</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forgetting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To take meds or to take on time</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>14</td>
<td>13.3</td>
</tr>
<tr>
<td>Missing dose or overdosing</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>14</td>
<td>13.3</td>
</tr>
<tr>
<td>To reorder meds</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>9.5</td>
</tr>
<tr>
<td>To take meds on trips</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>Sub-totals</strong></td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>16</td>
<td>6</td>
<td>8</td>
<td>48</td>
<td>45.6</td>
</tr>
<tr>
<td><strong>Dexterity Problems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening bottles</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>8.6</td>
</tr>
<tr>
<td>Handling meds</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>Cutting tablets</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Sub-totals</strong></td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>16</td>
<td>15.3</td>
</tr>
<tr>
<td><strong>Cost of Medications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prohibitive cost</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>9.5</td>
</tr>
<tr>
<td>Economizing measures</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>7.6</td>
</tr>
<tr>
<td><strong>Sub-totals</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>6</td>
<td>18</td>
<td>17.1</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeing meds</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>4.8</td>
</tr>
<tr>
<td>Swallowing meds</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>4.8</td>
</tr>
<tr>
<td>Side effects</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>6.7</td>
</tr>
<tr>
<td>Dislike having to take</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>Interruptions for medical care</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Sub-totals</strong></td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>23</td>
<td>22.1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>21</td>
<td>11</td>
<td>2</td>
<td>35</td>
<td>17</td>
<td>19</td>
<td>105</td>
<td>100.1</td>
</tr>
</tbody>
</table>
Forgetting accounts for 46% of the problems reported, while 32% of the responses were split between the issues of difficulty in handling the medications and being able to afford the medications. The remaining 22% of the comments had to do with difficulties in seeing the pills, swallowing the pills, side effects, and a general dislike for taking them. Women made 75% of the responses that were about dexterity issues, and women made all of the responses that were about difficulties related to being able to pay for their medications.

Remembering/Forgetting

The focus group responses included in the discussion below indicate the many ways impaired memory affects medication-taking habits. These responses are associated with the categories in Table 3-3 under the heading Forgetting. Remembering to take medications or to take medications on time was mentioned as a primary concern 14 times by participants. Some of the reasons given for why it was difficult to remember are shown below:

I forget to take my pills, too, because I am doing 10 things at one time. [Minerva, Hispanic female, age 72, Appendix F, p. 164]

I can’t remember, because I get confused sometimes when I’m taking my medicine…. You see, I have to be on dialysis. Then when I get off of dialysis and get home, I forget to take it. [Ethel, Black female, age 80, Appendix F, p. 186]

Remembering whether or not they had already taken their medications also presented obstacles for some:
I take Lanoxin, and sometimes I forget whether I took one and then take another one. So I call the drug store, and they tell me that if I don’t remember then take it tomorrow, don’t take any more today because with Lanoxin you have to be very careful. I’ve done that a lot of times. [Hannah, Hispanic female, age 80, p. 165]

The inability to remember elevates the risk of not taking a dose that should be taken, of taking medications in the wrong combination, and of overdosing. Any of these three situations could result in deleterious side effects.

Interruptions to normal medication schedules due to surgeries or acute illness, as well as to frequent adjustments to prescription strengths, were also obstacles to remembering.

I just experienced not taking medications on time because I was on antibiotics and one of the first things they told me was that I had to take them at the same time every day…. And I found it a bit difficult to take it at the same time every day. [Minerva, Hispanic female, age 72, Appendix F, p. 165]

It was complicated until the doctor changed it a couple of weeks ago. I had a heart operation… I was on a schedule: 8 a.m., 2 p.m., 8 p.m. for two pills, and now it’s changed so now I take three pills in the morning and four pills at night. [Louis, White male, age 81, Appendix F, p. 179]

What is really annoying is when the doctor changes the quantity…. And just about the time you get it down, the doctor gives you another medication or he says get off of this and get on another one. [Curtis, White male, age 79, Appendix F, p. 205]
The above comments by participants indicate problems they experienced with trying to remember to take their medications, especially after hospital stays or when physicians made changes in participants’ medications.

Failure to remember to refill prescriptions in a timely manner also contributed to adherence problems. Some who admitted having difficulties in this area also described ways they found to remedy the problems. June, a White female, age 77, had to come to rely on her daughter’s help because of June’s lapses in remembering to refill her prescriptions in a timely manner:

She [my daughter] mainly helps me so that we remember when to reorder the prescriptions. Because sometimes I was delinquent in noticing that the tube was getting too low and then I would be without medicine for a couple of days. So she took charge of the medicine. [June, White female, age 77, Appendix F, p. 164]

I would forget to reorder my prescriptions. One thing that really helped me is that, the company I order my prescriptions from sends me a reminder on my computer, and I just punch that thing in that I am ready to order….It’s all done on computer, it’s slick. . . . And it’s the easiest thing. [Janet, White female, age 86, Appendix F, p. 181]

I need to be right there when they are refilling it with my calendar so I can get into the habit of checking my calendar so I can see what I am doing. If I have to look at the bottle every time for the refill date, forget it. I have to write it down. So, that’s how I remember to refill it. [Minerva, Hispanic female, age 72, Appendix F, p. 166]
The above participants reported that they had problems remembering to order prescription refills in a timely manner. Janet’s use of a computer, June’s reliance on her daughter, and Minerva’s presence at the drug store counter with her calendar show that participants used different strategies to deal with their tendency to forget to reorder prescriptions on time.

There were those who mentioned problems of forgetting when preparing to leave on either an extended trip or just a one-day trip. (This problem was mentioned ten times during the focus group meetings.)

I was on vacation in New Mexico. I ran out of two meds. I only needed two pills each because I was on my way home. I went to Walgreen’s and they didn’t want anything to do with it. I had to call my doctor in Charlotte and he okayed it. And they penalized me—charged me 6 dollars each. At home they were only fifty cents each. [Max, White male, age 85, Appendix F, p. 206]

The trouble I recently have had was packing my pills when I was getting ready to go away on a trip. I had difficulty figuring out the number of pills I needed to take with me and in filling the box with enough. . . . I don’t have a two-week box or a three-week box. I need this one and this one, and if I have trouble then I need this one and this one. [Jewel, White female, age 77, Appendix F, p. 180]

I don’t have a problem [remembering] unless I have to leave early in the morning. When I’m home I usually do okay and take it. That’s why I have to carry them with me or else I will forget. [Adelle, White female, age 76, Appendix F, p. 181]
The above participants’ comments illustrate the types of problems that can occur if patients have difficulty in determining how many doses to take with them on a trip or if they run out of their medications while traveling.

Women more often than men in the focus groups reported having problems in obtaining timely refills of their medications. This was because many of the men who had served in the military received their prescriptions through a Veterans Administration (V.A.) hospital. They reported that the system provided them convenient and timely access to their prescription refills. This was evidenced in the following statements:

I’m glad I don’t have that problem. No, the government takes care of me so I don’t have to worry about it. [Al, White male, age 70, Appendix F, p. 168]

All I do is use the telephone and call the V.A. And I get options on the phone, and I check on refill or ask them why my pills haven’t got there. . . . When I run out of my refills I have to go to the V.A. to see my doctor. And she gives what I think I need, and sometimes she gives me 11 refills. [Louis, White male, age 81, Appendix F, p. 181]

I know how you can get the price of the meds down. I was paying 350 dollars a month and then I went to the V.A. and they said that the waiting list is very long, but if you had a disability from the war, you can get on the list. They gave me a card, and now I get my meds from the V.A. [Max, White male, age 85, Appendix F, p. 204]
I get for 90 days from New York State. The most I have to pay for any medication is 15 dollars. Most of them are 10 dollars. The state pays the rest. [Tim, White male, age 87, Appendix F, p. 206]

The above participants’ comments show that some participants were able to rely on the Veterans Administration or their state government’s services to help them receive timely refills of their prescription medications.

When it comes to self-management of medication, forgetting can have disruptive effects on the simple task of planning for a trip to more devastating effects of overdosing. Even if a patient’s cognition is not impaired, difficulties attributed to forgetting may be exacerbated by complicated medication regimens or from interruptions due to acute illnesses or to hospital stays.

Paying for Medications

The ability to pay for medications ranked second to forgetting as significantly impacting medication adherence among participants. The dilemma about how to pay for medications on a fixed or limited income cut across age and ethnicity. Females in these groups who lived independently were more vocal than the males on issues about being able to afford medications. In many instances, participants made decisions about whether or not to purchase medications based on their ability to afford (or pay for) them:

I have to give up luxury and you get used to it. You make sure you have the money, because I have to have mine [medications]. [Myra, Black female, age 86, Appendix F, p. 190]

I didn’t have the money to refill it…. But normally I get all six of them the first of every month and just go ahead and pay for them and what’s left I live on. It runs
It’s kind of hard sometimes to pay 80 dollars or over a hundred dollars sometimes for a prescription. . . . And it’s not easy when you are on Social Security, so you shuffle them around and up to until now, thank God, I’m okay. [Minerva, Hispanic female, age 72, Appendix F, p. 167].

There are three that I have to have. So I make sure I buy those and the blood pressure pills. But the others, if I can’t afford them, I just do them [the three].

[Beatrice, White female, age 77, Appendix F, p. 167]

The above comments by some participants show that, not surprisingly, some older people find it difficult to pay for the medications that they need.

Affordability is not a new problem. (Elderly people spend billions of dollars a year on medications [Medication Regimens, 1990]). What is less well known is how this inability to pay impacts adherence behavior. Ways mentioned to economize on medication expense included filling only one-half the prescription, or taking less than what was prescribed and substituting over-the-counter medications for prescription brands.

I have to buy my own. My Celebrex costs over a hundred dollars. And I take it, but I don’t take it too regularly because I am trying to save it—can’t pay the price. So I miss the medicines [she laughs nervously]. [Ethel, Black female, Age 80, Appendix F, p. 189]

Paying for it [the medicine] is a problem [very quiet voice]. Some of them are pretty expensive. What I do is, instead of taking a whole one, I take half, and so it
lasts two days instead of one. And that way it works pretty good. . . .Sometimes I just fill half of the prescription. [Jean, White female, age 76, Appendix F, pp. 166,167]

Jean did acknowledge the risks involved of side effects from the substitutions and the risks of not consulting her doctor:

There are some medications that you can buy over the counter that work pretty well, you know, like Aleve, instead of Vioxx. But there are side effects with it [Aleve] that you don’t get with Vioxx, so you have to be careful. You should check with you doctor before making these decisions. [Jean, White female, age 76, Appendix F, p. 167]

Some of the participants’ comments indicated that they were facing a serious dilemma, and that they were creatively trying to find ways to “stretch” their prescriptions because of their high cost.

The constant preoccupation about being able to pay for medications emanated from not wanting to rely on others for financial assistance and, in some cases, from recognizing that there might be nowhere to turn for support.

My daughter helps me out every once in a while, but I feel kind of bad going to her each time it happens, because they keep on giving you new prescriptions because some other things happen. When I had to go on antibiotics, my daughter helped me out. [Minerva, Hispanic female, Age 72, Appendix F, p. 172]

But what about asking our kids for money, what about our independence? [Jewel, White female, age 77, Appendix F, p. 184]
The comments above reveal that some participants were hesitant to ask their children for financial assistance to purchase medications. Some were too proud to do so and didn’t want to be a burden to their families.

Managing the problem of how to pay for medications was of more concern among the groups living independently than within the one group whose members were residents of the assisted-living facility:

They give me mine. They order the medication so I don’t have to worry about doing that. . . . They have the medical person to buy the medicine and dispense it. [Marylin, White female, age 65, Appendix F, pp. 173, 177]

It costs us three hundred dollars a month for the service, plus some other things, plus the cost of the medicines. [Rachel, White female, age 86, Appendix F, p. 177].

Here it is all set up for us. [Geraldine, White female, age 65+, Appendix F, p. 177].

The participants who made the above comments lived in an assisted-living facility, so obtaining their medications did not create a financial hardship.

Handling the Pills

Problems with dexterity interfered with many participants’ abilities to open what some disparagingly referred to as “aging proof” bottle caps. (This problem was mentioned nine times during the focus group meetings.)

I make sure the tops are on but not tight where I can’t open it. [Myra, Black female, age 86, Appendix F, p. 188]
Most of times it is hard to open those bottles. Because when I get that Tylenol they say push and I can’t do that. . . . I have to have some neighbor open it for me. [Ethel, Black female, age 86, Appendix F, p. 187]

I just throw the lid away. I don’t close it back. I just lay it on top of the bottle, because I got the lousiest hands in the world. [Al, White male, age 70, Appendix F, p. 166]

Sometimes I just put foil around one [bottle] because I have to take one every morning. [Hannah, Hispanic female, age 80, Appendix F, p. 166]

As the above comments reveal, several participants experienced manual dexterity problems in trying to manipulate (remove) the lids of medication bottles. Here again, some of the participants were able to creatively deal with the problem.

Other issues related to tactile impairments included the difficulties in handling the pills and of being able to divide the pills into pieces of equal size (and, hence, of equal milligram strength) when using pill cutters. (This problem was mentioned four times during the focus group meetings.)

When I take my medicine I don’t have sensitivity in my hands, and sometimes the medicine falls out. [Norma, Hispanic female, Age 69, Appendix F, p. 188]

The main problem I have is that I have a pill that I have to cut into fourths. So that’s my problem. It isn’t very big [half-inch long]. I bought a pill cutter. It does not cut them equal. And sometimes I worry that I don’t get as much this morning as I do maybe tonight or tomorrow. [Adelle, White female, age 76, Appendix F, p. 180]
Once in a while the pills won’t come out half-and-half, but my doctor says don’t worry about it. It’s not that important if it doesn’t come out perfectly symmetrical.

[Charles, White male, age 87, Appendix F, p. 206]

As the above comments show, some participants also had manual dexterity problems in handling the pills themselves, especially when tablets had to be cut into pieces. There was also some concern that the dosage was off when the tablet did not break into pieces of equal size.

Other Difficulties

Distinguishing medications by appearance proved to be a difficult task due to colorblindness, and due to similarities in size and shape among various brands. (This problem was mentioned five times during the focus group meetings.)

I am partially color blinded, and that’s the biggest problem: the shapes and sizes. They are all small and the colors vary. They are either dark pink or light pink. I can’t see without a magnifying glass. [Tim, White male, age 87, Appendix F, p. 207]

The Vioxx is so small sometimes I can hardly see to put that thing in my mouth. It’s a little-bitty pill. I forget it sometimes. [Ethel, Black female, age 80, Appendix F, p. 188]

I identify them by shape. Some of them are shaped like footballs. When you get into trouble is when they are all the same color and all the same size. [Curtis, White male, age 79, Appendix F, p. 207]
The above comments show that vision problems, including colorblindness, sometimes made it difficult for participants to distinguish between different medications. The very small size of some tablets also posed a problem for some participants.

The discomfort resulting from swallowing one large pill or several pills at a time was considered a barrier for those who experienced the unpleasantness of having their throats close up, or finding themselves left with a mouthful of pills and a stomach full of water. (This problem was mentioned five times during the focus group meetings.)

I have trouble swallowing that potassium. It just gets on my tongue and it won’t move. I have trouble with that. [John, Black male, age 69, Appendix F, p. 214]

It seems that sometimes, your throat just wants to close up the minute you put that stuff in your mouth. I try to swallow them all at once. [Henry, Black male, age 69, Appendix F, p. 214]

I have a horrible time trying to swallow pills. My doctor says that if you have trouble swallowing your pill, just swallow the water, don’t worry about the pill. If you just try to swallow the pill, you won’t. [Jewel, White female, age 77, Appendix F, p. 181]

The above comments show that several focus group participants reported that they had trouble swallowing pills. Some tried different ways to overcome the problem.

Side effects also caused some participants to refuse to take medicines as prescribed. Some participants were hesitant because of possible side effects such as hemorrhaging or liver damage. (This concern was mentioned seven times during the focus group meetings.)
I have a problem with one of them that makes my feet go this way and that way. It’s high blood pressure medicine. The doctor said he couldn’t keep it down [the blood pressure] low enough without giving me the medicine. They just can’t do anything about it. So I am dancing around sometime and sometime I bumped into walls. But sometimes it’s better. But it’s just a side effect of all the medicine I have to take.  [Georgia, White female, age 74, Appendix F, p. 174]

There is one pill I take which I wish I didn’t have to take. This is Diamox, and I have to go [to the bathroom] so often. . . . But I wish I didn’t take it, but I do.  
[Myra, Black female, age, 86, Appendix F, p. 192]

I do make sure I talk to the pharmacist because I don’t think the doctors have as much information as the pharmacists [about] whether I’m taking things that are not compatible with each other. Now, I won’t take Coumadin because the danger of hemorrhaging [John, Black male, age 69, Appendix F, p. 214]

The above comments reflect participants’ concerns about the side effects of some medications. In some cases, their fear of the side effects prevented them from taking the medications.

Cues to Action in Taking Medications

The variable “cues to action” refers to the various mnemonics that people employ to remind themselves to take their medications.
Table 3-4: Cues/Mnemonics for Taking Medications

|                      | White Male | Black Male | Hispanic Male | White Female | Black Female | Hispanic Female | Totals | %  
|----------------------|------------|------------|---------------|--------------|--------------|----------------|--------|-----  
| **External Cues**    |            |            |               |              |              |                |        |       
| Seeing med containers| 1          | 0          | 0             | 2            | 4            | 0              | 7      | 11.3  
| Use of timers        | 0          | 0          | 0             | 0            | 0            | 1              | 1      | 1.6   
| Use of pill-boxes    | 0          | 0          | 0             | 5            | 2            | 2              | 9      | 14.5  
| Written schedule     | 0          | 0          | 1             | 1            | 0            | 1              | 3      | 4.8   
| Telephone refill     |            |            |               |              |              |                |        |       
| reminders            | 3          | 0          | 0             | 1            | 0            | 0              | 4      | 6.5   
| Daily routine        | 2          | 3          | 0             | 11           | 2            | 5              | 23     | 37.1  
| Assistance           | 0          | 0          | 0             | 7            | 0            | 1              | 8      | 12.9  
| **Sub-totals**       | 6          | 3          | 1             | 27           | 8            | 10             | 55     | 88.7  
| **Internal Cues**    |            |            |               |              |              |                |        |       
| Illness symptoms     | 3          | 0          | 0             | 4            | 0            | 0              | 7      | 11.3  
| (arthritic, digestive, vision problems) | | | | | | | |  
| **Totals**           | 9          | 3          | 1             | 33           | 8            | 10             | 62     | 100.0  

External reminders included objects and routines that were used to cue participants to take medications. Many relied on the use of compartmentalized plastic pillboxes to remind themselves which medications to take, and when. (This method was mentioned nine times in focus groups.) The placement of the prescription bottles and pillboxes also served as a reminder. (This cue was mentioned seven times.)
I have no problem before I have my coffee. I have one of these things [pointing to the pillbox] labeled Mon, Tues, Wed, Thurs, and I have them all lined-up. And as I am making my coffee, it is almost automatic. [Tim, White male, age 87, Appendix F, p. 204]

I just seem to remember. In the morning I take one. First thing in the morning I take one. [Priscilla, White female, age 78, Appendix F, p. 180]

I have my medicine lined up on my dresser, and I remember to take them. . . . every morning right before breakfast. [Myra, Black female, age 86, Appendix F, p. 187]

In the above examples, the placement of the containers reminded the participants to take their medications; Tim said, “I have them all lined up,” and Myra mentioned that her medicine was “lined up on my dresser.”

Event-driven cues included mealtimes (mentioned eight times), putting on a pot of coffee in the morning (five times), and receiving assistance (eight times) also served as reminders, as in the following examples:

I’ve been on medication for so long, in my case it is routine. I get up in the morning, I know I have to do this before I eat, and I know I have to do this after I eat. [Ben, Black male, age 67, Appendix F, p. 213]

I get up, and I punch my coffee pot on, then I turn the TV on, then I come back and I take my medicine and get my coffee—the same routine every day. [June, White female, age 77, Appendix F, p. 166]
I can only remember one that way, and that’s the Thyroid. I have to take it 30 minutes before I eat, so I take it when I first get up. [Beatrice, White female, age 77, Appendix F, p. 166]

I can’t see to make up my shots, so my nurse makes them up for me. I pretty much take care of my own medications except for my shots. [Betty, White female, age 77, p. 165]

When I am filling up the meds for the next week, my daughter, who lives nearby, assists me to make sure I put the right product in the right container. [Charles, White male, age 87, Appendix F, p. 206]

In the above comments, events such as getting up in the morning, making the morning coffee, and preparing to eat breakfast, served as cues that reminded participants to take their medications.

Those living independently often mentioned having a spouse or visiting nurse to assist them. The majority of those receiving assistance were members of the group of females residing at Plantation Manor, where medications were prepared for them by the nursing staff:

They assist me here with my medications. [Said sarcastically]: They shove them down my throat every morning. [Caroline, White female, age 83, Appendix F, p. 173]

Mine are dispensed by the nurses here, because I get one at midnight. One is dispensed at 6 a.m., 7 a.m., and 7:30. One at 5:30 p.m., and one at 9 p.m. [Tina, White female, age 70, Appendix F, p. 173]
The comments made by some of the residents at Plantation Manor indicated that the nurses delivered the medications to them, although the comments reflect very different attitudes.

Internal cues primarily referred to physical discomfort that served as a reminder. These included joint pain, pain from digestive disorders, and the lack of ability to see or focus. Examples of comments that offer insight into participants' responses to the effects of internal cues/mnemonics are provided below:

Arthritis pain tells me that I didn’t take my medicine. [Al, White male, age 70, Appendix F, p. 166]

I absolutely forget my evening medications, and you get home and relax and then acid reflux starts reminding me. [Heather, White female, age 73, Appendix F, p. 199]

I'll remember to take them when I start having difficulty seeing, because I am an avid reader. [Geraldine, White female, age 65+, Appendix F, p. 174]

The above comments by participants give examples of pain, indigestion, and vision problems that served as cues to remind the participants to take their medications. Since these cues are also illness symptoms, they can be very insistent, reinforcing in the mind of the patient, the direct relationship between the illness symptoms and the medication.

Benefits of Device Use

The variable benefits of using the device are measured by the indicators in Table 3-5.
Table 3-5: Benefits of Using the Device

<table>
<thead>
<tr>
<th>Advantages of Using the Device</th>
<th>White Male</th>
<th>Black Male</th>
<th>Hispanic Male</th>
<th>White Female</th>
<th>Black Female</th>
<th>Hispanic Female</th>
<th>Totals</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reminds patient to take medications</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>3</td>
<td>23</td>
<td>19.2</td>
</tr>
<tr>
<td>Eliminates medication errors</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>Creates a printed log of medications taken and missed</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td>Informs caregivers</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>2</td>
<td></td>
<td>19</td>
<td>15.8</td>
</tr>
<tr>
<td>Allows individuals to live longer on their own</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Provides access to medical information without compromising privacy</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>10</td>
<td>8.3</td>
</tr>
<tr>
<td>Device accommodates multiple users</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Affordable through possible Medicare or insurance coverage and flexible financing</td>
<td>6</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td></td>
<td>19</td>
<td>15.8</td>
</tr>
<tr>
<td>Participants who said they would use it with assistance</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>11.7</td>
</tr>
<tr>
<td>Totals</td>
<td>21</td>
<td>11</td>
<td>2</td>
<td>63</td>
<td>10</td>
<td>12</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The benefits derived from device use were found to be things that helped to reduce patient and caregiver worry by the manner in which the device dispensed medications on time and in the proper amounts, prevented access to medications during non-dispense intervals, and the ability for it to notify family members and caregivers in the event of missed doses.

I would be able to take my medications on time every day and wouldn’t have to worry about whether I took it or didn’t take it. It would be great. It would give me a peace of mind about my medications. [Minerva, Hispanic female, age 72, Appendix F, p. 170]
I know a gentleman who is on probably eight to 10 medications per day. . . . He has been known to overdose, and he has been known not to take a medication . . . . Something like this would be great for him. [Jewel, White female, age 77, Appendix F, pp. 184-185]

I can see that it would be good for me to let my daughter know I am forgetting to take my pills, and have my daughter say, “Hey, you’ve got a problem. You need to check your medications.” [Adelle, White female, age 76, Appendix F, p. 185]

My kids would say, “Go for it.” [Jean, White female, age 76, Appendix F, p. 171]

The above comments indicate that some participants would be happy to let the device keep track of their doses of medications and to rely on it to keep them adherent.

The characteristics of the device which helped to provide “peace of mind” included the continuous signaling from the bell and flashing light, reminding patients that they had not yet taken their medications; the provision of a printed record of medications taken and missed to which the individual could refer; and via a phone call from the device to provide family caregivers a way to monitor their parents’ medication adherence, safety and well-being when they were absent.

The light and alarm is a very good feature. I could use it like an alarm in the morning. [Herman, Black male, age 69, Appendix F, p. 198]

I think it’s okay. I think you would get used to watching for it. And you would automatically look for it. [Adelle, White female, age 76, Appendix F, p. 183]
I think it [the machine] is fantastic, especially for elderly people. Their children won’t have to worry about overdosing or when they are missing their tablets. [Janet, White female, age 86, Appendix F, p. 182]

Well, I think it would be helpful. Because they [the family, doctor, etc.] could say, “Look, you are not taking your medication; look here…you missed here, here, here.” [Heather, White female, age 73, Appendix F, p. 200]

I think that would be a good idea, and I can see how that would work in another way. And if you called that person and they didn’t answer, then you would know that something was wrong. [Hazel, Black female, age 68, Appendix F, p. 201]

The above observations by participants recognized that the device could ease the burden of sons and daughters who act in the caregiver role by allowing them to stay informed without having to be physically present to do so.

In respect to the patient-doctor communication, the log was viewed as beneficial because it would provide more reliable information than the patients’ recollections of their adherence or non-adherence:

I am sure the physicians would be more interested in this [the printout] than asking you to remember what you did for the last three months. . . . This would be better than remembering to take all of your medications in a bag to the doctor as far as I am concerned. [John, Black male, age 69, Appendix F, p. 220]

Heather, who had worked in a physician’s office, took the physician’s perspective in respect to the merits of the log:

I know that doctors are skeptical; so often the patients bring in what they have written down they have done, particularly ones with diabetic problems. They will
say, “My blood sugar was this at this time, and this at this time,” and yet when they come in, their blood sugar is way off the charts. And the doctor says, “You can make yourself believe, but you can’t make me.” [Heather, White female, age 73, Appendix F, p. 202]

The above comments by participants indicated that some of them felt that physicians would be more inclined to rely upon the device than upon their elderly patients’ memories to learn whether or not their patients had been medication adherent.

Four of the six comments indicated that the type of benefits afforded by the device would allow individuals to live longer on their own and possibly reduce the cost of long-term care. Heather, who had been caregiver to an aunt, remarked:

We could have easily checked if she was taking her medications; even if she weren’t, then we would have known for sure just how long she was capable of staying by herself. [Heather, White female, age 73, Appendix F, p. 201]

I can see how it could help them live on their own longer. I sure do. [Doris, White female, age 66, Appendix F, p. 201]

Yes, if it would keep you out of the nursing home. Then you can get someone to come in and do it for you, like my son….They would only have to do it once a month. [Hannah, Hispanic female, age 80, Appendix F, p. 169]

The above comments indicate that some participants were optimistic that the use of the device could delay the need for a patient to live in an assisted-living facility or a nursing home.
The merits of the device in a multi-user setting suggested that the dispenser, when placed at the nurses’ station, could signal the nurse when it was time for several patients to receive their medications and have it accurately and promptly dispense medications for them.

Every nurses’ station should have one. . . . Because they are overworked, and very often they make a mistake and forget. [Max, White male, age 85, Appendix F, p. 208]

I think it’s a fabulous thing. . . . at a nurses’ station or even in the room where it rings and the nurse goes in and gives it to the patient. One nurse for how many people? [Tim, White male, age 87, Appendix F, p. 210]

I think under the circumstances the machine has a future if it’s in the right place. In health care. At the nurses’ station. At any stations where RNs are and no one else. [Charles, White male, age 87, Appendix F, p. 211]

Participants did not voice an objection to having their medication information accessible via the log tape or network, nor did they say that they felt that it compromised their confidentiality or right to privacy:

I would like that. I wouldn’t mind it. If you took it every day you wouldn’t have to worry about it. [Georgia, White female, age 74, Appendix F, p. 176]

Why would we want to hide it? If you miss one, you miss one; it’s your fault. [Adelle, White female, age 76, Appendix F, p. 184]

Because if I get real sick or fall out or something like that, well she would have to know anyway. [Ethel, Black female, age 80, Appendix F, p. 191]
The above comments indicate that some participants were not worried about the device’s reporting that they had missed a dose. They welcomed the device’s monitoring of their medication adherence.

Barriers to Device Use

The variable barriers to using the device are measured by the indicators in Table 3-6.

Table 3-6: Barriers to Using the Device

<table>
<thead>
<tr>
<th></th>
<th>White Male</th>
<th>Black Male</th>
<th>Hispanic Male</th>
<th>White Female</th>
<th>Black Female</th>
<th>Hispanic Female</th>
<th>Totals</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of control over medications</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>Size/capacity of device</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td>24</td>
<td>34.3</td>
</tr>
<tr>
<td>Difficulties in loading device</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>4</td>
<td>1</td>
<td>29</td>
<td>41.4</td>
</tr>
<tr>
<td>Privacy concerns</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Cost of device</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>18</strong></td>
<td><strong>5</strong></td>
<td><strong>0</strong></td>
<td><strong>34</strong></td>
<td><strong>9</strong></td>
<td><strong>4</strong></td>
<td><strong>70</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Two areas of overriding concern against using the device centered on the participants’ feelings of ineptness when it came to loading pill and prescription information and the financial ability to buy or lease the device. Forty-one percent of the comments suggested participants did not feel technically competent to operate the device. The words “overkill,” “fear,” and “scary” were used in describing the loading requirements:

I don’t think my mind is for computers at this age. If I were a little bit younger, it would be very nice. [Norma, Hispanic female, age 69, Appendix F, p. 190]
I think the machine would scare them. [Rachel, White female, age 86, Appendix F, p. 175]

I didn’t learn to type in school, and I don’t use a computer, so for some people it could be confusing. It could scare you. [Hazel, Black female, age 68, Appendix F, p. 199]

I think it’s overkill. It would be complicated for me to do it. It would be hard to load the machine. [Tina, White female, age 70, Appendix F, p. 175]

To be honest, as we get older, my generation are frightened of anything computers. Any time it’s mentioned how easy it is to work them, they shake. [Tim, White male, age 87, Appendix F, p. 207]

The above comments reflect participants’ fear of change, technology, and the unknown. Many were concerned that they did not possess the necessary competencies.

Ten percent of the comments indicated fear that the device might malfunction when dispensing medicine and expressed concern that the machine might break down. They indicated that this reluctance would be shared by others of their generation:

I can just see somebody getting frustrated that the printer would get jammed and then…[makes a motion like someone hitting it with a hammer]. [Geraldine, White female, age 65+, Appendix F, p. 176]

But honestly, the minute something goes wrong, I’m going to throw it out the window. I’m the same way with computers. . . . I can’t take it. I don’t want it. I
don’t want to get involved in it. . . . At our age we don’t want to bother. [Tim, White male, age 87, Appendix F, p. 209]

We have a lot of power failures in the area. But if it were time for a medication and the power was off, is there a backup that would automatically work with this? [The moderator responded that there currently is none.] Therefore, we do need to keep out our medications for that purpose. [Heather, White female, age 73, Appendix F, p. 197]

The above comments show both a fear of computers and a potential frustration in case the device malfunctions. One comment also expressed a lack of trust in the device (or in the participant’s electric service) and a desire to be able to access her medications in case of a power failure.

For many who rely on the simple method of loading their pills into pillboxes, the risk of these operational problems did not seem worth the expense or trouble. However, when the question was asked if they would use the device if physical assistance were provided, 11% responded favorably, as indicated in Table 3-5. Of this group, many felt confident that their son, daughter, or grandchild would have the technical expertise required to operate the device beyond the dispensing function.

I don’t think if I had one of those I would have any problems using it, if I had someone do the technical part. [Louis, White male, age 81, Appendix F, p. 183]

I think it’s a great machine if you are home, and also it’s a great machine if you can have a family member to load it and all you have to [do is] take them. [Jewel, White female, age 77, Appendix F, p. 182]
For her [their daughter] to help us? . . . Well, then I would take a whole other view it. But if I had to function it, if I had to learn how to do it, if I had to load it, I don’t need it. [Curtis, White male, age 79, Appendix F, p. 211]

I agree with you. If my granddaughter would come by every 30 days and fill it and operate. I could do it today if I had it. But I’m talking about later. [Thomas, White male, age 85, Appendix F, p. 211]

The above responses showed that some participants would rely upon family members to periodically load and operate the device. Thomas’s comment about his present competence compared to a future reliance upon a family member was a fairly common theme voiced by several focus group participants.

The other major barrier was the obvious cost of the device. While no price had been assigned to the device, participants, across gender, race, and socioeconomic Strata, felt they could afford it only if Medicare or a supplemental insurance plan would pay for it:

I think that the cost would override any convenience. [Doris, White female, age 66, Appendix F, p. 197]

Well, you heard several of us say that the money we pay out for our medications is a problem, so to buy a machine like that on top of not hardly being able to hardly afford the medicine, would be a problem in my thinking. [June, White female, age 77, Appendix F, p. 169]

If the machine is not too sky high I think Medicare could pay with the supplement. [Louis, White male, age 81, Appendix F, p. 184]
But the only way I could use this is if Medicare or someone did pick it up. [Hazel, Black female, age 68, Appendix F, p. 200]

Well, I'm like you, Hazel; I'm on a limited income. [Heather, White female, age 73, Appendix F, p. 200]

The above comments show serious reservations about the cost of the device. But some participants voiced the hope that Medicare would pay for the device. For many, their monthly medication expense would not leave them enough money to pay for the device out of pocket.

Another concern was the device’s rather large size. While seven found the size and number of wheels suitable, three mentioned that their needs warranted fewer than six wheels, and that perhaps the device’s cost could be reduced if it were made available with a varying number of wheels. Another cost savings suggested was that the device be shared with one’s spouse:

Why would you buy something more than you need? And the control could be all you would have to do is type in a number or date. [Jewel, White female, age 77, Appendix F, p. 183]

I could see different sizes of the machine for different people. [Adelle, White female, age 76, Appendix F, p. 183]

[Comment by Norma, who translated for Delores]: She thinks the machine is very good. . . . How can they make it so they could both use the machine? [Delores, Hispanic female, age 74, Appendix F, p. 191]
Some of the above responses concerned the possibility of more than one patient using a single device. The “overkill” theme recurred several times throughout the focus group meetings, especially in the context of cost.

Comments about physical limitations included one’s inability to view the pills inside the wheel, the observation that the display screen was too small, and that the drawer did not accommodate those with limited dexterity:

People with rheumatism would have a problem. Someone would have to load these. [Rachel, White female, age 86, Appendix F, p. 176]

What about people who don’t see too well? Can that screen come any bigger, so we can read it? Because a lot of us don’t see very well, especially if you are going to load it yourself. [Adelle, White female, age 76, Appendix F, p. 183]

I don’t think that some people could get their medications out when they come down there if they have crooked hands. [Georgia, White female, age 74, Appendix F, p. 175]

The above comments about problems that some elderly people could encounter when using the device will be useful to the design engineers. The comments are somewhat similar to comments by elderly people about problems with medication containers and childproof caps on prescription medication bottles.

It was felt that the logging feature would not accurately reflect medication adherence for highly mobile elderly people when they were away from home. Also, for
those who decided not to take medications, there was a concern that the log would give a false "missed" report.

If you are out [away] this isn’t going to help. This is set up for three times a day, and it beeps off and you’re not there, but yet you’re out and taking the pill somewhere else. [Jewel, White female, age 77, Appendix F, p. 182]

It would probably be more suitable for someone who is handicapped and inactive if it could be placed where they could operate it by themselves. . . . But [for] people who are mobile, circumstances not so easily handled, that you can keep a regular schedule, and if you have a breakdown away from the home. [Henry, Black male, age 69, Appendix F, p. 218]

The above comments show that some participants felt that complete reliance on the device would not fit their somewhat mobile lifestyles.

Another concern was that, while the log may have recorded a medication as “taken,” there was no proof that the medication was actually ingested. It could have been thrown away:

That’s the problem with any medication. They [the doctors] say they take it, but then they [the patients] hide it, and they take it only once. If they hide the medication, the machine is useless. [Jewel, White female, age 77, Appendix F, p. 185]

Well, would they know when I came home if I had taken them or not? They wouldn’t know for sure, because you can take it out and hide it. [Lillian, White female, age 71, Appendix F, p. 185]
The above responses indicate an acceptance that the device is not foolproof if patients intentionally want to avoid taking their medications. As Jewel implied, intentional non-adherence can occur regardless of whether or not a patient has a Liberty 6000 device.

A final concern involved whether or not pills left in the drawer would be a hazard for grandchildren, or worry that the device was not “tamper proof” when it came to older children and their inquisitiveness about electronic devices and their operation:

My problem is—what I worry about—is when the drawer comes out and is ready to take the pill, I have two little granddaughters that are with me, and I would worry if it were opened. [Adelle, White female, age 76, Appendix F, p. 182]

Well, talking about where you would put it, if you have a houseful of grand youngins, they get into everything they can reach. You would have to have it out of harm’s way. [Henry, Black male, age 69, Appendix F, p. 220]

These responses by some participants reflect concern that grandchildren might have access to the medications and might swallow some of them.

These findings provide a plethora of information for the device designer. They point out pros and cons of the device from the perspective of elderly people who take multiple medications daily. This input is very useful in identifying the reasons for acceptance, or non-acceptance, of the device.

Support Variables

The variables identified in Figure 2-2 as possibly affecting the independent variable include age, race, gender, ethnicity, and socioeconomics.
The only overt comments made regarding age dealt with elderly people’s fear of computers and their feeling that they do not possess the skills required to understand how they work or how to operate them. Geraldine, 65+, suggested that the “fear factor” might vary depending on the individual’s experience. She used the example of her own comfort and ease in her ability to operate her motorized scooter, which afforded her freedom of mobility, but she acknowledged that others’ comfort levels remained with walkers or non-motorized chairs.

Differences in socioeconomic backgrounds revealed themselves in matters concerning the device size. Participants living in rent-controlled residences said that space was limited to accommodating only the essential kitchen appliances (toasters, coffee makers, microwaves). Those who resided in their own homes had concerns about the device’s size in respect to the number of cartridges, which were more than they would use (an aspect also related to cost).

Gender and age contributed somewhat to differences in medication affordability. Men who received their medications through the Veteran’s Administration had less concern about how to pay for both medication and the device than did most of the women. They enjoyed the benefits of having access to automated telephone service, provided by the VA, for reordering and checking on the status of their refills. Men who had been employed by the government also did not mention price as an obstacle to their medication regimen.
Dependent Variable: Adoption of Intervention

Figure 3-2: Dependent Variable and Independent Variables

In the above figure, DV stands for dependent variable, and IV stands for independent variable.

Figure 3-2, above, illustrates the study’s independent variables and their relationship to the dependent variable, Adoption of Intervention. Adoption of Intervention measures the likelihood that an intervention strategy for improving a health outcome is achievable. The dependent variable is dependent on the six independent variables,
each of which is shown to have connectivity to it from the circles surrounding it at the center. Conceptually, the connectivity represents the combined influences of the independent variables on the dependent variable, and those relationships help determine the likelihood of adoption. The multiple circles in the outermost ring represent the values assigned to the independent variables. Their labels represent the grouping of responses from the study most often mentioned, and those that may serve as strong indicators of the degree of the success of adoption, in this case, of the Liberty 6000. For example, in the case of the variable Perceived barriers to taking medications, the concerns most often raised were associated with issues of Forgetting, Cost of medications, and Dexterity problems (see responses in Table 3-3). Perceived barriers to taking medications alone may not predict the success of the adoption. It may, however, when operating in concert with another variable. For example, when the independent variable Benefits of device use is added to Perceived benefits of taking medications, the motivation toward adoption may improve. In the case of the variable Benefits of device use, strong attributes of the device included its ability to remind, to notify or inform caregivers, and its ability to eliminate medication errors. If the biggest barrier an individual faces is identified with some aspect of forgetting to take his or her medications, and if this concern is shared by family members, then the inducement to adopt the device may be greater among this group than among those who did not report “forgetting” as a major obstacle. The interplay of the effect among the variables “Forgetting” and “Reminds” is illustrated by a dotted line drawn between them.

An example of the interaction between variables that may reveal a negative impact on adoption of the intervention is identified by the circles labeled “Cost of
Device” and “Cost of Meds.” Cost was considered a barrier in regards to both taking medications and device use. While the high cost of medication was viewed as a barrier that interfered with the taking of one’s medication, the added cost of the device on top of the existing medication expenditures put device use out of reach of most participants, despite what the device could provide in terms of improved medication adherence outcomes.

The examples provided above are just two of many relationships that exist among the independent variables in the study. They suggest that the factors measuring the independent variables and their relationships to one another have a shared influence upon the potential adoption, and merit further research and investigation for the purposes of the adoption of the Liberty 6000, as well as their impact on the potential adoption of any type of intervention strategy.
CHAPTER 4
A PROPOSED ADOPTION PREDICTION MODEL,
SUMMARY, AND CONCLUSION

Introduction

In 1961, Homans introduced his Social Exchange Theory that explains decision making in terms of rewards and costs. The Health Belief Model (HBM) represents this same concept in the field of medicine. It takes into account an individual’s perception of his or her susceptibility to a disease as well perception of the disease’s severity. It also incorporates an individual’s perceptions regarding benefits to be realized from a course of action (treatment) versus the “costs” (disadvantages) of that course of action.

A goal of this research investigation is to propose an Adoption Prediction Model that can be used to forecast the adoption of adherence strategies and improve adherence outcomes. This model incorporates the cost-benefit “trade-off” concept of the HBM and other expectancy-value theories.

The study identified several major benefits for taking medications and benefits to using the proposed intervention. Each benefit is valued by the importance that the individual assigns to it. The benefits will be collectively referred to as Adoption Benefits in the model.

Likewise, this study identified several major barriers to taking medications and several major barriers to using the proposed intervention. These barriers are not of equal concern to a particular individual. An individual’s attitudes and feelings about each of the barriers he or she faces, give it a relative value. The barriers will be collectively referred to as Adoption Barriers.
Adoption Benefits and Adoption Barriers represented in the Adoption Prediction Model (Figure 4-1) are represented by vectors that converge. These two vectors meet at a prediction point, Adoption. Its position within the model indicates the likelihood of acceptance. Ultimately the decision of whether or not to adopt the intervention is made by an individual after considering the relative pros and cons of the barriers and benefits.

**Figure 4-1: Adoption Prediction Model**

Adoption Benefits and Barriers

*Adoption benefits* are the advantages that will be derived from following a proposed intervention. They must surpass the benefits that exist in the initial, existing situation in order to provide a net advantage. *Adoption benefits* that lead to improved
health outcomes can reinforce an individual’s motivation to adhere to his or her regimen. Benefits may be realized by an individual, and they also may be realized by a group of people who have an illness in common.

Table 4-1 lists the main benefits that come from both following an existing regimen and those that come from adopting a proposed intervention; these main benefits were extracted and compiled from the focus group responses and discussions in Appendix F and from tables in chapter 3.
Table 4-1: Benefits of a Course of Action  
(existing and proposed)

A. Benefits of existing course of action
   - Reduce symptoms
   - Prevent deteriorating conditions
   - Maintain good health
   - Maintain independence

B. Benefits of proposed action (adoption of adherence)
   - Reminds
   - Eliminates medication errors
   - Informs caregivers
   - Facilitates independence

C. Benefits derived from existing and/or proposed action
   - Avoid serious illnesses
   - Improve upon realized benefits from existing medication regimen

The benefits in Table 4-1, list A, are associated with following an existing prescribed regimen. The benefits range from those that are gained from a reduction of pain and discomfort due to ailments, to those of a more intangible nature realized in an elderly person’s ability to maintain independence over his or her life. For many, this would mean not requiring the need of a caregiver or with being faced with the prospects of institutional living because of one’s inability to sustain a prescribed medical regimen on one’s own.

The benefits from a proposed intervention (Table 4-1, list B) are those that provide advantages over an existing course of action regarding the taking of medications. Its capability to serve as a reminder and to eliminate medication errors could result for some in net improvements in health outcomes through mitigating medical risks associated with irregularities in scheduling and dosage amounts. Benefits identified also include those that strengthen the network of caregiver support while at
the same time affording an individual semi-independence by providing the support at “arm’s length.”

The benefits derived from following a proposed course of action provide protection against having a physical condition develop into a more serious illness. (See Table 4-1, list C, above.) These benefits also may enhance existing benefits already achieved as a result of carrying out a prescribed course of action.

*Adoption barriers* are the obstacles that will be encountered when following a proposed intervention. They must surpass the barriers that exist in the initial, existing situation in order to present a net disadvantage. Some barriers can seem insurmountable and can diminish health outcomes. Barriers may be encountered by an individual, and they also may be encountered by a group of people who have an illness in common.

**Table 4-2: Barriers to a Course of Action (existing and proposed)**

A. *Barriers to existing course of action*
   - Forgetting
   - Manual dexterity
   - Side effects
   - Cost of meds

B. *Barriers to the proposed action*
   - Difficulty loading
   - Lack of control over meds
   - Privacy concerns
   - Size/capacity
   - Cost

C. *Underlying barriers to existing and/or proposed action*
   - A lack of effectiveness of cues/mnemonics
   - Lack of appreciation for the severity of one’s health problem(s) (Denial)
The barriers associated with administering a prescribed course of action (Table 4-2, list A) such as forgetting and manual dexterity, are examples of physical obstacles to success. Side effects from the prescribed regimen may also interfere with the success of sustaining a regimen because of the discomfort or unpleasantness experienced. The financial burden alone, or together with physical impairments, may result in interruptions and prevent an individual from attaining positive adherence results.

The barriers in Table 4-2, list B, are those that a proposed intervention needs to overcome. Other barriers in this list may complicate, rather than simplify, a course of action by placing demands on existing frailties to carry out the adherence tasks. These factors together may result in making people feel that they have less control over their regimens and would require more reliance on others for maintaining their well-being.

Barriers faced in existing situations (Table 4-2, list C) may result from a lack of effective cues/mnemonics means in place to mitigate these difficulties. The lack of recognition of what a proposed intervention may provide may be due to a lack of acceptance of the severity of one’s own health condition.

Proposed Model

Figure 4-2, below, is a graphical depiction of the proposed theoretical model along with a further discussion of the constructs.
Construct 1, *Adoption Benefits*, lies along the horizontal axis, while construct 2, *Adoption Barriers*, lies along the vertical axis. The directional arrows appearing along each axis identify the direction of increasing strength with respect to each construct. In the case of adoption benefits, as the benefits are positively realized, the vector’s direction moves from left to right (low to high). The vertical arrow pointing in the downward direction, representing construct 2, denotes decreasing resistance to the barrier posed (high to low); (In other words, increased proficiency gained over the imposing constraints). The diagonal bisecting the grid delineates the *area of rejection* from the *area of acceptance*. Predictors measuring high barriers and low benefits will
fall in the rejection area of the graph above the delineating line. Likewise, predictors indicating high benefits and low barriers fall in the area of acceptance in the lower portion. As predictors of adoption benefits and barriers increase in strength, moving from left to right and top to bottom, respectively, the likelihood of adoption becomes greater. Predictors that fall closest to the line on either side represent a weaker likelihood of adoption and rejection, while the areas further away from the diagonal in either direction represent a stronger likelihood. For measures that fall on the line, predictions are indeterminate.

The initial rationale for this predictive model is based on a patient-centered approach that views patients as active agents in their treatments rather than as “passive and obedient recipients of medical instructions” (Stimson, as cited in Conrad, 1985, p. 30). According to Stimson, patients have their own ideas about taking medications, which come only in part from doctors – that affect their use of medications. The constructs of the model are aligned with this patient-centered perspective because the plausibility of adoption is based on one’s own ability and/or motivation to overcome adoption barriers and improve health outcome benefits.
Discussion of the Model

For purposes of discussing the position of the predictors identifying likelihood of adoption, the graph has been segmented by a grid, and each grid square is referred to by its relative column and row identifier. Columns indicate benefits, and rows indicate barriers.

In the example illustrated in Figure 4-3, above, a person who does not adhere to a preventive health measure such as taking a daily low-dose ("baby") aspirin, may fail to do so because that person does not recognize an immediate or overt health benefit; yet
after experiencing a cardiac incident which elevates the risk of a life-threatening heart attack or stroke, the person may become more committed to the regimen and reevaluate the significance of the aspirin as a preventive measure. In the example illustrated above, in Figure 4-3, the individual's perception of benefits initially would lie in the uppermost portion of the graph, column C1, indicating the area of low benefit, and then, predictably, move to the right as health benefits improve.

Adoption barriers measure the degree of competency or control an individual perceives to have over identifiable barriers that create impediments for him in meeting adherence regimens. Those barriers are obstacles impeding adherence such as financial cost, medication side effects, increased inconvenience of a proposed intervention, and physical impediments concerning cognitive, dexterity, seeing, and hearing functions that cause interference.
An example (Figure 4-4) of an adoption barrier might involve the difficulty of removing a lid from a bottle of medication. For those with severe chronic arthritis, the task may be painful and the ability to overcome the obstacle arduous. For the arthritic sufferer, the barrier is high, and therefore the predictor would lie somewhere in row R1 or row R2 of the graph in the area of rejection, left of the diagonal. As strategies to overcome the barriers are introduced, the level of competency increases, and predictors indicating acceptance would move to row R3 or row R4. One hundred percent is approached on the adoption barrier axis but never completely attained, because it is assumed that some amount of barrier is inherent in any strategy.
Findings from this investigation involved the task of identifying benefits and barriers of using a medication-dispensing device as an intervention strategy to improve adherence to medication regimen outcomes. This model predicts adoptability of a variety of medical devices or strategies developed to achieve improved health outcomes that could, in some cases, save lives.

Applications of the Model

The discussion below demonstrates examples that further examine the constructs of the proposed prediction model and how they may act independently and together to influence/impact predictions about the likelihood of adoption of an adherence strategy. Insight into these constructs can help clinicians and device developers to make recommendations for modifying perceptions of health benefits, and overcome barriers, real or perceived, that will increase the likelihood of adoption. The pathway to adoption demonstrated by the model, then, is to increase benefits and to reduce barriers so that prediction points fall well below the diagonal line, inside the Area of Acceptance.
As illustrated in Figure 4-5, individuals who are strongly committed to an adherence regimen, because of high benefits realized, would be represented by points that lie in columns C3 and C4 of the chart independent of the introduction of any intervention or associated barriers. In this case, one can observe that the patient’s recognized benefits are already at a maximum without the need for an intervention strategy. Therefore, it would appear that any improvements among this group would have to involve actions aimed at removing barriers. The diagonal bisects columns and rows C1,R4 and C4,R1, indicating that predictions of acceptance/rejection occur half the time at the extreme minimum and maximum of barriers and benefits. The likelihood of
adoption among this group would be represented by a downward shift from columns and rows C3:C4,R1 to columns and rows C3:C4,R2:R3. Assume that data points appearing in columns and rows C3:C4,R1 represent a population prior to the introduction of an intervention strategy, with adherence levels at about half. Then assume that a strategy was introduced, like a mnemonic device, to aid the individual in cognitive ability so that the barriers to remembering would be reduced. The improvement realized would leave adoption benefits unaffected, but removing barriers to memory could improve the likelihood of adoption. In this example, the adherence improves to 88%.

Unlike a cost-benefit analysis, the benefits and barriers using this model can independently serve as reliable predictors of adoption. This method allows one to treat the constructs as two vectors independently: an adoption-barrier vector and adoption-benefit vector. This allows one to observe how events affect each of the individual vectors, as well as to determine the final position of a prediction point the predictor by the summation of the two vectors. Conversely, if one wanted to interpret the meaning of the position of a prediction point on the chart when one of the two vectors is unknown, then one would only have to look at the position of the point to create the unknown vector.

If an individual derives little or no health benefit from following an adherence regimen, one would have little reason or motivation to employ an intervention strategy to assist that individual. The intensity of the patient’s commitment is low because benefits are low, and the predictor point indicating this would be located within the areas of
columns C1 and C2 of the chart. To predict likelihood of adoption of an intervention without altering the patient’s perceptions of the benefits of adoption, the adoption barriers would have to be reduced by a minimum of 75% for him to consider one at all. The shaded area in column C1, Figure 4-6, below, is graphic depiction of the amount of barrier that must be overcome for the intervention to achieve acceptance.

**Figure 4-6: Achieving Acceptance by Overcoming Barriers**

![Figure 4-6](image)

**Pathways to Adherence**

The predictors derived from the convergence of the vectors represent the likelihood of adoption for an individual or group at a particular point in time. They can be
thought of as providing an adherence baseline. However, once plotted, over time, the likelihood of adoption, influenced by changes in competencies over barriers or improved benefits, can shift further right or left and reveal changes in one’s adherence behavior. Based on the position that the adoption point occupies, then, at any given time, clinicians and device developers can design new, or employ existing, strategies targeting those factors that influence benefits and barriers to guide the individual or group through unobstructed pathways for adopting or maintaining successful levels of adherence practices. The emphasis of strategies to maintain the likelihood of adoption when predictors fall within acceptance limits would require a different methodological design than one applied to those predictors that lie within the rejection area. One suggestion would be to design methods for improving strategies that require a move of the shortest distance from the original position to the final position. For example, as illustrated in Table 4-7, below, a predictor that appears in column and row C1,R1 may be considered highly resistant to acceptance on both measures.
The shortest distance from point A to the area of acceptance would be along line AB. Line AB represents actions taken to reduce barriers while simultaneously proportionally increasing benefits. This is the most direct, and most efficient, way to reach the area of acceptance. The best adherence strategy would include equal emphasis on both benefits and barriers and would be represented by line AB. Point C can be any point below B along the rejection/acceptance line. Line AC reflects an emphasis on actions taken to reduce barriers and, to a lesser degree, actions taken to increase benefits. Any point above B along the rejection/acceptance line reflects an emphasis on actions taken to increase benefits and, to a lesser degree, actions taken to
reduce barriers. Barriers and benefits are different for each individual. Clinicians, in designing a strategy to improve adherence, need to take into account the individual's particular strengths and weaknesses with regard to that individual's barriers and benefits. A particular barrier may be more formidable for one person than for another, and a particular benefit may be more attractive to one person than to another.

In the same way that pathways to acceptance from rejection are achieved, researchers must also be equipped with methodologies that help to maintain acceptance, once it has been achieved. Remembering that predictors are dynamic through time, and that pathways to acceptance are bi-directional, clinicians must be equipped with plans to mitigate circumstances that result in a change in health status that impact both the level of benefits and barriers upon which acceptance was achieved and maintained over time. In the case illustrated in Table 4-8, where a predictor started out in column and row C3,R2, an area of moderate acceptance, and then begins to shift upward, or to the left, suggests some changes are occurring that result in a decrease in benefits and increase in barriers. Monitoring the patterns of movement of the predictors can help to identify for clinicians the methodologies which target those underlying forces standing in the way of success strategies that help to encourage positive outcomes as a result of strong commitments to adherence behaviors.
Figure 4-8: Strategy to Maintain Acceptance
Testing the Application of the Model

To further validate the applicability of the model would require the design of a quantitative test instrument to gather data from which to generate the constructs. The data gathered to build the construct for measuring adoption benefits would involve questions concerning one’s perceptions about his susceptibility and symptom severity as well as concerning his perceptions about the benefits to be derived from following a prescribed regimen, be it medication or another form of therapy. For example:

Do you think you feel better as a result of taking all your medications?
1 A Lot  2 Some  3 No  4 Don’t Know  5 No Answer

Do you think your symptoms got better as a result of taking your medicines?
1 A Lot  2 Some  3 No  4 Don’t Know  5 No Answer

Do you worry about what will happen to you if you miss your medications?
1 A Lot  2 Some  3 Not at All  4 Don’t Know  5 No Answer

These findings would then be correlated to form a composite weighted measure to produce a variable that measures a quantity on a scale of benefits. Similarly, with respect to the model’s second construct, adoption barriers, the test instrument would include questions that both capture the types of barriers associated with a prescribed adherence regimen and quantify the level of difficulty one ascribes to the barrier. For example:

Do you remember to take all of your medications every day?
1 Yes  2 Some  3 Not at All  4 Don’t Know  5 No Answer

Why do you not take all of your medicines?

The medicine’s side effects make me feel bad.
1 Yes  2 Some  3 Not at All  4 Don’t Know  5 No Answer
The medicine is too expensive.
1 Yes  2 Some  3 Not at All  4 Don’t Know  5 No Answer

I had difficult opening bottles.
1 Yes  2 Some  3 Not at All  4 Don’t Know  5 No Answer

I worry about taking too much medicine.
1 Yes  2 Some  3 Not at All  4 Don’t Know  5 No Answer

An effort to enhance the validity and reliability of the predictors that measure adoption barriers, in particular, would be to find the minimal number of variables on which to base predictions. This would entail designing an instrument that can extrapolate from the findings those variables that are easily quantifiable and highly correlated to others. Reducing the number of variables that are highly correlated based on shared characteristics can then generate predictors based on standardized measures of barriers and improve the reliability of the predictions. This would be particularly useful when the model is employed in the analysis of larger studies where the number and variety of what individuals perceive as barriers would be too numerous to assess if there was not a way to select those that were the most significant.

Application of the Model

The thesis for this model was developed in response to a call by social science researchers for a multidisciplinary approach on the part of manufacturers, social scientists, and patients-as-consumers to finding practical, achievable, and effective strategies and solutions for reducing medication errors, and the complications associated with them, preventable. The intent of this model, then, was to provide a
reliable tool upon which to examine and evaluate the success of existing adherence strategies within a targeted population, and to provide a paradigm for use when developing and designing new strategies. With respect to existing strategies' predictions based on adoption benefits, the model may provide clinicians with insight into a patient’s perceived reality of adoption benefits from which clinical approaches can be implemented to align a patient’s perceived reality of benefits with clinical realities. Predictions of adoption barriers for an individual or for a target group can point out to developers of device technologies possible areas of improvement in operability or functionality that could help individuals improve self-mastery over identifiable obstacles. For marketers of intervention strategies and devices, the model may serve as an invaluable asset because of its ability to predict which individuals or groups would be open to, and accepting of, new devices. It also will be useful in isolating the individual barriers and benefits.

Conclusion

This research study focuses on older adults and how they can use technological devices to help prolong their personal independence. Elderly people face many barriers that can prevent them from taking their medications. A broad array of technological solutions has been used to address this problem. To properly design such solutions, it is necessary to intimately understand the many difficulties that confront the elderly population. I used a version of the Health Belief Model to examine these barriers. I also explored the barriers to, and the benefits of, using a high-tech assistive device.

Adherence to a medical regimen is a major problem for older people facing a high prevalence of chronic disease and physical impairment that may hamper their
efforts to achieve desired health outcomes. The elderly also face external barriers to adherence beyond just physical limitations. Under the present circumstances, many elderly people are forced to make decisions based on overriding economic considerations rather than medical necessity. Often financial situations dictate intentional nonadherence. This risky behavior includes “stretching” prescriptions by taking half doses and taking medications only after symptoms arise. Another economic factor that affects adherence is the lack of timely access to prescription refills. Again, this problem is related to affordability, and it can further compromise older people’s health.

The consequences of leaving the adherence issue unresolved cost the healthcare sector of the economy billions of dollars in hospitalizations and in long-term assisted-care for elderly, and it deprives older adults of years of prolonged independence. Policy makers need to understand and address the factors that relate to medication affordability in order to reduce the external barriers that threaten the health of the older population.

One of the goals of this investigation was to acquire insight into how the perceptions about health and illness of a group of older adults influence how they engage in health behaviors. Issues of social support, self-care behaviors, physician-patient interaction, illness interpretation, and personal control all contribute to how the elderly arrive at decisions to seek medical treatment and follow prescribed modes of care.

The use of a qualitative research approach provided the opportunity for in-depth inquiry using a patient-centered approach to issues of medication adherence so that the
appropriateness of strategies for improving adherence could be assessed. As the individual's role in health decisions becomes more participatory, the patient's knowledge, values, attitudes, and perception about his or her illness or therapy become key in predicting the likelihood that the patient will adopt a prescribed treatment regimen. A goal of employing this qualitative approach was to discover what older patients reveal about their feelings of control, mastery, and competency over self-care strategies, and how these factors can help to predict success of an intervention strategy aimed at improving health outcome benefits through the efficacy of self-care.

Historically, nonadherence to medical recommendations for the use of adaptive, or assistive, devices has been widespread. A “technology gap” exists for older adults today. Most members of our current elderly population never became computer literate. Many do not have the knowledge, skills, or comfort level to operate complex electronic devices.

One challenge for device developers is to design devices that will be user-friendly to those individuals who are on the other side of the “technology gap.” The “technology gap” has an impact when the elderly contemplate the use of high-tech medical devices that can remove the limits on mobility and independence that often accompany the aging process. Devices can help remove barriers so that the elderly can take full advantage of the promises that technology offers.

Members of the “baby boomer” generation are now nearing retirement age and the age bracket of senior citizens. Many of them will arrive with the know-how to operate complex electronic devices. Unlike their parents, they grew up surrounded by technology and the need to become functionally literate in its use. However, for the next
few decades, the elderly population will continue to include many individuals from across the “technology gap.”

A shift in the practice of medicine from acute to chronic treatment of illness has led medical device manufacturers to introduce devices that can reduce the barriers that individuals face in meeting their medication regimens. Effective approaches can substantially affect morbidity and mortality rates and can help decrease healthcare costs. Successful solutions can be found when social scientists and medical device manufacturers pool their specialized knowledge and work together.

Findings from the study have contributed to development of an adherence prediction model that will provide a useful set of predictors to gauge design and performance considerations to assist older adults in their daily living. As in any small sample research of a qualitative nature, the findings and analyses presented are descriptive and not generalizable. However, the research and the findings upon which the adherence prediction model was formulated, have generated many indicators that will provide a basis for further planning and can guide social researchers and medical device developers in determining how self-care behavior influences successful health outcomes.
Title of Study: The Feasibility of the Liberty 6000, a tablet and capsule dispenser, as an aid in improving medication adherence among older adults.

Principal Investigator: Suzanne August

Co-investigators:

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes the alternative treatments that are available to you and your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Purpose of the study and how long it will last:
The proposed research investigation will employ a series of 5 focus group discussions to gather data on the acceptance of an automated pill and capsule dispensing device, the Liberty 6000, in assisting the elderly in taking their medications. Questions asked are designed to learn what their existing advantages and disadvantages of using a medication dispensing device in their home care setting. The length of the focus group sessions will not exceed 90 minutes. Participants will be offered a break as needed and refreshments will be provided at the close of the session.

Description of the study including the procedures to be used:
A series of 5 focus groups will be conducted. Each group will include 6 participants; both males and females of African American, Anglo, and Hispanic descent living either independently or semi-independently in a home setting or residential group-care setting. The venue selected for the group discussions will be at a convenient location that is easy to find, accessible, such as a space in a local library or senior citizen center. The locations will be determined most likely by where the participants reside. A moderator and moderator assistant will lead the discussions. They will greet the participants at the door and make the appropriate seating arrangements. Assistive devices such as hearing aids, or mobility devices will be available to accommodate those who have requested them prior to the session.
Description of the study including the procedures to be used (continued):
Questions will be asked about 4 existing medication taking practices, how successful they are, and what the participants believe are the advantages and disadvantages of using the Liberty 6000 to dispense their medications in their home care setting. All questions will be discussed orally. The use of a video presentation will be used to facilitate the discussion.

Description of procedures/elements that may result in discomfort or inconvenience:
There are no inherent health or physical risks to those who choose to participate in the focus group study as described. Participants can withdraw from the discussion at any time without prejudice, penalty, or loss of benefits and that they will still receive their payment for participation. Participants are under no obligation to purchase the device, nor are they promised the use of the device at any discount as a result of their participation. These measures will be taken to help control biased response and to control for reliability and validity testing.

Description of the procedures/elements that are associated with foreseeable risks:
Participants will be able to rely on the moderator's qualities of respect and sensitivity as a basis for their responses. The moderator will do everything in her power to help generate a setting that is conducive to discussions concerning medical conditions that can be somewhat personal in nature. The moderator will display both tolerance and respect for the participants and exhibit interest in both the participants and their viewpoints, regardless of personal experience.

Benefits to the subjects or others:
Transportation will be provided to and from meeting place for participants if needed. Participants will receive a $40 stipend for participating. The major anticipated benefit from the data collected from this focus group is for the improvement of medication regimen compliance within the participant age group. Findings will help to determine if this Liberty 6000 prototype model is suited to the medication-taking practices among elderly living semi-independently or independently within the community. Discussions among participants should hopefully provide clues to the potential success or failure of the Liberty 6000’s implementation. Findings will help to determine if this prototype model is suited to the medication-taking practices among elderly living semi-independently or independently within the community.

Confidentiality of research records:
Records will be kept confidential between the research personnel and participants. The results of the discussion will be compiled in a manner that makes it impossible to identify any single individual from the presentation of the study results. While videotaping may be used as an aid in the transcription process, the tape(s) will be available for review only by the researcher for the purpose of making a script of the discussion, after which the tape(s) will be destroyed.
UNIVERSITY OF NORTH TEXAS
RESEARCH CONSENT FORM (Continued)

Review for protection of participants:

This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940) 565-3940.

RESEARCH SUBJECTS’ RIGHTS: I have read or have had read to me all of the above. Suzanne August, principal investigator has explained the study to me and answered all of my questions. I have been told the risks or discomforts and possible benefits of the study. I have been told of other choices of treatment available to me.

I understand that I do not have to take part in this study, and my refusal to participate or to withdraw will involve no penalty or loss of rights or benefits or legal recourse to which I am entitled. The study personnel may choose to stop my participation at any time.

In case there are problems or questions, I have been told I can call Dr. Susan Eve at telephone number .

I understand my rights as a research subject, and I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done. I have been told I will receive a signed copy of this consent form.

________________________________________________________________________________________
Subject’s Signature Date

________________________________________________________________________________________
Witness’s Signature Date

For the Investigator or Designee:

I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

________________________________________________________________________________________
Principal Investigator's Signature Date

Research Consent Form -Page 3 of 3
APPENDIX B

SCRIPT OF VIDEO PRESENTATION OF FOCUS GROUP QUESTIONS
APPENDIX B:

Transcript from Video Presentation of Focus Group Questions

Actors:

Female 1: White, age 65+
Female 2: Hispanic, age 70+

Male 1: White, age 80+
Male 2: Black, age 70+
Male 3: White, age 90+

**Question 1: What illness or condition do you feel susceptible to?**

Female 1: I feel vulnerable to my MS because I know people that have it and are in worse shape than I am. I also feel vulnerable to cancer because both my parents had it and a sister.

Male 1: I think there is some vulnerability attitudes as you grow older. At this age I think the vulnerability is to those things that just suddenly come like the beginning of Alzheimer's disease, cancer and the various forms that can start up.

I don't dwell on these things but you constantly think about arthritis in your thumb or in your shoulder.

So that's the kind of things that are in the back of your mind occasionally and friends who show up with these various forms of late life disease. I think that makes an impact when you start thinking about ...well I wonder what's going to happen to me next. But I don't dwell on it very much.

Male 2: I worry myself personally because hypertension runs in my family and in fact it runs in my race of people to be exact. I have been told this many times by the medical authorities, and this is what really bothers me.

I stay on the right diet. I don't eat pork, I stopped eating salt, I don't smoke, I don't drink, I don't dip I don't chew but however this is what really bothers me because this is a very serious disease. It has taken a lot of my family members that have perished from this disease.

Female 2: Well, I worry about my diabetes because it's a real bad sickness. But I take my medicines and I go to the doctor every time I have to go. The worst thing I think about is if I lose my sight. My eyes, you know, my vision, but, Thank God, right now it's okay, but I worry about it.

142
Question 2: What concerns you about the disease?

Female 1: My concern about having any illness of any kind is that the fact that I would be incapacitated. I am a person that’s a go-getter, I like to be involved I like for my day to be full, and if I was incapacitated I would probably go bonkers.

Male 2: What really concerns about my condition is the fact that is with hypertension one is subject to strokes and things of this nature. In the event that this would happen it would really have me because if it happened to me I could not do my profession.

One side of me would be paralyzed or whatever and then I would be at the hands of relatives—I would have to move in with a relative or with someone to kind of look after me, that would really concern me, because these things do happen with ailments which I have.

Male 1: One of the things that you are really concerned about when you are coming up with an illness that could debilitate you.

I think well if I have something wrong with my mobility I can’t take part in those things I enjoy so much If your knees go out and you enjoy playing tennis and you can’t play tennis anymore.

Something about terminal illness, then you have to plan for your location where you are not a burden to the family. I would hate to have to move in with my children and put that burden on them but then you worry can you afford to go to a good nursing home, can you afford that sort of thing, you need that sort of constant care, that sort of thing we worry about.

Just having a normal, not exciting, but just a normal way of living day-to-day.

These things are more important than dramatic thing we would like to do like climbing a mountain, or rowing a boat, or sailing around the world. Just maintaining a decent manner of life day to day. That’s the kind of thing that you wake up at 3:00 in the morning, and say, “Whew, if I have this and I can’t do that anymore. I can’t have that just a normal good working relationship with life each day.”

Question 3: What do you do to manage your condition?

Female 1: Steps that I take to compensate for my MS is I do swim when I can, I haven’t just recently because I had a foot infection and couldn’t go in the water but I do go three times a week. And if I can’t do that my son has a pull-down walk thing that I walk on and I also walk my dog every day.
I try to take my medications regularly but I do have a memory loss thing and I forget.

Female 2: When I feel bad I don’t take my medicine. You know once and a while I don’t take my medicine, when I feel real bad. But otherwise I take my medicines every day.

Every time I have an appointment with the doctor I go and see him. It’s very important for me to see the doctor.

I don’t exercise too much because I get tired you know with my leg, I’ve had surgery. I don’t do a lot of exercise except here in the house walking around.

Right now my diabetes, I can take care of it, I can do my house work take care of the kids, I can’t go outside, no, no, because of the surgery on my foot, but inside I can do everything, slow, but I can do it.

Male 2: What I do to cope with my condition is that I take my walks every day every morning to be exact, and later in the evenings if the weather permits. I’ll take another walk, and of course I’ll stay on my medications and do all the things that I have to do to try to stay ahead. It’s all one can do to try to stay ahead.

You know, you can take medicines and things every day all day, but there are other steps you can take to help, to go along with the deal. It’s all a package deal. And I try to stay to it, and stay with it, and do as best I can. Staying ahead is the main thing.

I am not one to wait until my medicine runs out. I stay right on it. I want to be ahead of it, if I possibly can, and this is what I choose to do on my own. I exercise regularly. Being an ex-professional athlete myself for a number of years this is a part of me, so I have to accept the ailment of hypertension because it is now part of me so I have to do what is required to keep me ahead of it.

Male 2: I believe in this because, I have always been, health wise. I try to eat right and things of this nature. I don’t try to abuse my health with harsh foods and things that I know would be against me. I never drank alcoholic beverages, I never smoked cigarettes, I never used drugs of no kinds, narcotic wise, unless prescribed by health professionals.

Male 1: I think you take various steps in with coping with concerns. So many people have had certain diseases or certain problems that ultimately you or some members of your family are going to have, and with Internet and with the availability of all the information you can essentially look it up and read about it.
I think some people are afraid to investigate and do their own research on it. I think that is something we can all do.

There are several things that I try to do. I have that yearly physical a complete physical.

You don’t want to trot to the doctor every time you have a headache or a pain, but there is a persistence of certain things I think you have to investigate that.

If you have someone in the family who has some medical knowledge, you can discuss this with or a friend, then you discuss a symptom you may have.

And if you know how to use the Internet, you could usually look up those things in a medical.com.

So I think there are a lot of things we need to be in contact with and not just say, “Well, if I don’t know about it, it won’t happen to me.”

Because I think those things can happen and we need to be well educated because and it’s a great time of our life to be educated.

When I was a kid no body ever talked about a disease that somebody in the family had. You just didn’t mention that. And that’s dangerous. And that’s I think people have to share those things, and people share more than they used to.

Female 1: I am member of the national society for MS and I get a booklet once a month and I also get from the local Lone star chapter and I read all these and every once and awhile (I can’t remember the name of it) but it comes on the television and then you can call in and ask questions of the doctors and although I have never called in I do sometimes watch it.

**Question 4: At what point in your concern and worry do you seek help?**

Male 2: If I begin to feel bad, say for instance a fever, or sneezing, or coughing or what have you I would go to see my physician, because normally this is not me. It hasn’t happened over the years, and so I would by then because of the reading and stuff that I do, that something is wrong with me, so I would immediately go to my health professionals and consult with them about this.

Female 1: I am a person who will not usually go to the doctor or will not go to the physical therapist until I’m hurtin’ pretty bad. Maybe two or three weeks, maybe four weeks, maybe five weeks. Sometimes it’s been longer than that.
I go to my doctor once every six months unless I have symptoms and I'm really bad about not going. It's not my favorite thing, doctors are not my favorite thing—I don't like them and I have to be pretty well out of it, down in bed in pain lots of pain before I even consider that they're there.

Male 1: I think you finally come to the conclusion in looking for action when you are hurting that, there is a very deep question in your mind something must be wrong.

Having a lump in your side. You go to a normal doctor who says we have to do some things with this and that.

Maybe there is an outside influence that you hear about or read about that says ok there’s got to more than this, so you go to a specialist on it and you go to the specialist and find out that you need to have a colonoscopy, let's say.

And, I think it’s more than going to a doctor sometime that you have to be pretty cognizant of things that are going on around you and be informed about various things.

Male 1: I think that's a very important part that most people don't pay attention to and say, “Oh, that will just take care of itself.”

**Question 5: Is it important to take your medications?**

Female 2: I take my medicines because I feel better and I can take care of my grandkids and my house work and I feel better because I know I need them, and I feel better and I feel good.

Male 2: The benefits I reach by taking my medications is the fact that it helps me to try to keep this condition under control. I know it won’t cure me but it helps me. So this is what I intend to do for as long as I have to.

As I said before, this is why that I watch all medical news, coming through, there might be something that comes through that is even a greater benefit than the medicine that I am taking. I don’t know that but I do think that something sooner or later might come that will help me on this condition which I have. But until then I will be taking my medication as I have always done and seeing my physician like I always do and things of this nature.

Female 1: I think sometimes it helps and sometimes I think it’s a waste of time. When you get up and walk the floor all night like I did last night in particular I can’t see that the medicine did a bit of good.
Then I may not take that medicine for two or three weeks because I figured it didn't do me any good, then I'll really get to walking the floor then I'll start taking it again. I am not very good with my medicines.

I'm not always sure that all the medicines that they give you for MS are what you need, and I am very hesitant to try new things.

I have had a lot of success with prednisone. People tell me that it's not really good for you and that it has a lot of side effects, but for me it has worked whenever I've had an exacerbation. When that occurs and I get on the prednisone, it works. So that has been the rule of thumb for me on that.

Male 1: Taking the medication in the manner in which it is given to you reduces the worry of what is going on. Ahh, suffering with a little arthritis pain you take a certain pill. You have a congenital pain in the back or knees because of whatever reason, you take the recommended dosage, and it goes away for awhile.

I think it's ridiculous to say well I can work through all this pain with all the availability of medicines today. Why worry about say waking up at 3:00 in the morning; 3:00 is a key time. Everybody I talk to says, "I wake up at 3:00 a.m. worrying about this."

Why wake up at 3:00 worrying about how you going to hurt the next day. All you have to do is take your medications. That’s all I have to do. I don’t have depression, I don’t have allergies, I don’t have pain.

So, I’m going to work with those medications and take those medications religiously, just exactly like the doctor prescribed.

Male 3: Well, I don’t have any definite feelings about taking my medications. It's just a long-term process. And it just requires me taking the medications.

Due to my age, I’m arthritic, and a lot of times I have a short memory.

Taking a pill and then the next 15 or 20 minutes that take in and affect me I don’t feel it.

Male 2: Medications that my doctor prescribes for me helps me tremendously, this is all that I can do, and this is all they can do, is to prescribe and give me medication to help me with my ailment. And this why I try not to worry, because this is a fact. And until something else comes along, I shall always to take my medication as prescribed by my physician.”

Male 3: I don’t put any meds aside—because when I take it I need it then and there. By putting it aside is not going to help me a whole lot.
**Question 6: Why don’t you take your medications?**

**Female 2:** Sometimes I don’t take one of my medications if I’m going to drive because I feel dizzy for maybe five or 10 minutes so I don’t drive.

If I have to go somewhere and drive I don’t take it. Maybe, if it’s supposed to be twice a day, well, I take it just once a day, at night, and go to sleep.

**Male 2:** When I take my medication, some of the things that bothers me I worry about is sometimes I may not take them on time, I will forget to it, you know things of this nature and so this is the main thing.

Sometimes I may have a headache or something and then find out that I have missed one of the medications I should have taken and didn’t take it. I had taken the others but didn’t take that one so it is always good to take them as prescribed by your physician or health professional.

**Male 1:** I don’t like to take the meds because it seems like the price goes up so much and we just can’t afford to take the medications that cost this much money.

I have so many to take. And all of a sudden your taking 6-8 medications a day. And it’s almost beyond remembering or wanting to remember.

That is part of my problem I just don’t want to remember sometimes because if I cannot take them I save money, and I save the pain and headache of having to think about, that’s my biggest problem.

I don’t like to take the meds because it seems like the price goes up so much and we just can’t afford to take the medications that cost this much money.

**Female 1:** The reason that I don’t take of some of my medicines—the very reason is that over the years I’ve been given several medicines and I think possibly that’s what is wrong with my mind. That, I can’t remember.

Also because they are so expensive, and I live on a limited income sometimes it’s just not feasible. You know, what are you going to do? Are you going to quit driving your car so you can’t go to the Post Office to get your mail, or are you just going to quit living just so you can eat and take medicine, are you not going to eat and just take medicine.

It’s stupid! And I’m not going to do it.
**Question 7: How do you remember to take your medications?**

**Male 1:** Motivation to take your medicine, and there are many.

The fact that your wife doesn’t yell at you, “Be sure you take your medication.” So you want to take it without having these little clashes.

Basically and most importantly thing – take your medication you feel better. That’s why I’m taking the medication, because I feel better.

You go to the doctor, and he gives me a test and says hey your cholesterol is way up here, take this medication. Next time you go back your cholesterol is down and you see right there the reason for taking your medication.

**Female 2:** I only remember to take my medicine usually in the morning. I have it right there on the counter, I see it when I get my cup of coffee, and that’s when I take it.

The doctor wants me to go on this Fosomax, and he said I’d have to take it first thing in the morning and not eat anything for 25 minutes. I have already gotten panic stricken because I don’t know that even if I can afford it that I will remember and then once you eat something I guess you can’t take it.

Personally, I feel that less medicine is better.

**Male 2:** I will take the bottles with me during the day in the car and have them with me and I would read the prescriptions…and look at my watch and I would write down the different times on a time sheet, and this is how I will remember to take them.

I check my watch, and if I have to take them with food well then if I’m not at my house and I am on the road, then I just stop some place, and get me a sandwich or something and then take the medicine.

**Female 2:** The way I remember to take my medicines is because my meals. I have to take it before my meals, my insulin, and my heart medicine and my high blood pressure before. Then I eat. After I eat I have to take another pill.

I know that every time I eat breakfast or dinner I have to take my medicines.

**Question 8: Would you use a device?**

**Female 1:** If I had a Liberty 6000, I think it would regiment my medicines for me. The alarm would go off and I would know that I had to go in there and take it.
Maybe part of my mental problems would cease to exist because I would be taking my medicine on a regular basis, instead of hit and miss like I do. It would give me the dose I needed. I wouldn't overdose. also, it would remember for me, and it would tell me if I didn’t take it the alarm would go off and remind me.

So, I really think the machine would probably help me.

Female 2: Well, if my doctor told me or asked me or told me to use it or my daughter, you know, to use the machine I will use the machine.

Male 1: I think that having a medicine-dispensing machine would be really great it’s going to be timed. That relieves you of worry about—Did I take my medication and do I have to take it later.

It’s going to help me without having to open bottles and work on these childproof aging proof containers. And the result is that I am reminded several times a day or at least once a day that I can have feeling in my hand or whatever necessary and go and play with my electric trains again.

I don’t have to be preoccupied about being sure that I have to think that in two hours I have to take this medicine ….

I don’t have to have somebody there all the time poking me and telling me… The machine will do that for me. That’s great; that sounds good. Good Idea.

Male 2: The medication dispenser is the greatest thing that has come along in many, many years. I don't have to worry when I have it here, because it would notify me that it is time to have the medicine. The bell would ring the light would come on.

Sometimes it is hard for me in the night to get my bottle if it has fallen on the floor. But if the machine sits right there and it goes off and the medicine comes out and that’s it.
APPENDIX C

THE LIBERTY 6000
Figure C-1: The **Liberty 6000** (The device is identified by its former name, *Liberty 2000*.)

**Liberty 2000 Automated Tablet and Capsule Dispenser**

An adjustable 1000 Hz alarm is provided to alert the visually impaired when it is time for medication.

For persons with tactile impairments, the device is equipped with an automated and contoured delivery tray and a dispense button of sufficient size that only the palm of the hand is needed for operation.

The dispenser’s paper-tape printout can be used to obtain setup and compliance data stored for as long as one year.

For patients with cognitive impairments, the programmable and signaling mechanisms at medication times are beneficial. The printout provider prescribed medication setups and indicates whether or not medication has been taken.

For the hearing impaired, the health care provider can input prescription setup information—using the computer-type keyboard which slides out of sight when not in use—to facilitate successful medication compliance in spite of the patient’s inability to hear verbal instructions for the proper use of medications. A flashing light alerts the hearing impaired when it is time for medications.

**Features of the Liberty 2000 Tablet and Capsule Dispenser**

- Automated delivery of medication
- Eliminates need to open bottle/container
- Eliminates need for special packaging
- Allows printout of stored information
- Prevents overdosing
- Allows at least six schedules
- Provides visual alert for hearing impaired
- Provides audio alert for visually impaired
- Accommodates cognitive impairments
- Accommodates tactile impairments
- Medication is tamper proof
- Power backup
- Electronically stores medication setups
- Stores prescription and compliance history for one year

*For additional information contact:*

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APPENDIX D: RECRUITMENT FORM

OLDER ADULTS SOMETIMES HAVE PROBLEMS TAKING MEDICINES WHEN THEY ARE SUPPOSED TO. A LOCAL ENGINEER HAS DEVELOPED AN AUTOMATED TABLET AND CAPSULE DISPENSER THAT WILL AUTOMATE DISPENSING OF MEDICATIONS AT THE TIME THEY ARE TO BE TAKEN.

WE ARE LOOKING FOR VOLUNTEERS WHO WOULD LIKE TO PARTICIPATE IN AN INFORMAL DISCUSSION GROUP AND DISCUSS THE POTENTIAL BENEFITS AND SHORTFALLS OF THIS MACHINE.

VOLUNTEERS SHOULD MEET ALL OF THE FOLLOWING CRITERIA:

- MALE OR FEMALE 65 YEARS OF AGE OR OLDER
- AFRICAN AMERICAN, CAUCASIAN, OR HISPANIC
- CURRENTLY TAKING A MINIMUM OF THREE PRESCRIPTION MEDICATIONS ROUTINELY
- DOES NOT CURRENTLY RESIDE IN A NURSING HOME
- ENGLISH SPEAKING

INDIVIDUALS SELECTED TO PARTICIPATE WILL RECEIVE $40 FOR TRAVEL EXPENSES.

CONFIDENTIALITY ASSURED.

PLEASE RETURN THE POSTAGE PAID POSTCARD AND PRINT YOUR NAME AND TELEPHONE NUMBER. FOR THOSE WHO ARE LOCAL PLEASE CALL 214-728-1319 AND LEAVE YOUR NAME AND TELEPHONE NUMBER.
Yes, I wish to be contacted to participate in the group discussion about the use of the automated tablet and capsule dispenser.

Please print the following information

Name (First, Last): ________________________________

Contact phone: ________________________________

Best time to call: ________________________________

City in which you reside: ___________________________

PROGRAM COORDINATOR

1510 HILLCREST DRIVE

LITTLE ELM, TEXAS 75068
APPENDIX E

DESCRIPTIONS OF THE FOCUS GROUPS
APPENDIX E: DESCRIPTIONS OF THE FOCUS GROUPS

The number of participants in the seven focus group sessions totaled 49. The first five groups in Table 2-1 (on page 43) attended sessions held in urban communities of North Central Texas; sessions for the last two groups were conducted in a metropolitan area of North Carolina.

Group 1: Cherry Hill Apartments, Southwestern U. S.

Cherry Hill is a five-story, renovated hotel. To live there, residents must be at least 63 years old and meet certain (maximum) income requirements. Each resident's contribution to rent varies according to income, assets, and extent of medical expenses. Applications for residence are reviewed and certified by a qualified Section 8 Specialist of the city’s Housing Authority. The Section 8 Voucher Program is a subsidized housing program that helps poor, elderly, and disabled people to rent respectable housing. The focus group consisted of 9 participants: 1 White male, 6 White females, and 2 Hispanic females. None of the participants had spouses residing with them. The average age of the group was 75, with the youngest at 68 and the oldest at 80. Five participants were on three medications, and the other four were taking between four and six medications.

Group 2: Meadows House, Southwestern U. S.

Meadows House residents require some types of non-medical assistance with daily activities. Assistance ranges from simply providing meals and activities to helping with bathing, dressing, grooming, eating, medication supervision, respite care, and other personal services. Residents are encouraged to exhibit independence, and every effort
is made to stimulate continued socialization, while providing support with the once
demanding chores and isolation of living alone. Participating in this group were 8
women whose average age was 83, with ages ranging from 70 to 98. None of the
participants was living with a spouse. Seven of the women were White and 1 was Black.
The 8 participants reported being on more than three medications, with the highest
number of daily doses reported to be 15.

Group 3: Township Senior Community Center, Southwestern U.S.

The Township Senior Community Center offers a wide variety of senior programs
and field trips tailored to the interests and needs of adults over 50. Program offerings
include arts and crafts, historical tours, a bridge club, aging seminars, and meal
program. The center also hosts workshops, speakers, and other events. Individuals
selected from this facility regularly attend senior programs at the center. The facility is
situated in a middle-class suburb in a predominantly White neighborhood. The 10
individuals who participated in this session were residents of the community who live
either on their own or with family members in the surrounding communities. Their ages
ranged from 76 to 86, with an average age of 78. Comprising this group were 2 White
males, 7 White females, and 1 Black female. All members of the group were on a
minimum of three medications. Additional data about the number and dosage of
medications taken by each participant was not collected for this larger group due to time
constraints and the absence of the assistant moderator who would normally assist in
gathering this information. One male participant requested to leave early due to
transportation issues.
Group 4: Greater Senior Community Group, Southwestern U.S.

Greater Senior Community Group reaches out to 46 different communities by offering a wide range of services, including financial assistance; family counseling; social casework; health services; pharmaceuticals; food; affordable rental housing; home restoration; vocational assessment and counseling; career training; job search, and spiritual counseling. The participants were recruited from the group of minority elderly people who attend the senior programs held on Mondays, at which time they are able to visit the food pantry, and attend a noon lunch or a social event. Some of the participants live in CCA housing, while others receive rides to and from the center via transportation provided by the center. This group comprised 6 participants: 1 Hispanic male, 2 Black females and 3 Hispanic females. Only one woman was living with a spouse. Another woman lived with her 90-year-old sister, while the remaining participants lived alone. One female participant, who was non-English speaking was aided by her friend (also a participant), who translated her comments during the session. The average age of the group was 78, with ages ranging from 65 to 86. All participants were on three or more medications. Three participants reported taking four medications, and 2 reported taking five. Two female participants requested to be excused before the end of the session and left at different times, although each had participated in at least 40 minutes of the session. One had to leave due to transportation issues; the other wanted to visit the center’s food pantry before it closed.
Group 5: Plantation Manor, Southwestern U.S.

Plantation Manor, like Cherry Hill Apartments, provides Section 8 housing for low-income senior citizens. It has the capacity to serve 140 persons on an independent living basis and provides individual, bungalow-type housing for its residents. The session was held in the residence's community room. The group comprised 5 participants: 2 White females, 1 Black female, and 2 Black males. Two of the African American participants were husband and wife, the rest lived alone. The average age was 69, with the youngest at 66 and oldest at 70. Two participants were on four medications, 2 were taking five medications, and 1 was taking nine medications, all on a daily basis.

Group 6: Magnolia Retirement Community, Southeastern U.S.

The Magnolia Retirement Community consists of 276 residential apartments designed for independent living and 54 assisted-living apartments. Also on the grounds is a nursing home facility for 50 residents and an Alzheimer's unit.

Approximately 399 residents live at the Magnolia Retirement Community. To secure an independent living residence, a person must be at least 62 years old, and qualify to live independently or make private arrangements for needed assistance. The group consisted of 6 White males, all residents of the independent living community. Two were married, and four were widowed. They ranged in age from 79 to 87, with an average age of 84. Length of residence spanned from four months to nine years. A common characteristic across the group was that none of them was native to the area but had come to reside at the Magnolia Retirement Community from throughout the
U.S. because it was in close proximity to either a daughter or son. The number of medications that the participants reported taking ranged from three to seven.

Group 7: All Saints’ Baptist Church, Southeastern U.S.

All Saints’ Baptist Church has been a presence in the community for at least 35 years. Membership in the church numbers approximately 800. Arrangements for recruiting the group were made through the church’s associate pastor. The associate pastor spoke to members of the congregation who met the criteria for the study and asked those who were available to volunteer. The individuals who were selected to participate had been members of the church for 35 years or more and lived independently in the community. The session was conducted in the church’s boardroom and was attended by 5 Black males ranging in age from 69 to 88, whose average age was 75. Two of the participants were brothers who lived together, and the remaining three were married and living with their spouses. The number of medications taken by the participants ranged from three to nine.
APPENDIX F

TRANSCRIPTS OF FOCUS GROUP DISCUSSIONS
APPENDIX F

TRANSCRIPTS OF FOCUS GROUP DISCUSSIONS

GROUP 1: CHERRY HILL APARTMENTS

Group participants: (Real names have been replaced with fictitious ones.)

Al, White, age 70
June, White, age 77
Kate, White, age 74
Elaine, White, age 68
Minerva, Hispanic, age 72
Beatrice, White, age 77
Hannah, Hispanic, age 80
Betty, White, age 77
Jean, White, age 76

Moderator: What are some of the difficulties in taking your medications now?

Jean: To remember to take my pills is my problem.

Minerva: I forget to take my pills

Minerva: I forget to take my pills, too, because I am doing 10 things at one time.

June: I am very much interested in being able to have my pills sorted out properly. I have a box mainly like this one and my daughter helps me with. She [my daughter] mainly helps me so that we remember when to reorder the prescriptions. Because sometimes I was delinquent in noticing that the tube was getting too low and then I would be without medicine for a couple of days. So she took charge of the medicine. I take four different kinds, and that works well for me. So I am quite interested in seeing what this machine does.

Beatrice: One medicine I take is for arthritis, and if I take too much of it, it makes me kind of sick, so I have to write it down. One morning I almost took too much, and then I looked at my book and saw that I had already taken some. All of them I started writing down; the others, well, I guess if you took too much of the other they would become toxic, but that one alone becomes very toxic. Hopefully, I remember to write it down.

Al: I tried it [writing it down], but it don’t work. They’re just sitting there right on the TV so I can’t help but remember to take them. When 5:30 p.m. comes, that’s it. It’s not that it’s hard to swallow three pills. None of mine [pills] have that problem [drug interaction].
Betty: I forget to take mine. I try to take it at 6 a.m. in the morning ‘cause I take four pills early in the morning, then I try to take all four, then I forget them, then I can get my shot, then I forget them for a little while. I drop my pills, but I’ve been lucky; so far, I can find them. I can’t see to make up my shots, so my nurse makes them up for me. I pretty much take care of my own medications except for my shots. I take my meds 2 times per day.

Minerva: I just experienced not taking medications on time because I was on antibiotics and one of the first things they told me was that I had to take them at the same time every day, and that was not easy because you get involved in doing things around the house or whatever you do, and you have to leave the house and you always leave without taking the pill with you, or when you are in the house you forget that it’s time to take the pill. And I found it a bit difficult to take it at the same time every day. If I had something I guess to bop me in the head every day then I know it would be time. Even my other pills that I take every day, sometimes, like I said, I get involved If there was something there to tell me it’s time. Does this machine make a sound? Sometimes I put the timer on so I know when it goes off. Especially when I get busy I try to remember by setting the timer.

Minerva: I forget to take mine, and I forget when I’ve taken it or if I’ve taken it, so I take it twice. I have no side effects from taking it. I don’t have anyone helping me take the meds.

Kate: No. When they bring me them in the hospital, and they bring me all my meds in a little cup and I take all of them at one time. That is what I do at home. I have breakfast and I take my pills. They are sitting there all on the table.

Jean: Sometimes opening that bottle, that childproof bottle, you know if I am in a hurry or something, they have different kinds of lids around, and I think that when you get as old as we are and we don’t have children around, they ought a do away with them or give us an option.

Beatrice [Interjected]: You know you can ask for them [from the pharmacist].

Jean: You know, I didn’t know that. Well does the machine tell you when to reorder your medicine? [Machine going off] Well, it looks like Star Wars.

Hannah: I take Lanoxin, and sometimes I forget whether I took one and then take another one. So I call the drug store, and they tell me that if I don’t remember then take it tomorrow, don’t take any more today because Lanoxin you have to be very careful. I’ve done that a lot of times.

Beatrice [Interjected]: Another way you can check is to count your pills.
Betty: I had a problem with the lids, so I told the pharmacist that I had no kids in the house, and I wanted the ones that opened easy. Of course, when the grand kids come over I put them on top of the icebox. I just couldn’t get some of the lids off.

Al: I just throw the lid away. I don’t close it back. I just lay it on top of the bottle, because I got the lousiest hands in the world.

Hannah: Sometimes I just put foil around one [bottle] because I have to take one every morning.

Moderator: How do you remember to take your medications?

June: I get up, and I punch my coffee pot on, then I turn the TV on, then I come back and I take my medicine and get my coffee—the same routine every day. I have one of these boxes and all you have to do is to remember to look and see if you’ve taken them or not, or sometimes I can’t remember whether I did or not, so I can look at the day and hour and see whether I did. And if the medicine is not there I must have taken it. And the other thing you have to remember is to reorder the prescriptions in time, so that’s where my daughter has helped me because I had been very bad about letting the medicine get so low that there wasn’t even time to order some more. I know I am getting low because my daughter keeps the medicines at her house. I go over there on Sunday afternoons and she fills it up. And if it looks like something is getting low, she’ll call it in for me to the pharmacy. I need a lot of help.

Minerva: I need to be right there when they are refilling it with my calendar so I can get into the habit of checking my calendar so I can see what I am doing. If I have to look at the bottle every time for the refill date, forget it. I have to write it down. So, that’s how I remember to refill it. And also automatically when I am in the house in the morning to take them. That’s when I get up in the am and eat something; if not, I get stomach problems. But sometimes I get busy before I do what I am supposed to and take my pills. And then I forget to take them. That’s where my problem is.

Beatrice: I can only remember one that way, and that’s the Thyroid. I have to take it 30 minutes before I eat, so I take it when I first get up. So I write it, and sometimes I even forget that. But that’s the only one I have to remember that way.

Hannah: I’ll get up and turn the coffee on and go right to the counter and take my meds.

Al: My body tells me, “You didn’t take your medicine.” Arthritis pain tells me that I didn’t take my medicine.

Jean: Paying for it [the medicine] is a problem [very quiet voice]. Some of them are pretty expensive. What I do is, instead of taking a whole one, I take half, and so it lasts two days instead of one. And that way it works pretty good. Like your blood pressure, you know, you can tell when your blood pressure is getting up, you can go have a “hissy
fit" or go take another pill. And arthritis medicine is horribly expensive; so you can either hurt or take a pill.

Betty: I know when my blood pressure is up. I had a doctor tell me that, no, you can't tell when it is up, but I can tell when mine is.

Minerva: Sometimes because of the expense of the pill, and because sometimes you have so many medications and you are only on Social Security and you can only get three prescriptions filled. So if you are on four prescriptions, or five prescriptions, guess who pays for the two extra? So sometimes what you do is just skip one to get another one that you need more than the other. So you jumble around with them, and you take one every other time, every other day, so next month you don't fill that one, but you put another one in place of it. Because it's kind of hard sometimes to pay 80 dollars or over a hundred dollars sometimes for a prescription, over 75 dollars, you know. And it's not easy when you are on Social Security, so you shuffle them around and up to until now, thank God, I'm okay.

Jean: Sometimes I just fill half of the prescription.

Beatrice: There are three that I have to have. So I make sure I buy those and the blood pressure pills. But the others, if I can't afford them, I just do them [the three].

Jean: There are some medications that you can buy over the counter that work pretty well, you know, like Aleve, instead of Vioxx. But there are side effects with it [Aleve] that you don't get with Vioxx, so you have to be careful. You should check with you doctor before making these decisions.

Minerva: I make these decisions on my own. Because what gets me is that they give you a prescription, and then maybe you can't take them; you have a side effect, and then you can't take them anymore. And they won't take them back. So, I think they ought to give us trial to see if they'll work before they can give us a full prescription.

Minerva: I usually ask them, hey have you got any samples, because if they [the medicines] don't agree with me, I don't want to pay that kind of money.

Betty: I just don't like mixing them. I take four in the morning. I don't like mixing all of them but he said it would be all right. So I hope so, and that's all you can do.

Kate: Well, I take Coumadin, and boy that's one you have to take every day, well at least I do, because if I leave it off, I take the chance of having a blood clot go to my heart. And I definitely have to take it. And I've been on 4 mg, I've been on 3, I've been on 2, and right now I'm on 3. And they said I need to stay on three, but right now my blood is pretty normal. But I can miss it, I ran out one time, and just didn't have the money to fill it, and I was off of it for three days, and, boy, I began to bruise pretty bad, and I looked terrible. And I had to get back on it. They
told me that was fine, so I take that stuff, and I mean I'll get it before I get anything else.

Kate: I didn't have the money to refill it; it was before the end of the month, and for some reason or another I didn't order all of them the month before because I had some left because I'd been on two different kinds while she was trying to get my blood straightened out. And I didn't reorder because I had some left and it was before the first of the month, so I just couldn't do it. I know not to leave that one off. I will take that one regardless. But normally I get all six of them the first of every month and just go ahead and pay for them and what's left I live on. It runs me quite a bit of money every month.

Al: I'm glad I don't have that problem. No, the government takes care of me so I don't have to worry about it.

MACHINE DEMONSTRATION

Moderator: Now, I'd like to demonstrate the machine, and tell me what are the advantages/disadvantages.

Jean: What if you had this machine and it's programmed like you're saying it is and you had to go to the hospital, what happens then? Does it still keep doing that every day until you get back and then you start it all over? If you have your pharmacist fill it, you have to take it to the pharmacist; it wouldn't be where your pharmacy could have a wheel and fill it and then you could bring it home and put it in?

Al: I don't think your going to get a pharmacist that is going to mess with that thing. They say here are your pills, they aren't going to mess with that thing. Do you think they will? I don't think they are going to fool with it.

Beatrice: They would if you were going to spend enough money on your medications. They want your business.

Hannah: They're so busy they probably wouldn't want to.

June: Instead of giving us a bottle of pills why couldn't they just put it in a little wheel, like putting a disk in a sewing machine. Do you understand what I am saying?

Jean: Is it breakable?

Minerva: Is the machine heavy, is it heavy? Does it come in that one size, or does it come smaller or what?
**Moderator:** What do you believe are the disadvantages of the machine?

June: Well, you heard several of us say that the money we pay out for our medications is a problem, so to buy a machine like that on top of not hardly being able to hardly afford the medicine, would be a problem in my thinking.

Jean: What would one cost?

Minerva: Would Medicare pay?

**Moderator:** What would you pay for a machine?

Betty: I don’t think I would want one. I don’t think I can work it. It would be a disadvantage to have to take it to a drugstore.

Beatrice: If it could keep you out of a nursing home it would be worth a hundred dollars.

Hannah: Yes, if it would keep you out of the nursing home. Then you can get someone to come in and do it for you, like my son. Could you get a family member to do it? They would only have to do it once a month.

Betty: I have six pills – She [a nurse] could program it. But I think I would rather just take my pills.

Minerva: What would be the maintenance on the machine?

**Moderator:** What do you think about the idea of hooking the device up through your telephone?

Al [Shaking his head, no]: It ain’t going to work. It’ll cost too much money, because you are going to have a computer hookup. It ain’t going to work. Who is going to pay for the telephone line? The machine is going to be too expensive for 90% of the people. This is for high dollar folks. What do you think? So you get another phone bill. That’s the same as computers work, you have a phone line for it.

Beatrice: If it would keep you out of the nursing home, I’d go for it.

Jean: The glucose thing costs 150 dollars, and all you do is stick your finger, you know, and put a drop of blood on it, and it’s a little-bitty old thing. One-hundred-fifty for the machine.

**Moderator:** What would be an advantage for your taking your medication?

Beatrice: It would tell you when you missed your medication, and you would know that it wouldn’t be toxic, because you hadn’t taken it when you thought you had.
Minerva: You could program it for once a month and that way you wouldn’t have to worry about forgetting it. I think it’s a wonderful idea, but it has a lot to do with the money again. I would be able to take my medications on time every day and wouldn’t have to worry about whether I took it or didn’t take it. It would be great. It would give me a peace of mind about my medications.

Kate: It’s a great machine if it does all of that, but the extra expense I couldn’t stand; two, I don’t know where I would put it in my place. The bottles sit up in the medicine cabinet except when I fill my box.

Jean: It would be easy to keep clean.

Al: Maybe. [In response to Jean’s comments]: I don’t see how medicine bottles sitting on the table create a mess. It doesn’t. So that shouldn’t create a mess either.

Beatrice [Interjected]: It could sit on the coffee table if it would be hooked up to the telephone.

**Moderator: Do you like the way the device looks?**

Minerva: Yes, it would be nice if it were smaller.

Betty: Would they be good in nursing homes?

Al [In response to Hannah]: Theirs is all on computers. I mean, it’s not the individual’s doing it, it’s the computer when to give you a pill.

Betty: I think they would.

Kate: It does take care of having the medicine there when you need to take it [like the box] and it also reminds you of the refill. Those are the two main things that she [my daughter] does for me besides counting off the pills in each little box. Just remember that you are in a facility here where all of us are low income. So if you had a focus group someplace where everybody has enough money to do anything they want to then you answers would be different.

Hannah: What specifically can go wrong with the machine?

Jean: It’s computerized, so that virus could get in it.

Al: It would have to be powerful to do that sort of thing.

Jean: What happens if the doctor changes your medication in the middle of the month? Can you leave that one in place and add that one?
Minerva: What about if the doctor stops you from taking that medication? You don’t take that one anymore and he has a new one in place of it. The machine, let’s say has a week or two weeks left of the one he stopped. I can take it out, empty it and replace it with the new medicine. And then do I have to re-program it again, that wheel that I took out, right?

Jean: My kids would say, “Go for it.” [Beatrice nods her head in agreement.] Of course, my son would take it apart to see what makes it work.

**Moderator: What if you told your kids about the device?**

Jean: It would take worry off of their minds.

[Minerva, Beatrice, Hannah nod in agreement to what Jean said.]

**Moderator: Would you consider buying vs. renting the device?**

Hannah: It depends on how much the leasing costs.

Jean: What would be the warranty? How long will it last. Is it set up to work for a year, 10 years, it’s not a Y2K thing?

Beatrice: Do you know there is already a small one with a clock in the catalog? It has a clock on it with an alarm.

**Moderator: What would you be willing to pay for this device?**

Minerva: I would pay a hundred dollars [not per month] for the machine if it would keep me out of the hospital. [Hannah, and Beatrice nod in agreement.]

Jean: Four installments, no interest.

Beatrice: I would go with JC Penney’s fifteen dollars a month.

Jean: Like it’s going into production? Is it going to be made in the U.S. or somewhere else. So where it’s made is important. I prefer it be made in the U.S. [Beatrice, Hannah, and Betty all nod in agreement, that it is important that it is made in the U.S.]

Minerva: If your doctor or pharmacist told you to have the machine.

**Moderator: Do you think there would be a period in your life where you may need the device?**

Jean: Most of us are on medications that we will take for the rest of our life.
Beatrice: We get more forgetful as we get older.

Jean: Maybe it [the machine] would help us to remember, you know. If we can get our brain cells working to listen for the bell, maybe it would help it.

June: What do you think about insurance covering it? Somebody’s insurance may be persuaded to cover it. We get catalog all the time about these little scooters, and it’s free for you if your supplemental insurance. Or if you are on your Social Security, Medicare, or extra insurance, it may come to you for nothing and we will handle the paperwork. It’s just as important as that scooter.

Jean: It might help someone to remember to take your pills. Because there are some medications that if you don’t take it and you wait too long, it’s too late to start over.

Beatrice: Who was this guy who invented this? Was he from the U.S.?

Kate: Well, I think it would be wonderful for anyone who forgets their medication; I think it would be great.

**Moderator:** Do you think the log would be useful?

[Beatrice and Hannah thought that the log would be useful.]

Jean: We put all of our pills in a plastic bag, every time we visit. The doctor looks at them.

June: It would sure catch up with Minerva; that if she didn’t take any and didn’t buy any that month …

Minerva: He’d know, because I already told him. He didn’t like that idea very much, but I told him, Hey, Doc, are you going to buy me my next prescription for me? You know it’s 75 – 100 dollars. It’s not easy. My daughter helps me out every once and a while, but I feel kind of bad going to her each time it happens, because they keep on giving you new prescriptions because some other things happen. When I had to go on antibiotics, my daughter helped me out.

Betty: Do you think your medicine can be in there and not come out?

Kate: I would like some information to give it to my daughter’s mother-in-law. She overdoses sometimes where we can’t get her up for days. She likes to sleep all the time, because she takes too much medicine. My daughter drives 15 miles every morning and goes in to fix up her medications and take care of her. And I think it would really help her.
GROUP 2: MEADOWS HOUSE

Group participants: (Real names have been replaced with fictitious ones.)
Rachel, White, age 86
Georgia, White, age 74
Marylin, White, age 65
Tina, White, age 70
Caroline, White, age 83
Margie, White, age 65
Elizabeth, Black, age 98
Geraldine, White, age 65+

Moderator: How do you currently remember to take your medications?

Georgia: Taking medicines is part of my life. I’ve been taking meds since 1970; I had rheumatic fever as a child and it struck my valves, so I take it, I just take it – like I get up and brush my teeth, I get up and take my medicine. I just remember I know what I have to do every morning and every night.

[Note: After the tape was over, Georgia mentioned that before she moved into this place, while at home she thinks she would have used this machine, that it would have been good to have.]

Caroline: They assist me here with my medications. [Said sarcastically]: They shove them down my throat every morning.

Rachel: I could take my own medications. I could put them in a box like this one and then they wouldn’t have to.

Elizabeth: I just remember to take mine. And if I don’t get it right it don’t bother me, I just take it. I leave them in the bottle, and take them from there, so I have the names on them.

Geraldine: I take this one three times a day and a different one at night. And I keep it here in my chair right here, to remember to take them. I do it at breakfast, and supper, and if I forget, it’s not long before I know I need them because I have trouble seeing. I put my own drops in. I have bottles at my dinner table that I take before and after I eat.

Tina: Mine are dispensed by the nurses here, because I get one at midnight. One is dispensed at 6 a.m., 7 a.m., and 7:30. One at 5:30 p.m., and one at 9 p.m. I could not have something like that at this time.

Marylin: They give me mine. They order the medication so I don’t have to worry about doing that. They dispense it morning and night.
Margie: I just use one of these, morning and night. Two, Sunday, Monday, Tuesday, and then four on the other. And Sunday evenings I fill it up for the next week. Then my medications are ready for the whole next week. And so each one I just put it in a mediation cup. I don't take them all at one time. But I have been on them for so long, and have taken them for so long that I automatically know that it is time. It's easy, it's simple.

Georgia: That's what I use, too.

Tina: During the time I was taking care of it myself I would count out at night. And I would put them in a saucer and I could see what I had taken that day. All the meds were in a saucer. Then at night I would lay it out again. And then if it was still there I knew that I hadn't taken it, or if it wasn't there I did take it.

**Moderator:** What kind of difficulties do you have in taking your medications problems?

Rachel: I swallow all of them at once, all six of them. And I take them twice.

Georgia: Sometimes I'll drop them on the floor, and I look and look but ... I know what I take but I don't know the names of these ones. Cause my son does it. But I eventually find it.

Elizabeth: I leave mine in a box so I read what they do. I have herbs. They give me a water pill and potassium and the rest of mine are herbs.

Tina: There are some medications that you have to take before you eat and that sort of thing. I'm not sure I took it. For instance, timing of medication with meals is important to consider also.

Geraldine: I'll remember to take them when I start having difficulty seeing, because I am an avid reader.

Elizabeth: I was taking this medicine. I saved up [this many]. Because there was something I was taking that was making me do this ... So I quit taking them [because of the side effect]. All I take now is water pill and potassium. All the others I order myself.

Georgia: I have a problem with one of them that makes my feet go this way and that way. It's high blood pressure medicine. The doctor said he couldn't keep it down [the blood pressure] low enough without giving me the medicine. They just can't do anything about it. So I am dancing around sometime and sometime I bumped into walls. But sometimes it's better. But it's just a side effect of all the medicine I have to take.
MACHINE DEMONSTRATION

Moderator: Now, I’d like to demonstrate the machine, and tell me what are the advantages/disadvantages?

Geraldine: What kind of brain that thought that up?

Rachel: Was it you?

Georgia: I wouldn’t like it. It’s too much trouble. I would just remember to take my own. It seems like they would need help to learn how to do it.

Rachel: I think the machine would scare them. I don’t think it would be any problem [if someone would load the machine and load them correctly].

Geraldine: I think it would be good for people who were not quite all there.

Rachel: That’s what I mean. Surely they could remember to press the button.

Elizabeth [Shaking her head]: Sounds like a problem. That machine. Pressing the button.

Margie: I think it would help some people. Because there are some patients that get anxious when it is time for their pill and it isn’t there, the nurse hasn’t brought it. And I think it would help them. Because some ladies get out in their wheel chairs and go hunt the nurse when they’re anxious about whether or not the medicine is coming.

Rachel: I think the alarm would help some people.

Georgia: I don’t think that some people could get their medications out when they come down there if they have crooked hands. Well, if you have arthritis, I guess they could [after trying it herself].

Rachel: It looks like it would have to sit on a table of some kind.

Tina: I think it’s overkill. It would be complicated for me to do it. It would be hard to load the machine. It has its possibilities if I were to just have to use it and not load it. [This woman had suffered a stroke and had limited hand dexterity.]

Rachel: She is not here often enough to load it for me—she works [apparently speaking of her daughter]. So they give me my meds at the counter.
Moderator: *Now I would like you to try loading the cartridges?*

Rachel: Old men with [gestured with crippled fingers] fingers couldn’t do it. It’s easy to miss one. People with rheumatism would have a problem. Someone would have to load these.

Moderator: *How would you feel about someone else knowing whether you took/missed medications?*

Georgia: I would like that. I wouldn’t mind it. If you took it every day you wouldn’t have to worry about it. My medicine changes a lot. I am not always taking the same amount. And I would always be taking it out and putting it in. The amounts change pretty regularly.

Rachel: There is somebody here that gives us our meds every day. It would take much to put them in these and take it ourselves. If I had this machine and the medicine I could load it and take it and do it myself. [Rachel wonders why they are doing it for her at all.]

Georgia: When you have a lot of medicine it’s hard. They would probably charge the same, do you think they would [to Rachel].

Rachel: They would probably charge something.

Moderator: *Do you think having the info printed out would be helpful?*

Tina: Yes, it would be helpful.

Moderator: *What are your overall impressions of the machine?*

Geraldine: Let’s take an example, like this chair [she has a motorized chair]. Now, I don’t have any problem working this chair, but some people here can’t do it. They’re afraid of the chair. But I think it’s wonderful. I love this chair. Well, it frees me – I don’t need anyone to help me – I just go “shweee” down the hall.

Moderator: *Do you think this machine would be freeing?*

[Georgia shakes her head, no.]

Rachel: Some people who are not scared of machines

Georgia [to a woman who works on a computer]: No. What happens if someone is away from home?

Geraldine: I can just see somebody getting frustrated that the printer would get jammed and then… [makes a motion like someone hitting it with a hammer].
Caroline: Most of the patients here would not know how to use it.

**Moderator: Would you recommend this to someone?**

Geraldine: If there was someone at that stage of their lives that they would use it.

Elizabeth: What I have works for me.

Margie: When I am unable to do it my way, then I would consider getting a machine.

**Moderator: If someone recommended the device would you use it?**

Georgia: No. If you can do that, you can put your meds in a box. You might could get used to it.

Tina: I could not recommend it. It’s overkill; it takes so much time.

**Moderator: How much would you pay for the device?**

Geraldine: 1500 dollars.

Georgia: If we have to have someone load it for us, then why don’t we just have a caregiver give us the medication directly? They would have to stick around all day.

Rachel: You’d better educated the doctors about that slip. Would the doctors be able to understand what you take from the list?

Geraldine: This reminds me of the *Popular Mechanics Magazine* in the section of “What’s New?” And this reminds me of the type of items that are in there. And I love to read those.

Marylin: If you are living in your own home and just having help, then that could be very useful to a person. A person lives at home. Here they have the medical person to buy the medicine and dispense it.

Rachel: It costs us three hundred dollars a month for the service, plus some other things, plus the cost of the medicines.

Geraldine: Here it is all set up for us. [When the moderator said that you could have the device in your room, Geraldine’s response was]: You don’t know my room.

Marylin: You would have to obtain your medication to put in it. Here we don’t have access to our medication.

Geraldine: I couldn’t be interested in it now anyway.
Geraldine: If you had one, then I may be approached by someone to ask if I could put their medication in it also. I can see that coming in a place like this. Like wheel 1 would be mine and wheel 2 would be theirs.

**Moderator: Do you feel that the device compromises your privacy?**

Margie: Wouldn’t bother me [the privacy information] If anybody wanted to look through my medicine draw, they are perfectly welcome. Except one time I had a bit of problem that one person found out what med I was on and thought I was [crazy – making the finger sign] I take two meds that are dope, and it does not bother me if anybody knows. It keeps me going, so what? It’s my medical treatment here, and I’ve never had any trouble getting my meds; they are good here, very good. As long as I can take my own in my own room, I am going to do it. When I know I am not capable of doing it I will say so, and I will know. That I, am not capable anymore. Then I maybe I will have one of those old machines.

Caroline: I think you’d have to have a good mind to do it.

Geraldine: I bought myself sometime ago a smart typewriter – I’ll tell you right now. My husband came in and I was sitting at my old typewriter – the manual Royal. I can think faster than the new one – Well I’m afraid of it. Everybody said, oh, what a great typewriter.

Caroline: It still has to be loaded.

Geraldine: Well, probably anybody could dispense from it.

Georgia: We live in a place where they give the medication to you. So that may be one reason. Because we don’t have any choice in that [meaning the machine].

Rachel: If you lived on your own you might like that machine.

[After the discussion, Georgia commented to me that she felt that when she was living on her own before she moved in to this facility that she could have probably made pretty good use of the machine.]

GROUP 3: TOWNSHIP SENIOR COMMUNITY CENTER

Group participants: (Real names have been replaced with fictitious ones.)

Priscilla, Black, age 78
Virginia, White, age 72
Gladys, White, age 77
Shirley, White, age 75
Lillian, White, age 71
Joe, White, age 81
Moderator: How do you currently remember to take your medication?

Louis: This kind [holding up the pillbox in front of him].

Gladys: I take eight pills in the morning after breakfast, then I don’t take any all day and then I take seven pills at dinner time. And then a pill at bedtime, a sleeping pill, and I have a pillbox one pm and then one for my sleeping pill. I set up my medication by myself, , each day. I prefer that way. In the morning I take them out of the bottles. That’s all I have, two times a day, and when I go to bed. I remember to take them after breakfast, and then after dinner. Sometimes I take them before dinner, because sometimes they don’t eat until 9 p.m. [probably referring to her children whom she lives with].

Jewel: I grab one of each, and that’s it.

Janet: I take five every morning and not all prescriptions. Some are vitamins. I have three pillboxes and fill them up. I stick my toast in the toaster, and I start taking my pills. I set them up three weeks in advance. Oh yeah, I can do that because I take the same pills all of the time. Five-five-five-five and they’re all the same ones.

Louis: It was complicated until the doctor changed it a couple of weeks ago. I had a heart operation… a big one… I had this container… I was on a schedule: 8 a.m., 2 p.m., 8 p.m. for two pills, and now it’s changed so now I take three pills in the morning and four pills at night. And I have a container [half the size of that]. I do it myself. I have a container in a cabinet and I get it out and set it on a table. And take one bottle at a time and open the container and it tells me what time. Then I set the bottle way off to the side that I just used so that I don’t wind up putting two in that that could cause over dose.

Adelle: Well I take five in the morning and three at night and I keep them all in a zip-lock bag in their containers. I usually carry my pillbox in my purse, in which I keep two days worth of pills.

Louis: I generally have a little bottle of where I put these nitroglycerin tablets, but most of the times it’s a big waste, because I don’t need to take them anymore.

Adelle: I carry one too. I don’t think of it as a prescription, it’s just part of it.

Shirley: I have this see-through spice shelf. I take one in the morning and evening. They are all right, but it’s the afternoon pill I keep on forgetting. I also do take the little pillbox in my purse.
Louis: I take it three times a day, and I hated that, but now I take it two times, morning and night. Your heart tells you.

Jewel: Black Kotash.

Louis: One thing I have neglected over the years is to drink plenty of water. And try to stay regular. And I found out that Metamucil, the powder, works well. I think it’s very important for us older people to drink water, and we’ve got plenty of time.

Priscilla: I just seem to remember. In the morning I take one. First thing in the morning I take one. I just take them. I know when to take them. I just keep them in the pharmacy bottle, and I keep them all in one place. I keep them in a small place in the medicine cabinet. I keep them there away from the reach of my grandchildren when they come over and visit.

Joe: I just take three a day, and that’s it. I have both I just fill them up every week. I have to take them in the morning after breakfast. I have to take two pills before breakfast, 45 minutes before breakfast, and then after breakfast I take seven pills, and then after lunch I take two pills and then after dinner. I’ve had seizures and they won’t let me drive. If I know I going to eat at 8 p.m. I plan to take them at 7:15. It seems like it would be so much easier to punch a button and have that pill come out.

Jewel: The trouble I recently have had was packing my pills when I was getting ready to go away on a trip. I had difficulty figuring out the number of pills I needed to take with me and in filling the box with enough. Once I packed it, then when I got to my son’s house I took them out and put them in their cabinet. I don’t have a two-week box or a three-week box. I need this one and this one, and if I have trouble then I need this one and this one.

Moderator: What are some of the difficulties you have when taking your medications?

Louis: The main thing I have is forgetting.

Adelle: The main problem I have is that I have a pill that I have to cut into fourths. So that’s my problem. It isn’t very big [half-inch long]. I bought a pill cutter. It does not cut them equal. And sometimes I worry that I don’t get as much this morning as I do maybe tonight or tomorrow.

Jewel: The reason they do this [have you buy the pill and then cut them] is for example if you. If I give you an 80 mg tablet it’s going to cost you as much as a 40 mg but you get twice as many pills by cutting them in half. Especially when a lot of us don’t have medication insurance you’ve got to pay for it yourself. It may cost you a little more in the long run but not as much as maybe two months of 40 mg. I have to take Zocor 60 mg. So I break mine in quarters and take three parts.
Louis: I get a letter with my medication from the V.A., which tells me the pros and cons of each medication. I have driven away a few times without my little container. Generally it goes in my pocket but at times it didn’t. But here’s what’s important to them [pharmacy warning]. If you get too close to the next pill, the same pill, well, don’t take it, skip it, and then get back on schedule after that. This would be one way someone can overdose.

Jewel: The main thing that bothers me is those horse pills. They are hard to swallow. It’s not really a medicine; it’s a vitamin.

Janet: What I do is, I flatten my tongue out and then I put water in my mouth and then the pills. But then I get a whole lot in there [water] and then I swallow it and it all goes down, the pills and the water all at the same time.

Jewel: I have a horrible time trying to swallow pills. My doctor says that if you have trouble swallowing your pill, just swallow the water, don’t worry about the pill. If you just try to swallow the pill, you won’t.

Janet: One thing that really helped me is that I would forget to reorder my prescriptions, and then the company I order my prescriptions from send me a reminder on my computer and I just punch that thing in that I am ready to order, because my doctor has given them how many times they can refill it. They mail my pills to me. It’s all done on computer, it’s slick. I use my computer. They send me an e-mail. They have my credit card number. And it’s the easiest thing.

Louis: All of my pills, I need to keep up with them, some are 30 days, and some are 90 day supply, and sometime I forget to order them. But all I do is use the telephone and call the V.A. And I get options on the phone, and I check on refill or ask them why my pills haven’t got there. And it tells me that on a computer. And I don’t have to talk to anyone. Push 1 for refill, push 2 to find out where my prescription is. When I run out of my refills I have to go to the V.A. to see my doctor. And she gives what I think I need, and sometimes she gives me 11 refills. I get a 3-month supply for my cholesterol medicine, and then the doctor wants to see me and check my cholesterol. What gets me so mad is when they ask me if my parents had high cholesterol. Well, how should I know? And then they [the doctors] say, well, why don’t you? Back then they didn’t take cholesterol maybe they took blood pressure, but they didn’t know about those things back then.

[Louis engages Jewel in a discussion about what “good” cholesterol is.]

Jewel: Mine is 300, so I have to get it down.

Adelle: I don’t have a problem [remembering] unless I have to leave early in the morning. When I’m home I usually do okay and take it. That’s why I have to carry them with me or else I will forget.

Louis: This [discussion] has been very interesting and educational.
MACHINE DEMONSTRATION

Moderator: Now I'd like to demonstrate the machine, and tell me what are the advantages/disadvantages?

Louis: Does it tell you how many days I have to go get some more? When I call the automated phone line at the V.A. they tell me that this is refillable and they give me seven to ten days to go and fill it. So will that machine tell me 10 days ahead of time?

Janet: I think it [the machine] is fantastic, especially for elderly people. Their children won’t have to worry about overdosing or when they are missing their tablets.

Jewel: The only thing against it, if you are out [away] this isn’t going to help. This is set up for three times a day, and it beeps off and you’re not there, but yet you’re out and taking the pill somewhere else, or if you are going away you can’t just put it in your pocket. This would be good for people who forget their pills or who double up on their pills.

Janet [In response to Jewel]: Well, that’s when you need to carry some with you.

Adelle: My problem is—what I worry about—is when the drawer comes out and is ready to take the pill, I have two little granddaughters that are with me, and I would worry if it were opened. [She didn’t understand at first.]

Louis: There’s bound to be some problems here. But the good of this machine is going to be super because what she said about [kids]. We are not going to get any younger, and I think that everyone here at this table now are able mentally and physically to take care of this [their medicine]. But there will be a time that we won’t have the mentality or strength to take care of this thing [the meds] so we would probably have some relative, neighbor or friend would take care of setting this up and then all we would have to do is listen for the sound and go push the button. [In response to my question of: “Would this be okay with you?” he responded]: I think it’s great. I hope that I don’t get to that point [mentally].

Jewel: I think it’s a great machine if you are home, and also it’s a great machine if you can have a family member to load it and all you have to [do is] take them.

Moderator: How many feel that you could load the machine?

Louis: I don’t think I could, but I do have someone who can.

Jewel: Say for instance, it’s 10 days before and it takes 10 days to get them. The machine needs to tell you that you have only 10 days’ worth of medication left and it’s time to reorder. It needs to be 10 days before, and not the last day, and not the first day, either. The harder part is that once the meds are in the machine you can’t see them. If
you look at the pill containers, you can see them and know you have five pills left, etc. Especially when you order them in the mail.

Louis: Give us the info 10 days, plenty of time.

Janet: That is the way mine comes on the e-mail. That your refill is due if you are ready to re-order, and it give you plenty of time.

Adelle: What about people who don’t see to well? Can that screen come any bigger, so we can read it? Because a lot of us don’t see very well, especially if you are going to load it yourself.

Gladys: It’s too big. I don’t know where I’d put it. You could probably put it in the kitchen.

Louis [He had a concern about keeping it away from kids.]: Little kids nowadays know how to work computers.

Jewel: You don’t need one that big for an individual use. Why can’t you put six medications in each slot? But if you took once a day I can’t see why you couldn’t just need a machine with one wheel. [She is suggesting making different size machines with a different number of cartridges.]

Louis: I think there quite a few people out there that take seven at a time.

Adelle: I take eight pills a day, but I take five in the morning and three at night, and two cartridges would be all I would need, because they are small enough to fit all in one slot for 28 days. And they are all on the same refill schedule. It’s like when you are in the hospital. They give them to you all at once.

Jewel: Why would you buy something more than you need? And the control could be all you would have to do is type in a number or date.

Adelle: I could see different sizes of the machine for different people.

**Moderator:** *Do you think the alarm is loud enough and the light bright enough?*

Shirley: I think it is [the alarm] if you are there.

Adelle: I think it’s okay. I think you would get used to watching for it. And you would automatically look for it. When I walk into my house, I always look for the light on my answering machine. So, I think it would be something that you would get used to.

Louis: I don’t think if I had one of those I would have any problems using it, if I had someone do the technical part. It is technical to me.
Adelle: I have a simple question. If I were to go out and buy one, is it covered by any insurance?

Jewel: Would Medicare or what, because, let’s face it, we are all on fixed incomes. Most of us would think that it would have to be covered. If it were paid for by Medicare you wouldn’t have to worry if it were paid for monthly or in total.

Louis: I would pay $29.50.

Janet: I think that as good as that machine apparently is and your family were interested in taking care of you your kids, if you can have money. They may be hiring someone to take care of you. So they may think that this would be good for you.

Jewel: But what about asking our kids for money, what about our independence?

Adelle: It would give our kids a piece of mind. They wouldn’t worry so much about you.

[Everyone started getting anxious about lunch.]

Adelle: Do you know about the Medical Alert? But you just sign up and you wear this thing around your neck. I can see this thing being connected with the Medical Alert – where they can be rented like the Medical Alert, and would not have to be bought.

Louis: I know Medicare has a supplement. I don’t know what they charge for this. But if the machine is not too sky high I think Medicare could pay with the supplement. There are ladies that have jobs who go out and take care of people. But maybe they [patients] would be able to push that button. Things are not going to get any better especially, we just need to take our medicine, rubbing the ointment, and take our aspirin. But pretty soon if we live long enough we will be bedfast, and that is where the machine may pay off.

Gladys: I will not get to that point. I want someone to shoot me. I think it would be cheaper for the individual to just rent that. I mean after you are gone who’s going to use it? Put it on the shelf until someone else is old enough to use it? I think renting it would be better.

Moderator: What do you think about the privacy issues concerning the device’s ability to record whether or not the medication was taken?

Jewel: Who would know outside your family?

Adelle: Why would we want to hide it? If you miss one, you miss one; it’s your fault.

Jewel: It only tells you if you took it out of the machine, not if you took it. I know cases, I know a gentleman who is on probably eight to 10 medications per day. And what they do is line up the medications on the counter for him to take them. Well, this machine
would be phenomenal. He has been known to overdose, and he has been known not to take a medication. And they have to hire someone to come into make sure he is taking the medications at the different times of the day. Something like this would be great for him. And then you can see what he is on.

Janet: Then some of these people hide their pills. But that is not the machine’s fault.

Jewel: That’s the problem with any medication. They [the doctors] say they take it, but then they [the patients] hide it, and they take it only once. If they hide the medication, the machine is useless.

Louis: This would help the daughter. Nowadays the daughters and sons have jobs [in most cases], so they can set this thing up and they don’t have to be there.

**Moderator:** *What do you think about the device’s ability to notify someone via a phone call?*

Louis: Good idea.

Adelle: I think that this could go along with the Medical Alert thing. Right now I can’t see that anyone of else right now have a problem remembering to take our pills, but a little further down the line I can see that it would be good for me to let my daughter know I am forgetting to take my pills, and have my daughter say, “Hey, you’ve got a problem. You need to check your medications.”

Lillian: Well, would they know when I came home if I had taken them or not? They wouldn’t know for sure, because you can take it out and hide it.

Gladys: I think it would be a very good feature. And some people it would be very helpful to, and other people they wouldn’t need it. Now, I wouldn’t need it the way I take mine. I may need it 10 years down the road. I just don’t want to live to be a hundred. No one I know would need or use the machine. It would be helpful for some people.

Louis: It would take a little bit of time for any of us to learn. The fact that we are going to die, but what would you do with it after we didn’t need it anymore? [He thought that the rental arrangement might be preferable.]

[Note: After the meeting, Jewel expressed concern about independence and the use of the machine.]

**GROUP 4: GREATER SENIOR COMMUNITY GROUP**

Group participants: (Real names have been replaced with fictitious ones.)

Alfonso, Hispanic, age 65
Gertrude, Hispanic, age 79
Special notes:

Alfonso had a hearing disability so he was placed next to the moderator.

Gertrude after many comments, Gertrude raised her hand to thank God.

Ethel was in a wheelchair, was having difficulty seeing. Because of allergies; her eyes were burning and watery. I am not sure she could see the machine very well. She also showed interest in the small pillboxes—she had not seen them before. She particularly liked the colorful screw top ones that were stackable because you can see the pills that were left to take. She had to depart at 11:30 a.m. to shop at the food pantry supported by the Greater Senior Community Group.

Myra lived with her 96-year-old sister and saw after her. Had to depart early because of transportation.

Norma lived alone. Had a daughter living nearby, but separately. Arrived with two grandchildren [older], because the meeting was on a school vacation day.

Delores, who was non-English speaking, lived with her husband. She was a neighbor and friend of Norma. Myra translated for Norma.

Moderator: How do you remember to take your medications now?

Gertrude: I got them in my mind. Heart pills one in the morning and one in the night. High blood pressure every morning. And Premarin is so good. Oh, my God, I really don’t believe it. I take them in the morning first thing. My vitamin A fit is very good for memory and for my hair. And then in the night when I go to bed at 9 or 9:30, I take my Premarin.

Ethel: All of the time I can’t remember, because I get confused sometimes when I’m taking my medicine. Of course, the medicine I take now is Vioxx, and you take one a day of that. You see, I have to be on dialysis. Then when I get off of dialysis and get home, I forget take it or I wait until take it the next day. And if I that machine to help me. I need someone to help me. [she laughed]. I just forget. And my Tylenol, I take that. Sometimes I take the Tylenol when I take my Vioxx. And when I am out of Vioxx, they give me Celebrex. Now, I’m not supposed to take Tylenol when I take that [meaning Vioxx] And so one morning I woke up and was sure I took [both], and I was so scared that day that I had taken both of them on the same day. But it didn’t hurt me. But I was scared. You know, it’s dangerous to do things like that, because they are both pain
medicines. My children work, and there is nobody in my home but me; you see, I live alone. That’s why I think I need someone to show me what to do.

Myra: I have my medicine lined up on my dresser, and I remember to take them. They are lined up and I take them every morning right before breakfast. Once a day. They are in the bottles lined up.. tops on the bottles, [there are no children that live with us that can get to them, just me]. I go to each bottle, and open it and take one pill out, and I have no problem remembering every day. I do remember. I know I must take my medications and that’s why I have them lined up there.

Norma [Pointing two boxes of medication]: First thing in the morning, I gotta take my thyroid early in the morning because it has to be when my stomach is empty. Later on when I’m coming out, first I have to check my blood and put in my insulin. Then I take my medicine, then I have to take all of these [pointing to the first row of boxes in two-week medication boxes] and part of a second line too. That’s a lot of medicine. And then in the evening after my dinner I have to take the other ones, and when I sleep I have to take one. And then at night I have to sleep every day with the oxygen. I have a respiratory problem. I have to sleep with the machine all the time. I take a lot for high blood pressure, and for my thyroid, and for my diabetes. And I have also to take Vitamins – C and E. It’s when I take my breakfast and my meals that I take my medicine. Before breakfast and then in the evening. Nothing during the day.

Alfonso: I’ve got two medicines that I take, one in the morning and one in the evening. So I take this pill and check it off my list. And then when I take it for the second time. I put it on a piece of paper and line the pills up on a piece of paper. Sometimes I take the pill then mark it off. The pills are on the paper. I take them two times per day. Sometimes there’s one I can take anytime of the day. It’s only once a day. I keep pretty good track because I write them down. If I don’t write them down, I do forget sometimes. Nobody helps me.

Delores [Translated]: We live very close. She knows these pillboxes. She said that in every bottle she puts a one a day or two a day. She said that her husband helps her only with her vitamin. I take my medicine three times every day with the water. That’s seven medicines. Any time of the day she is able to take the medicine. There is no specific time during the day she has to take the medicine. Her husband takes one a day to control him to go potty.

[Gertrude mentioned that she exercises three times a day. She walks in the morning and in the afternoon, and she rides her bike.]

**Moderator: What kinds of problems do you have when you take your pills?**

Ethel: Most of times it is hard to open those bottles. Because when I get that Tylenol they say push and I can’t do that. [Alfonso and Gertrude laugh in agreement.] I have to have some neighbor open it for me just cannot open those bottles, you know take the
top off. The Vioxx is so small sometimes I can hardly see to put that thing in my mouth. It’s a little-bitty pill. I forget it sometimes.

Ethel: I used to have cut my pills. When I used to have high blood pressure I’d have “horse pills” and I had a cutter, and I had to cut them in two, and take half, and then take the other half the next day. I used to have to take about eight or nine pills a day when I had high blood pressure, but this doctor, he took me off of them, and I don’t have high blood pressure anymore. I had so many pills. I don’t have high blood pressure anymore.

Myra: I don’t have any difficulty in opening the bottles. Because when I get my medications and I open I don’t screw the tops down tight, so that way I can get the medication. I just kind of make sure I have the top on and leave it that way. I see quite well. I just take out the one pill and put the top back on and then I take the next one and so on. I make sure the tops are on but not tight where I can’t open it. I don’t have any hearing problem, yet.

Gertrude: No problems taking my medications. The doctor gives me samples. When I feel depressed. He gave me samples.

Alfonso: I don’t have any problems taking my medications.

Norma: To open the medicine is not difficult. My difficulty is…. that I put the medicine in a napkin. And I put two here two here three here three here and sometimes one here in the middle. When I take my medicine I don’t have sensitivity in my hands, and sometimes the medicine falls out. But not too often, because in the pharmacy they know I live alone. And I have one daughter, but she’s married and she has her own house. Then only I take it with the safety caps then I don’t have any problems to open any bottle. Sometimes when I get a sample and I take one bottle and I take a piece of some …and put it into the bottle.

Delores: Sometimes she can, sometimes I can’t. Sometimes her husband helps, sometimes her daughter. Sometimes after two or three times she says no more and he asks for help. She says that it’s the first time she’s ever seen it.

**Moderator: Do you use the plastic pillboxes?**

Norma: Yes, especially if I have to go someplace I take it.

Ethel: I have about three of these things and I put my pills in them and when I get home I just forget to take them. I forget my pills. This is better than the others. That seems like an easier way to go.
Moderator: *What kinds of problems do you have when you take your pills?*

Myra: I know you can’t do anything about this, but there is one pill I take which I wish I didn’t have to take. This is Diamox, and I have to go [to the bathroom] so often. But I wish I didn’t have to take. But I wish I didn’t take it, but I do.

Moderator: *Do you ever take a break from your medications?*

Ethel: I do.

Norma: I never take a break from my medicine. Because I am alone, and I have to depend on my brain lets me do it. And I tell my daughter when I can’t do it myself anymore—my daughter she lives alone too with her two children, and she is handicapped – she got polio in Cuba when she was little. Then she wears a brace for the rest of her life on her leg, but she works and her husband works too. So I am alone and my close friend Delores lives one house down. And I am completely alone all the time. And so I told my daughter the day that I [lose my senses] or don’t become clear or whatever, you take me and put me in a home. I’m clear about this. I know because my father, when he got old, he got Arterial Sclerosis and my mother-in-law got Alzheimer’s. And it was terrible to see how they are going down, down, every time, every time. But they had me; but me, I don’t have anybody. I want to be independent as long as I can. I understand that my daughter’s house is her house, is her own way, and my house is my house. [Implying that we have different ways of living.] She coming every week to my house and my grandkids are with me today and they come. When you are married you need to be alone and to depend on yourself.

Gertrude: Everyone has to have memory. I have my son, they are the most sweetest thing in the world. They don’t drink, no smoke, and drink no coffee. My daughter, too. But they help me out when I need. I have this Premarin for hormones, they cause cancer, and the doctor took them away from me. I used to take them every day but then he took me off of them.

Myra: I live with my sister – we live together-we share an apartment—and she’s a lot older than me—she’s 96. And it makes it convenient for the two of us to be together. I mostly help her. And I can do it.

Moderator: *Does the price of medication present a problem to you?*

[All were in agreement.]

Norma: Too high!

Ethel: I have to buy my own. My Celebrex costs over a hundred dollars. And I take it, but I don’t take it too regularly because I am trying to save it—can’t pay the price. So I miss the medicines [she laughs nervously].
Myra: I have to give up luxury and you get used to it. You make sure you have the money, because I have to have mine [medications].

Alfonso: I have no problem yet getting my medications. Not yet.

**MACHINE DEMONSTRATION**

**Moderator:** *Now, I'd like to demonstrate the machine, and tell me what are the advantages/disadvantages?*

[Note: When the pill dropped, there was amazement expressed.]

Delores [Translated by Norma]: I have to have this machine. If she doesn't have it, what is she going to do [part in jest, part serious] she said it was easy to “scoop the medication.”

Norma: Is this something like a computer? That’s a problem; I don’t know too much about a computer. I don’t have it.

Ethel: I like the childproof feature because she said she has three grand kids. How much is this machine?

Norma: I want the machine free. I don’t want to have pay. I don’t think my mind is for computers at this age. If I were a little bit younger, it would be very nice.

Ethel: I think my daughter would load the machine for me.

Alfonso: I think it’s a good machine. I don’t think I would want to have it. I think it’s a good machine. I think I’m doing pretty good with my medications I’m taking my medication on time during the time. It would remind you to take your medication and I think that’s good but so far I’m not having any problems taking my medications right now. I probably would need someone to show me once or twice to start with, and I could probably take it from there.

Gertrude: I don’t think I need it. I keep it in my mind everything. I like the machine very much. “She’s a brain.” It’s very good. It think it’s a real nice and important thing. The size is okay.

Ethel: I would like to have it. I mean, you know, something to help you out. I’m by myself. My daughter, they work, and they come and check on me sometime, but I would like to have something to keep me from forgetting my pills. I took my Tylenol and Vioxx on the same day, and I’m not supposed to do it.

Norma: I would like it, but who would program it?
Delores [Translated by Norma]: She thinks the machine is very good. She wants to ask if she has to buy it? I would like to “keep the machine” vs. renting it. In her case, in her house with her husband. How can they make it so they could both use the machine? How can they make the machine different?

Norma: In other words, they both could use it. She is going to explain it to her daughter.

Ethel: I would like to have that machine. Do you think Medicare would buy that machine for me? I hope you do. Because the time I was telling you when I took the medications together, I went to church I was so scared. And when I come in it look as though someone had poured a whole lot of rocks down in my building. I was seeing things that weren’t there. And a little thing jumped up at me, it looked like a little lizard, and it jumped up at me and looked at me and said “hi.” Well, to tell you the truth I run back out the door and I knocked on my neighbor’s door, and asked, “Will you kindly come in the house with me?” She said, “But what’s wrong?” And I told her what’s wrong. And she said, “Oh you must have overdosed—you have taken too much medicine.” She said, “There’s nothing with your floors,” and I didn’t see anything on my floors. It was real scary. When that little thing jumped on my walls and said “hi,” to me I was ready to leave home.

**Moderator:** **Would you have a problem if others could be notified if you missed your medication?**

Ethel: Well, I don’t mind, because when I do something like this I usually tell my daughter. Because if I get real sick or fall out or something like that, well she would have to know anyway. Then when I go to my doctor I tell him. Yes, I would want them to know.

Gertrude: Well, sometimes [she laughed somewhat nervously]. I don’t mind that they know it.

Norma: I have my daughter’s husband or my little kids to help me with the machine to fix it or whatever. I don’t think so. Because all my life I am really dependent on my medicines. Well, until I keep in my brain. But in my family I have a lot of people who knows. My uncle was a doctor, my brother-in-law was a doctor. My father was an administrator in the hospital and my father-in-law, too. Because if you don’t take your medicines on time, you lose a minute—a minute of your life. I am very thankful for my medicines all the time. I can miss a Tylenol, but my medicine for my [?], no, I never miss.

Delores [Translated by Norma]: She said she should get it free [the machine laughing]. It would be very nice if Medicare could be pay for it. She has three children and are married. And they live out. And she’s got one girl who knows a lot about computers.
Norma: In our housing they are big houses, and everything for me is simple. The floor is ceramic and anti-slippery because I have handicap in my right knee. Everything on the cabinets are special. We’ve got a very nice kitchen. This [machine] is like a toaster—the size of it. I think this machine would go in the kitchen because it’s close to the water and the living room.

Alfonso: I keep the list in the bedroom. I would see this in the bedroom because that is where the list is.

Delores [Translated by Norma]: She thinks it would go in the kitchen.

**Moderator:** *What do you think about the device’s appearance?*

Norma: It’s not only pretty. I think it’s safety. Because I’m telling you from this moment I have control over everything. But the years it’s going to happen, who knows in a year what will happen? What if I take it outside the room, nobody knows. It’s very nice all the points you showed me and it’s very safety, that you are never going to miss anything.

Delores [Translated by Norma]: She said that it has to be all the time thinking about, when she’s cooking and cleaning or doing and says “Oh, my medicine.” That it is very important that it sounds and tells also when you have to take your medication.

**Moderator:** *Would you use this machine?*

Gertrude: I have a room separately—a private room to watch television and I could keep it in that room and it’s close to the kitchen but it’s very safe. And I would see it every minute. I would like to know if I get old where could I buy it? What is the name of the device?

**Moderator:** *Do you have any suggestions for this device’s name?*

Gertrude: The more smart device has brains and wisdom.

Delores [Translated by Norma]: “My second head” – “My big helper.”

[At the close of the session, Alfonso asked me if I would let him know when the machine would be available.]

**GROUP 5: PLANTATION MANOR**

Group participants: (Real names have been replaced with fictitious ones.)

Arthur, Black, age 69
Hazel, Black, age 68
Herman, Black, age 69
Heather, White, age 73
Doris, White, age 66

Moderator: How do you remember to take your medications?

Doris: Well, I keep mine in a container like this [pointing to the 7 x 4 plastic pillbox]. I do great in the morning because I put my put my coffee on, brush my teeth, wash my face, make my bed, I get my medications out, and take them with coffee. It's the evenings, did I take my medicine, or I'll get the wrong day in the evening. And that's my problem, it's the evenings, just forget, and it's in the same container. But I don't have my coffee then to swallow all my pills.

Hazel: I have one like this [pointing to the 7-day box] and I fill it every week. And when I run out, I refill it. I take most of my medicines in the morning time. I have three that I take at night. Then I got my self in a habit that around 7 and 8 o'clock I remember to go and take my medications for that night. So I store what I need in the same day's medicine. So, that's how I remember. When we get real low, then I know it's time to call them in.

Doris: Because you do them a week at a time it gives you time to refill. And believe me, they never all run out at the same time. You are at the pharmacy every week. I make my weekly payment.

Hazel: We pick up ours at the pharmacy, all except my diabetic supplies, the things that stick your finger. They come in the mail. And they mail it out like every three months.

Herman: In the morning time I have to take three different medications. Every night I get out the three for the morning, so I don’t get mixed up and in the evening time I have to take one. The only trouble in the evening time is remembering if I took it, because I may get to doing something and then I may not remember did I take it, then and if I let the time run over I wonder did I take it. And if I did remember to take it, well I missed one. And if I remembered to take it, well, then, I will overdose. And I refill my meds every thirty days except the sticks, because they come in the mail.

Hazel: I'm not going to tell you no tale, no I don’t [prick myself]. No, I don't do it every day, I don’t stick every day.

Herman: Sometimes I do it three times a day. It all depends, on what I eat. If eat something that is high [in sugar], then I test to see if it’s high or low.

Hazel: I probably would. If it gets to be a problem then I probably would.

Heather [Addressing her comment to Doris]: I have just one suggestion. Doris, since you said that you go to the pharmacy every week, well I was in that position, too, and I said hey this has got to stop. So, what I did was to have the pharmacy to fill just half of
my medication to where I could even it out and I have all of my prescriptions refilled at the first of the month. And I have it done at Walgreen’s. And they call me when they are ready so the only problem I have is going to pick them up.

Hazel: A lot of them, I get a three-month supply, a lot of them, because a lot of them are real high.

Heather: But the thing I have with mine, I use containers similar to these, but a single one. And I have one marked a.m., one marked p.m. And I never forget the one in the morning one, because I have a rule, no coffee…. But I’m not drinking coffee in the morning.

Doris: We are going to have to find something to relate the medicine too.

Heather: Although I do remember when the acid reflux starts happening

Hazel: Most of the time I remember to do.

Arthur: Well, I get up and wash my face first and I take my medication, and then take two after breakfast. [He doesn't forget his.] I take one in the morning and then I go back and take two. In the evening I take one.

Hazel: He is very good at remembering. I wished that I had his memory [and she laughs]. I have to ask him what’s what. It’s not the coffee for me. After I wash my face, I remember to take my medicine. Mine is in my bedroom.

Doris: Kitchen. Mine is right above the coffee pot.

Arthur: Mine is in the bathroom.

Hazel: Well, mine is on the dresser, so that when I comb my hair, I know there is my medicine box [a titter of laughter].

Heather: If you can have your prescriptions filled with a 30 day supply and, as I said, all of them come at the same time, then I have boxes that I fill two weeks supply at a time. Two weeks of a.m. and two weeks of p.m. Instead of doing this every day.

Hazel: You know, I use this [pointing to the 7 day box] but I can really see how this [pointing to the a.m., noon, p.m., and evening box] could be nice, because it’s got the morning and noon supply for two weeks.

Heather [Pointing to the a.m./p.m. box]: This one pretty much holds all of my medications. I have one supply of a daily dosage, which I always carry with me when I go out or do decide to spend the night with my son in Lewisville. Then I always carry one.
Hazel: If I’m going out of town, I will carry my medicine like this. I will fill this and then make sure I have extra in case something comes up. I have the kind you put under your tongue. It’s in my purse.

Moderator: What other kinds of problems do you encounter?

Hazel: Other than that, I just don’t want to take them. I haven’t [taken breaks] but sometimes I would sure like to get rid of some of them.

Doris: One thing about going to the doctor, is once they put you on a medication, you are not going to get rid of it.

[Note: It was a consensus that they don’t miss many of them.]

Herman [reiterated that he doesn’t miss many of them. But that when he misses them he tries to avoid overdosing by waiting until his next dosage, and then start all of them.]: Most of the time I do that. I’ll call the doctor and he will tell me to wait until the next time.

Hazel: You know if it’s not too late, you can still take it if it’s not too close to the other one.

Moderator: Do you have difficulty opening bottles?

Doris: I am going to end up breaking my teeth trying opening those bottles. So, what I do is have my granddaughter to pen them so snap type lids and put them up in the cabinet.

Heather to Doris: Have you ever thought about asking the pharmacist to change the type of the caps?

Doris: Yes, he has changed everything but a couple of them.

Herman: I don’t have any trouble with them.

Doris: Well, I don’t have any problem with the push down. But it’s the ones that have the tabs that you have to line up. They come in the childproof, unless you ask specifically for the other ones.

Heather: You have to specify, and they will change and use the other cap, but then you are responsible if a child gets into your medications

[Doris said that have to find a child to open them usually because they can manipulate them better.]

Heather: That’s true, if either of you have tendonitis in your fingers.
Doris: Then you get the kitchen knife and you just pry it open. It's terrible to get old….

Heather: Yes, but it's better than the alternatives.

Doris: Oh, yes.

Heather: Well, I always said they talk about the Golden Years, and I always looked forward to them, but just my luck when I got there I got brass.

Doris: The helpless years.

Hazel: I have a lot of problems, but I don't really fuss about them, I just go about them.

Doris: I don't let them bother me, I just do one day at a time.

**Moderator: Do you have hobbies or interests?**

Arthur: I walk at the mall five days a week. If I walk around the mall twice, then it’s about four miles.

Hazel: I very seldom walk, but I need to. I used to walk some when I was working out there with foster grand-parenting, and I’d walk some. But now that I am home, I don’t do much.

Heather: I think it’s important that people our age keep active, not only in walking, but I found something my 94-year-old aunt taught me, that you keep your mind busy. If you don’t use it you lose it, and I think that her attitude has been a big impression on me. I love the computer, I do a lot of things on the computer, I enjoy very much card games, love to embroidery, it’s just that things that seniors have to do. Because a lot of time we really don’t want to just visit, we like our own time and we like our privacy.

Hazel: I crochet more in the wintertime when I am housed in, and then I crochet, and it keeps me occupied.

Heather: We keep ourselves medicated in order to keep us healthy.

**Moderator: Does taking your medication interfere with any of your activities?**

Hazel: There was one pill that would have, but I quit taking it, and I told my doctor why and so we cut it down just to at nighttime so it’s no longer a problem.

Arthur: You should see some of the ceramics that I do at the school. I work in between. They have the mold and the kiln. [Note: He offered to show his work after the session. You have to pour it and then take it out of the mold.

Arthur: I have painted some of that stuff out there.
MACHINE DEMONSTRATION

Doris: If it came down in the tray, how does that machine know you haven’t taken it? You say it rings a bell. Does it continue to do this until you take the medications? Your medication is still in the tray. You have to push the button first before it dispenses.

Heather: Do you suggest that we save out a few pills while we are getting adjusted to it? It may be that I am out for an evening and decide to stop by and see someone and I am not home within the time frame, so when I get home my acid reflux is going to be telling me to take my medicine. But if we had one saved out, then I would take it.

Hazel: Like in the morning times, I take like five different medications. How would I fill this so that they will dispense? [She had some difficulty understanding how the loading was to take place.]

Heather: Even if they are all morning [pills] …

Hazel: I thought you were just putting them in just one.

Heather: Let’s say you are taking two pills morning and evening. You go ahead and use the same cartridge for morning and evening.

Hazel: And what happens when you have more than six medications?

Heather: We have a lot of power failures in the area. But if it were time for a medication and the power was off, is there a backup that would automatically work with this? [The moderator responded that there currently is none.] Therefore, we do need to keep our medications for that purpose.

Moderator: Who do you think would input this information for you?

Doris: I don’t think I would. No, I think I could fill it, but I don’t think it provides much of a purpose. I really don’t. And I think that the cost would override any convenience, and I just don’t see that much convenience in it right now. Like I said, mornings are fine, but it’s just the afternoons, and I’m just going to have to program my mind to associate with something, like the news.

Heather [Talking to Doris]: But maybe for a trial it can help in assisting in trial with helping you by putting in just your evening medications…

Doris: Now, that’s a good point.
Moderator: If the device is not for you then how about for anyone else?

Heather: I wish I had had something like that prior to putting my aunt in a nursing home—because that was her biggest problem, she couldn’t remember to take her medication. And I had to call her, or trying to remember to call her, every morning every evening. And she was alert enough that she would have heard the beep she would know to take it.

Doris: What type of cost is going to be on one of these?

[Note: When I explained to Doris the alternative ideas such as Medicare or leasing, she responded]:

Doris: Well, since they don’t pay for your medications [Medicare], then why would they care whether you take them or not?

Heather: I can certainly see how it can keep some patients from overdosing.

Moderator: How do you feel about the safety features of the device?

Herman: I have only grandkids that come over once or twice a month, and I keep my medications way on top where they cannot reach them. The light and alarm is a very good feature. I could use it like an alarm in the morning.

Doris: My coffee machine. It won’t dispense my coffee.

Arthur: I don't have enough medications. But I don't forget mine.

Heather: I can just see it sitting around and having it say, “Are you making bread today?”

Doris: It’s our memory savings.

Heather: I can see that problem, and that in time being more compact. I think even if it were made taller instead of wider. Because you are talking about us in a small one-bedroom apartment—our kitchens are all the same size. But you don’t have enough counter space for your appliances that you need. They get stored in hall closets. But I do see, Sue, that if it could get scaled down.

Hazel: Another thing, I don’t know, I guess I’ve just really gotten used to it, but I think it would be confusing to me really. I think I wouldn’t have a problem refilling it—I think I could do that.
Moderator: Do you have suggestions for an alternative for loading the device?

Heather: Maybe it could be voice activated.

Hazel: I didn’t learn to type in school, and I don’t use a computer, so for some people it could be confusing. It could scare you.

Doris: I think it would scare a lot of elderly people. I really do.

Heather: Well, it might, but if they had someone who could program it for them and show them the benefits of where they wouldn’t be forgetting their medicines.

Moderator: How about from a caregiver point of view?

Heather: Taking care of my aunt it was a hardship for me.

Doris: Yes, if someone was going to program and refill for them.

Heather: There are residents here that I personally know that I think it would be good for. Unlike Hazel, I don’t think they could program it.

Hazel: Telling it wrong would really be a mess. If you were taking a lot all during the day, maybe you would probably get confused sometime and forget.

Heather: I absolutely forget my evening medications, and you get home and relax and then acid reflux starts reminding me. You know, for example when we get the flu, and we have an antibiotic that the doctor gives us. If they can program it for us and we are going to be in bed and we’re going to be sleeping because of feeling bad, then beep, beep, beep, beep.

Hazel: You know, it’s like I was saying, stuff like you are not used to doing, you know, any medicine you are not used to taking during the day, then you probably get confused with it. Every time you go, they give you a new medication.

Doris: I actually got cut down on one last week…[sounding quite proud]

Herman: I’d like to cut down on my medication, and then I went out there [to the doctor] and I wound up getting some more.

Hazel: Now, I think that would be a problem for most of the elderly if they had to pay for renting it, ‘cause right now your income is low, and mine is very, very low, because I usually don’t get the full amount of any of it. So there would be no way I could fit it into my budget.
Heather: But I think, too, we have to consider this as not only helping ourselves, but in this study see how we might benefit for others.

Hazel: Yeah, that’s what I said, there are people that are paid for, and, like you said, they have a lot of medications; sure it would be nice.

Doris: You could have someone program it correctly.

Hazel: But the only way I could use this is if only Medicare or someone did pick it up.

Heather: Well, I’m like you, Hazel; I’m on a limited income. But my interest in the study was to see how maybe I could help by using the machine how it could help benefit others who are not lucky enough to be here with us.

Hazel: Yes, I understand. There are a lot of people that really don’t remember to take their medications.

Heather: But I can see how I wish a few years back I had the opportunity for this because I was caregiver for my husband who not only had Alzheimer’s and spinal stenosis, and several other things, and insulin sensitive diabetic…. And I can see how this could have helped me tremendously because one of those 7a.m. and then 9 or something else [an indefinite schedule].

Hazel: I could see where how in situations like that, it would be beneficial, and in some others, I am not so sure.

**Moderator: How do you feel about issues of privacy with respect to the device’s ability to record missed medications?**

Heather: Can we ourselves look at that tape or does it stay in machine?

Doris: I think the information would be helpful to the family or the caregiver, the doctor, I really do. I think the family would be able tell [if they haven’t taken their medications]. They would be doing something different, i.e., lying on the floor or on the cabinet.

Hazel: She didn’t think it would do much good.

Heather: Well, I think it would be helpful. Because they [the family, doctor, etc.] could say, “Look, you are not taking your medication; look here…you missed here, here, here” [pointing to the box].

Hazel: How many people would see it? You mean if a person is real sick or something. A nurse or caregiver.

Arthur: Like a family member.
Doris: I can see how it could help them live on their own longer. I sure do.

Heather: Like with my aunt, had we had something like that, we could have easily checked if she was taking her medications; even if she weren’t, then we would have known for sure just how long she was capable of staying by herself. Because she was capable of going and taking her medications, when I reminded her; sometimes she had and sometimes she hadn’t, but when she hadn’t, then she’d go ahead and take her medications and then we had a rule that she had to call me back. If we had had something like that, there was no doubt in my mind that she was alert enough and she would have taken them.

**Moderator:** *Do you think that it would be useful for the device to be connected to a telephone line?*

Hazel: I think that would be a good idea, and I can see how that would work in another way. And if you called that person and they didn’t answer, then you would know that something was wrong.

[Arthur and Herman also thought that it would be a good idea.]

Doris: Over the phone I think having the pharmacist be able to program the information into the machine would be great. That would be absolutely fantastic.

Heather: And for so many of us elderly that maybe the computer scares us to death, that would be good.

Hazel: If you forget to take it in the evening and you don’t get it in that window then…

Heather: So that’s why you would want to save a few extra of each bottle of each medication.

[Hazel concurred with Heather.]

Herman: The doctor said that if you forget, just leave it alone and start over the next day.

Hazel: I think all of them [have side effects]. Because of all the side effects that all the medications have. So, I don’t really see how they all don’t interact. And all of them have side effects.

Heather: Do you put your prescription number as well as the name…

Hazel: So, if it’s hooked up to the drugstore, they would know when they needed it to refill. I think it would be a real good feature.
Heather: The pharmacist calls us at some of the drugstores, like Walgreen’s, when it’s time for your refill, they automatically do a refill and call and let you know, if you don’t go within a reasonable time they call you again. So, I think it would be very good if it could be tied in with the telephone and the pharmacist. So, they would automatically refill if they are refillable, and the caregiver…

Doris: Yes, and the caregiver.

Hazel: Does Walgreen’s fill three months’ worth?

Heather: It’s usually cheaper if they fill it for three months.

Hazel: We’ve had the electricity go off several times during the night. Say, for instance, that it did go off [the electricity], would this still work when the power came back on?

Moderator: You would miss that one dispense.

Heather: Maybe we need a backup button [everyone laughed] back up and give us what we’ve missed!

Hazel: I think it’s a good machine, and I think a lot of people might could use it, but like I say, if you were responsible for the cost, a lot of people wouldn’t be able to afford it. But feature-wise a lot of reasons it would be helpful. I’m not saying it wouldn’t be good for us… [What it seemed that she meant by this last comment was something like: “Now don’t get me wrong, if you were to give this to us, I would not be opposed to using it.”]

Doris: I think it has a lot more assets than downfalls. I Agree with Hazel [about the cost].

Heather: And stay out of nursing homes.

Heather: I think the tape is very good, because I know that so many times the doctors will ask you are you taking your medicines like I told you or I like I instructed you to? Well, if you could take the tape along, to the doctor and tell him I haven’t missed any doses, then they would know whether to increase or decrease. You see I’ve worked with doctors for years and I know that doctors are skeptical; so often the patients bring in what they have written down they have done, particularly ones with diabetic problems. They will say, “My blood sugar was this at this time, and this at this time,” and yet when they come in, their blood sugar is way off the charts. And the doctor says, “You can make yourself believe, but you can’t make me.” So, I think if you had something to show your oral medications to go along with your diabetes, you would have the tape showing … unless you throw them in the trash.

Doris: Not for what you are paying for them you are not [going to throw them away]. I’ve told my doctor that “that” is the worse medication and I dropped it in my coffee but I’m not about to waste it, but that was the worst cup of coffee I’ve tasted in my life, but I
was going to get every last drop of it. And the doctor said, “Why did you drink it?” And I said, “For what one of them cost, no sir.”

Doris: Did you all see this morning’s paper where it says that our Medicare insurance cost is going up 13.5%, to 67 dollars a month?

Heather: Okay, let’s see what are we going to take off of the grocery bill this month? [In jest, yet sarcastic.]

Doris: Are we going to get an increase to pay for this?

Hazel: No. That’s what’s so hard. You know, and every doctor you go to, they tell you a different food group to eat. You can’t afford it.

Doris: I see only one doctor.

Hazel: Your primary doctor knows your medication.

Heather: If we are using different doctors we need to use the same pharmacist so they can tell us about interactions. There are so many programs that the doctors know about that can assist you in getting their medications with the incomes that most of us have, that we need to check those out. I will be able to share them with you.

Heather: I would like to see this project go forward. This would have been really helpful for my aunt, because she was capable of taking care of herself, she just couldn’t remember to take her medications.

Hazel: It would be nice if it were smaller.

Heather: Going up with the machine would be a space saver. The kitchen.

Hazel: I keep my meds in my bedroom anyway, so it’s what you are used to having them. It’s right there looking at ya.

[Note: Herman paraphrased Arthur, commenting that just seeing the machine there would remind you to take it.]

[Note: No one thought the beeping would be a problem in disturbing the neighbors in the complex. They offered examples how their singing, or playing spiritual music did not disturb anyone else.]

GROUP 6: MAGNOLIA RETIREMENT COMMUNITY

Group participants: (Real names have been replaced with fictitious ones.)
Thomas, White, age 85
Max, White, age 85
Tim: I have no problem before I have my coffee. I have one of these things [pointing to the pillbox] labeled Mon, Tues, Wed, Thurs, and I have them all lined-up. And as I am making my coffee, it is almost automatic because I have been here [at the retirement community] for almost 9 years—I’m the oldest of everyone here, and nine years took the coffee take the medicine. I maybe forgot once. It’s so easy. I think I may have missed my medications once. Monday, Tuesday, Wednesday, Thursday, I have them in each one of these [referring to labeled pill containers], and, in fact, I refer to the tops to know which day it is. The coffee is sitting right there.

Curtis: I have a similar method [pointing to the pillbox strips]. I have one for my evening meds and a smaller strip for my morning meds. It’s not foolproof, but I’m not a big enough fool because sometimes I am disoriented in the morning, but it works. What I think is annoying is filling it once a week: You have to sit there and go one of these and one of these, and then on this particular one you take 1 and a half. Now you are in the pill-chopping business. Luckily, they are scored. I am more interested however how to get the price of the medicine.

Max: I know how you can get the price of the meds down. I was paying 350 dollars a month and then I went to the V.A. and they said that the waiting list is very long, but if you had a disability from the war, you can get on the list. They gave me a card, and now I get my meds from the V.A.

Curtis: I appreciate your suggestion.

Thomas: I use the same system. Seven days – no problem. So far, so good. I take them two times a day.

Max: I have a basket with all of my medications. I take one of these out every morning with a little juice and two in the evening. I just remember.

Tim: Why do you guys take your medications at night?
Max: Zocor, and Coumadin, “rat poisoning”

Tim: Rat poisoning for a rat.

Curtis: One of the reasons I take them at night is because the prescription warns about drowsiness, so it’s better that I am asleep anyway.
Larry: I take three medications—two pills and an ointment. I take one pill in the morning, a second pill after lunch. I don’t use any reminders. Everything is right on the shelf in the bathroom, and I take them there.

Charles: For years I’ve been taking Monopril and an aspirin in the morning, for many years. After my wife died, the doctor suggested that I take Benadryl and another pill for cholesterol. About three weeks ago, I became ill and have been going to a doctor since then. He’s kept these pretty much the same but has given me four other ones. Now, never having had this challenge before, I made a copy of my routine that the doctor suggested. It is very similar to a box. I have the days of the week starting with Sunday through Saturday. This says morning all the way across, noon all the way across and evening. The Sunday of each weekday, I put what I need in each of the containers. On the top of the box is printed M-T-W-T-F-S and morning, noon, and evening across the sides.

Moderator: What do you do about refills?

Tim: I have a box with all these pills in them and at the end of every week on Saturday I refill the box and refer to the bottles themselves. I also make out a form of every medicine and every refill when I go to the doctor, so I never have to call the doctor. I get 90-day refills, but you can’t order to far in advance prior to the refill date, otherwise they won’t fill it. I just went to the doctor last Tuesday and he filled out every one of my prescriptions for three months. And I go to see him twice a year.

Max: Every 90 days I get a package in the mail. Now something went wrong this past month, and it didn’t come on the day. So I called the V.A. and told them I ran out of it and I needed it. And they sent it out Fed Ex, and it arrived the next day. I have to see the doctor at the twice a year to get these medications, and she completes the forms. It is a wonderful system.

Charles: One of my prescriptions says when low call Walgreen’s and refill. Another one says you must call your doctor for approval before refilling.

Curtis: What is really annoying is when the doctor changes the quantity. Increases or decreases the strength that they control. The physician controls that very tightly. And I would say at least once a month or more than that they’re adjusting up and down. That can cause consternation. If I have 10mg, they may say I need 7.50 It’s the changing. It’s an annoyance. And just about the time you get it down, the doctor gives you another medication or he says get off of this and get on another one.

Larry: I just have to renew mine every 30 days. I’m supposed to take them for a year and then go back to my doctor and see if he wants me to continue.

Charles: Does that pill container have the dates [looking at the boxes]?

Max: The only time I use that is when I travel.
Curtis: Travel can be an annoyance.

Max: Oh, boy [he says in agreement]. When I travel, I have to use these. It's the counting out, and when I'm on vacation I forget.

Curtis: The biggest problem I find that when I'm traveling is when I'm out of medication you are up a creek.

Max: Oh, boy. Oh, boy. It happened to me in New Mexico.

Curtis: If I have filled up the boxes for my trip and then we extend our stay, well if it's a day or two.

Max: I was on vacation in New Mexico I ran out of two meds. I only needed two pills each because I was on my way home. I went to Walgreen's and they didn't want anything to do with it. I had to call my doctor in Charlotte and he okayed it. And they penalized me—charged me 6 dollars each. At home they were only fifty cents each. I never went back to Walgreen's since. Usually, you go to a distant area, and if it's a reliable source, they would give you one or two. But not here.

Charles: When I am filling up the meds for the week, my daughter, who lives nearby, assists me to make sure I put the right product in the right container.

**Moderator: Do you have difficulties taking your medications?**

Max: The V.A. sends me a pill cutter every six months. You can get them at a drugstore. I will give my old one to you the next time.

Curtis: Problem is, the blade wears out. It doesn't stay very sharp. I used to carry a single edge blade in my wallet.

Max: They cut very well.

Charles: Once in a while the pills won't come out half-and-half, but my doctor says don't worry about it. It's not that important if it doesn't come out perfectly symmetrical.

Max: They send me 40 mg pills of Zocor. But I only need 20 mg. So instead of having enough for 90 days, I have enough for 180 days.

Charles: That happens to me, too.

Max: The V.A. went up from two dollars a prescription to seven dollars, for 30 days.

Tim: I get for 90 days from New York State. The most I have to pay for any medication is 15 dollars. Most of them are 10 dollars. The state pays the rest.
Max: Wait until this guy gives us a new program. You are going to pay 300 dollars for 30 days.

Tim: Sometimes they are so small they jump out of my hands. But if I had to worry about paying big money for them, I would spend the time searching the floor.

Curtis: I don't know if this is considered a problem or not, but... I fix my wife's medication, and I fix my own. So I am working with a lot of pills.

Tim: You are a pharmacy technician.

Curtis: I should be, all that I am lacking is the degree. Anyway, I identify them by shape. Some of them are shaped like footballs. When you get into trouble is when they are all the same color and all the same size. And yes, some of them have them printed on. That's one problem. Then what happens is when you go from the specific to the generic, the generic do not come from the same supplier. So now what happens is that they are not the same color, or not the same size. My wife has one pill it's at least that big [microscopic]—aah.

Tim: And as you get older, I am partially color blinded, and that's the biggest problem: the shapes and sizes. They are all small and the colors vary. They are either dark pink or light pink. I can't see without a magnifying glass.

Charles [To Thomas]: I don't mean to insult you, but you haven't had much to offer. I don't mean to offend you.

Thomas: No, I'm just listening.

Curtis: Apparently he doesn't have any problems.

Max: No, no, he's got a good doctor. I know.

Tim: Of course, he's not Irish, and the Irish never stop talking [referring to Charles].

Thomas: I'm only on two or three pills, so I don't have problem like some of these people. The only problem I have is with my wife’s pills. She takes about seven pills. I don't help her but let her take them herself for as long as she can.

MACHINE DEMONSTRATION

Thomas: Did you say they are working on a way to reorder your prescriptions? I think that would be a good feature. It looks like a computer to me.

Tim: To be honest, as we get older, my generation are frightened of anything computers. Anytime it’s mentioned how easy it is to work them, they shake. Especially, there is a reluctance to learn anything new. Secondly, this might be very good for an
assisted-living place where in each room there would be a machine like that and there would be someone to take care of it. For the average person that has to go to assisted-living, there are a lot of people in this independent living that belong there [like Thomas]. We have a reluctance to technological things. We don’t like to get involved. I have enough on my head without having to figure this thing out. The nurses or attendants would be able to work it.

Thomas: He’s right. The nurses’ station, that’s wonderful. Yes. I agree. That is a very good suggestion. I think it would be very useful if someone would come by and load it for you.

Curtis: From my vantage point and my capabilities today, that would be a pain in the neck. A flat-out pain in the neck. First off, in terms of remembering to take my pills, I don’t have a problem remembering that. Loading the pills would be another thing, and the space that that takes up is another thing.

Thomas: Does that thing have a battery backup?

Max: For the average person, like the age group of the people here, they couldn’t use that; they would have to have someone come in to help.

Charles: Conceptually, it is a very good machine, except the procedure of setting up is just the opposite, it’s very confusing.

Curtis: If you couldn’t take your medications by yourself, that machine is not going to help you take your medications. Like Tim said, those patients relying on nurses all the time, then it would be helpful to the healthcare workers, it would be wonderful.

Tim: There are so many more patients than people they have to work with them, and if that would go off they would know what to do. When my wife went into rehab after her knee replacement, there was one gal whose only job was to do exactly what that machine did, and I saw her handling all those meds and reading over there, and I was wondering how did she keep all of that straight.

Charles: Or what if she made a mistake, huh?

Curtis: Exactly…. In that position, but I wouldn’t want that in my bathroom.

Max: Every nurses’ station should have one. [Tim and Charles agreed with him.] Because they are overworked, and very often they make a mistake and forget.

Charles: And they can all be trained at the same time.

Tim and Max thought it would be excellent if they were in each of the rooms and then tied to the nurses’ station.

Charles: And I don’t think they would work in an assisted-living arena.
Max: No.

Thomas: You would have to have an assistant to operate it. This would be great for someone who had a granddaughter live next door who could load it every month and work it out for you. You'd have to be a computer person practically.

**Moderator: What would make it easier for you to use the device?**

Max: A robot attached.

Charles: I don't think anything would make it easier, from my experience.

Curtis: Thinking outside the box, supposedly we got our prescriptions filled out like this [pointing to a multiple box pill container] instead of getting it in little bottles that we’re going to throw out anyway, unless we can find other use for it. Fill this out, then I am set.

Charles: As far as myself, I get the medicine, and I take it morning, noon, and night. So what’s the problem?

Max [who had owned a blood laboratory]: I had a Coulter machine that analyzed blood in my laboratory. Every time something went wrong, they would have to send a guy out from Atlanta. They charge you from the time they leave to the time they get here to the time they get back. That is what you are looking at, 500 dollars the first time. That would not matter, even if it is hooked up to a phone line. They have to send a technician.

Tim: But honestly, the minute something goes wrong, I’m going to throw it out the window. I’m the same way with computers. If the computer goes bad, forget it. I am not going to bother. To call someone and go …. At our age we don’t want to bother.

Charles: You mean, Tim, if that went on the blink it would be “forget it.”

Tim: As far as I’m concerned. I can’t take it. I don’t want it. I don’t want to get involved in it.

Charles: How many of the five of us? I’m against it, because I feel like I can handle it myself, and I have done it all my life. In a health care, where these people are relying totally on nurses; I think it is an excellent idea.

[Thomas, Max, and Larry did not think this machine would make the difference between someone staying at home or going into a nursing home.]

Tim: It’s not always physical. If you are at home, you can’t take these, and you come here. You’ve got other things on your mind: you can die, you can get sick.
Max: If you go down to health care here at the Magnolia and they have 40 patients, I bet you not one could regulate their medication. Most of them are gone. They have someone give them their medications. If they are lucky. You should see the kind of help they hire around here.

Charles: I volunteer at the health care once a week. Some people are just lying, there and they are barely alive.

Thomas: I wouldn't trust them to do it.

Curtis: I wouldn't want them to do it. The thing that I think is interesting, that with all the technology do you see how they line it up to start it there are two little red dots. What triggered my thought was when these dots are lined up, is this one or two? And that’s one.

Thomas: I can see you redesigning this machine [pointing to the wheel] where you load the wheel and it can drop out the pills [M-T-W-T].

Tim: I think it’s a fabulous thing, as I said before, at a nurses’ station or even in the room where it rings and the nurse goes in and gives it to the patient. One nurse for how many people?

Max: That’s when they’re lucky. They hire kids that come in off the street, never was in a place like that, they don’t know what the hell is going on, and they take care of the patient.

**Moderator:** Do you believe this device could help in the future?

Max: Well, we don’t have a choice. Do you know what Kaddish is? Well, you might as well start saying it.

Charles: I go to the Alzheimer’s unit to help out. Now, I am not certain, but I believe their medications are handled through the attendants. But I would suggest you find out how the medication is given to the patients.

Max: Through the attendants.

Charles: But, as far as health care, boy, they need it badly.

Charles: If I were on my own, I would say yes. But, fortunately, my beloved daughter who lives a block away, and she comes over and helps me sort it out. But if it weren’t for that, I’d be lost.

Curtis: My wife and I moved here about six or seven months ago, because my wife and I have two daughters who live near here. One lives about five minutes from here
other lives maybe 15 minutes away. And you said what would you do? We sold our house to come here.

Tim: We all did that.

**Moderator: If your daughter suggested the device would you use it?**

Curtis: For her [their daughter] to help us? And make the load on her easier? Well, then I would take a whole other view of it. But if I had to function it, if I had to learn how to do it, if I had to load it, I don’t need it.

Thomas: I agree with you. If my granddaughter would come by every 30 days and fill it and operate. I could do it today if I had it. But I’m talking about later.

Tim: It’s not that we’re stupid. It’s just that I am not interested in doing technical stuff. I used to do everything myself, hook up televisions I can’t do a damn thing now. I don’t want to.

Charles: I think under the circumstances the machine has a future if it’s in the right place. In health care. At the nurses’ station. At any stations where RNs are and no one else.

Larry: If that machine is designed for one person, what good would it do at the nurses’ station?

Max: That’s right. No good, unless it could take care of multiple persons. They would need a machine that would take care of so many patients.

Tim: And then the sound would go off and they would.

Charles: What would be wrong with having a machine for every room?

Max: Look at the expense. And if a few would go wrong, what would you do? They have at least 25 rooms.

Max: Here they soak the hell out of you. My wife was in there for three years. It was 8,000 dollars a month for three years.

Charles: If that would help the expense—75 dollars a month for a nurse’s visit.

Max: To have one for each patient. It makes no sense. They couldn’t afford it.

**Moderator: Do you think the notification to a caregiver of a missed medication would be helpful?**

Max: For whom would it be responsible when it went haywire?
Curtis: What would my daughter do if it notified her? [The Moderator explained a scenario.]

[Max, Charles, Larry and Tim said they did not think that confidentiality was a problem.]

Max: Our whole life is a book.

**Moderator: How do you feel about renting vs. purchasing the device?**

Max: No purchase. I can see renting. It’s for me. I don’t know what my kids would do with it.

Curtis: I think Tim brought up a good point. I think it’s the correct one. The machine is too much for one person, and not enough for a nursing station. If you want have it at a nurses station, then you have to have one for every person.

Max: Look, I bought a Culter machine back in ’83, 14,000 dollars, and every time it went broke, it went off I had to have someone come up – 500 to 600 dollars.

Tim: That’s buying, leasing…

Max: Leasing is just as bad. You are still responsible for it.

Tim: I think it would be great. In each room would have one of these things, and when it went off into the nurses’ station, and they would know to get the medications, or something similar.

Charles: I have one question. How are you ever going to summarize this?

Thomas: You mentioned about connecting the machine to the doctor? I don’t know about that.

Max: Did you ever try to get a doctor to call you back. Forget it. Hell no, that’s your problem. In the first place, he can’t write you a prescription until he pulls the records and it takes a while.

Thomas: I order my prescriptions by mail from Arizona and I think people order them from other places. I don’t know how you could connect this to all these pharmacists, I don’t know.

Curtis: I just want to mention, my wife was in rehab, there was one nurse, and her main function was that she had a cart with all these meds on the cart, and she would fill the cup for each patient. And that’s what she did. And I said holly molly, I would go crazy. And then when my wife came out of the rehab, guess who got the job of putting the medication together? Me! And I went crazy. I don’t see the machine helping me. For one person, no; maybe for a group. Not for me, it’s not in the cards.
Tim: Just keep in mind that as you write this up our age, our outlook. I really don’t have any problems, but this is the least of them. I mean the hell with it, how many years have I got, 30? 40? [He was 87].

GROUP 7: ALL SAINTS BAPTIST CHURCH

Group participants: (Real names have been replaced with fictitious ones.)

John, Black, age 69
Ben, Black, age 67
Henry, Black, age 69
Ron, Black, age 83
Saul, Black, age 88

Moderator: How do you currently remember to take your medications?

Ben: I’ve been on medication for so long, in my case it is routine. I get up in the morning, I know I have to do this before I eat, and I know I have to do this after I eat. And I go home at night, and I know what to do then. The only problem is when it gets late and I forget to take my medications with me to work. I’ve taken them so long, it’s routine. I have morning and nightly medication. I do not have any midday unless something is wrong. My basic medication is in the morning and evening. There are some I take before I eat, and some I take after I eat.

Henry: Like Ben, there are two I take twice a day. And one, sometimes it depends on how my stomach reacts. If it is sour, I don’t have to take. That leaves me with four to take in the morning. Usually I have to take insulin in the morning and in the evening. You have to take insulin before I can eat anything. Sometimes I take a vitamin and an aspirin. Sometimes like Ben said when you get home late, you still have to go through all of your routine.

Ben: I have insulin in the am and insulin in the night. Mine is an injection.

Ron: I take my medication in the morning. I eat, and then I just take it. I did take something a while back after I eat, but now I take it once a day, and that’s all I take.

John: Well, I sit there and count mine out. Well, I keep up with them, like when Christ finished feeding the 5,000, he told them to gather up the rest and put them into 12 baskets so I put my medicine in a basket. And leave the basket in front of where I sit to eat. And I count my morning medication, my middle of the day medication and my evening medication. And my schedule is terrible. So sometimes I don’t do them on time, but I try to make sure that I do then each day. I do my non-prescription medications in the middle of the day. And I did tell you that I did 14 in all. But I do vitamin E, B, C, D, calcium, and the coated aspirin. The coated aspirin is required by not a prescription so I can do that any time. And in the mornings, I do Plavix, Zoloft,
Norvasc, Allegro, a potassium. Then in the evenings, my night medications I do a blood pressure, another diuretic, and two .... And usually I had the iron at night, and the potassium [in the morning and evening]. There are six in the morning, four in the middle of the day, and in the evening at least four. That makes 14. When I put in the iron, it makes 15. And if my stomach is queasy, I take something like Lomotil, my diarrhea medicine. I really don’t have any that are the same color. The pharmacist, she told me that I shouldn’t need aspirin with the Plavix, but I am going to go back and discuss it with my doctor. And I see that on TV that they recommend that you use it with aspirin.

John: That may have contributed to my stroke because I didn’t realize how valuable the aspirin was. Because about two weeks prior to my stroke I don't think I took any because I ran out and didn't go get any. That was the only thing I didn’t do coming up to it. But our family history is strokes, so I will probably go ahead and have one anyway. If you want to be a bona fide member of this family, you have to have a stroke.

Henry: I had a brother that had a pill assortment like the Pastor, and there was no way he could remember when and how many to take, and I had to keep up with it, too. And his wife helped, but she was not as involved with the medications as with other kinds of care. Some of my medications I have to cut the pills in half. My aspirin and vitamin and Zocor and have to split them in half. I have a pill cutter. I use to do aspirin with a knife but the V.A. issued me a pill cutter. And I was just wondering if that machine will help you swallow that stuff.....[laughs]

John: I have trouble swallowing that potassium. It just gets on my tongue and it won't move. I have trouble with that.

Henry: It seems that sometimes, your throat just wants to close up the minute you put that stuff in your mouth. I try to swallow them all at once.

John: Well, nobody has told me this: how do all those pills know where to go? The six I take in the am, that is just mind-boggling. Now what I do make sure I talk to the pharmacist because I don’t think the doctors have as much information as the pharmacists [about] whether I’m taking things that are not compatible with each other. Now, I won’t take Coumadin because the danger of hemorrhaging. I gave my Zocor to Henry’s wife because of the liver problems associated with it. But she was using it. And I had bought 50 dollars’ worth it, and I was going to throw it away. She tried to pay me, but I told her she didn't owe me any money because it was garbage as far as I was concerned, I wasn’t planning on using it – ever. And when the undertaker gets through [and, Ben, he is a mortician] they are never going to know whether you died with liver disease or from high cholesterol. It won’t make a darn bit of difference, you are going to be dead as a doornail. So I refuse to take the Zocor. I told the physician and the cardiologist as well. You are not going to obey if you’re not going to obey. I just let them know what I wasn’t planning on doing. And they asked me what I was going to do. I said, well, you are going to find me something else do. And they haven’t found me anything else, so I am on oatmeal now, as a combatant [for cholesterol], I presume. Don’t ask me, I just found out that it would work. And mine hasn’t been high. So whether
that is medically sound, or not, I am not taking any cholesterol medication. And that’s been 1997. That’s when we had a lady that was taking a terrible amount of medicine, quite a bit of it was cholesterol control; her liver went bad, and they could not find a liver to transplant, and she passed away. They carried her to a hospital down there because she would be near a center where the likelihood of a liver was higher, but they did not find one in time and she passed away. I read about my medications, but I don’t necessarily understand everything, so I get in “cahoots” with the pharmacists and I talk to them.

Henry: Anything you have to take internally you have to find out about. There is a whole bunch of things that can come, this and this and this. It depends on what you what risk and not risk. Everyone wants to stay as well as possible so it’s a catch-22. You don’t want to look back and say “Gee, I wish I had,” but you don’t want to take things that are not necessary. Just like, sometimes you have an understanding of how certain things make you feel a certain way, especially among diabetics. Blood pressure may be out of whack, is a bit more silent and secret. Some years back, when I first had to really bother with my blood pressure, my doctor asked me, “Did you have … last night.” You are operating at stroke level. And that’s scary. So then we got in the process of rearranging some of my medications… Then I got a change of doctors. He didn’t know why my blood pressure was erratic, but the combination I have is working quite well.

Ben: When I go get examined, and he tells me, describes so and so. And then that’s when I proceed to ask why, what’s it going to do, how is it going to react, and how am I supposed to react to it, and then once I receive the prescriptions, then I also immediately read the material that comes with it. [In response to whether or not he tells his doctor the other medications he is on… he remarks]. If I go to my regular doctor he has a record of what I am on. But if I go to a specialist then I tell him what I am taking now.

Ben: I take three blood pressure medicines. I will try to get my appointment for an examination in the morning when my blood pressure is very good, but when I schedule them for the afternoon after work. . .

John [Interjects]: A mortician’s work is high tension. People are grieved, and you have to fight arranging the cost, and sometimes they want to spend more than they got and you have to tell them no. There are people like me my brother’s ashes came in a fragile container and I took them over to him and I said you Get something to put my brother’s ashes in before they are all over my house!

John: We had a screening [blood pressure] here yesterday [meaning at the church]. There were more people here than went to the screening, but it was voluntary.

Henry: Speaking of blood pressure, I didn’t even realize when I was younger that it was as elevated as it was. We went out to give some blood and they checked it two or three different times, and they said why don’t you rest awhile. They said your blood pressure is a wee bit high, and we don’t want to take it. That was the first time it was a serious
problem. I was told before that maybe it was high. The pastor’s doctor told me, “You must have drinkin’ a whole lot of white liquor when you were young because your blood pressure is high. And I told him, contraire to what you say, I drank some just because of association, because the boy would put me out. And I thought about that and I wondered why. For a while [when I was a kid] I didn’t have to bother until they decided they were going to make me fit in—but after that on my own I didn’t desire not anything—but just to keep from being alone, but I wondered Why he would say a thing like that? I knew I hadn’t been like some people I know who drink every day. I think it was more an inherited, because my daddy died when he was 54, and I am sure he died of a blood clot or stroke. It happened when he was helping people load some logs. And he would sweat, sweat, sweat, sweat, sweat. And he would eat pork grease, he would not eat butter. He was raised around there, and he would not have anything to do with butter. They wouldn’t have anything to do with milk products. And he would pour molasses and he would pour it in that grease. I didn’t know then, but I realize now that I might take after him. Anyway, he always worked hard, and he would always sweat, he could get wet from head to toe. And there were some neighbors down there, and after they loaded up the truck they went over to the neighbor’s house. And at that time the water dispenser for houses was a big bucket with a dipper. And he was sweatin’ so, and they gave him a chair and he sat down on the porch and he asked them to bring him some water. But when they got the water there he was already dead. He had a massive stroke. So, it always worried me until I got past 54, was I going to die? Because I knew I had blood pressure problems, but I was so apprehensive about would I live beyond 54…. I tried to be as aware of the blood pressure as I could. But I worked hard like my daddy, and I ate a lot, so it was just a thing in my mind.

John: I am real close [in age] where my mother was when she died, but I am not even about to approach my father’s age. My daddy missed 93 by ten days, and if he hadn’t had a fall he’d probably still be around. He’d probably bury me. He would have been 108 this year, 109 in October.

Henry: My mother lived to be 91. But some of her situations was my brother and his driving. He had several wrecks, and all of them were on her side where she sat. She loved the garden and raised flowers. But it injured her on the shoulder and she couldn’t move, and that took a lot out of her. But she died on her way from the kitchen to the living room. I was 13 years old when she died.

John: I despise taking all those pills, but they are a necessary evil, a necessary evil—they keep me going—I presume. I’ve kept my power of the divine, but I think that the power of divine would let me in bed if I didn’t take my medications. [John looking at Ben]: Don’t you think you have a genetic predisposition to diabetes?

Ben: Yes.

Henry: Same as it is in my family. And I hadn’t even realize that’s why he was taking them. My diabetes got so bad that I couldn’t even see. And it got real bad when I couldn’t see to watch TV or drive. Sometimes it would get bad, and then it would wane
away. I thought that maybe I had cancer, and I quit smoking, but it didn't help at all. I was at work one night but by 12:30 I was in such a state that I told my supervisor I gotta go home. So I came home and went to bed, and the next day was Sunday. And Sunday morning I felt pretty good, so I went up took a bath, came to church. And after church I was sure I was not going to make it. And by Monday morning, I called my friend who was a pastor at another church and said I need to go to the hospital, and I can't see how to drive. So he drove me to the hospital and my sugar was 940 and they told me, well, did you bring your clothes? And I said, well, I didn't come to stay. And they said, well, you are going to be here awhile. So I spent a month in the V.A. hospital. And I was told that I would not be off insulin for the remainder of my life. And that was in February, and by September I was off the medicine. Now less than 10 years today. You just try to keep your diet. That was in 1979. And then in 1992, I had to go back on insulin.

**Moderator:** *Do any of you ever take breaks from your medications?*

John: If I take a break, it's either because I ran out or I was “out of place” [away from home]. I don't take no “holidays.”

Ben: I have a case … Talking about insulin. It's a matter of discipline. On one examination my sugar was in such good [shape]. And if I had lost some of my weight she could drop my doses down. So right now I'm going through some self-discipline, right now, and will see what is going to work out.

**Moderator:** *Do you feel that medication controls your life?*

Henry: That's true. Sometimes, not by choice, but by circumstance when you go on a trip, you always forget something. Never figure out … I said sure I put my pills in there. I've been on fishing trips, and I have my insulin and everything. And when I get there, I find that I left my insulin at home. Well, insulin you can buy with a prescription, and at that time I did have a prescription. But sometime when I go to a convention and I think I have every one of my pills and sometimes you forget one combination of medicine. But as a human being, you can do without them.

John: Oh, Lord, I call home to have a chance to send mine. I call my two children who live here—they both have keys to the house and I have them, usually, by the time she sends them I'll be back home, but I generally call my daughter, and they are usually there the next day by express mail. I have gone to the pharmacist out of town, and it's easier than it used to be. If you are a CVS customer, and you can go to any CVS in the country, and they can access it from anywhere. And I can pay the same price as at home. I don't think anyone of us get a reduction in price because we’re not income eligible. My medication runs more than 500 dollars a month. My insurance pays half. Now Henry has wonderful coverage because he worked for the postal service. Henry: We get a rebate. Then they will prorate. They give you a discount. Everything helps. My insurance just went up.
MACHINE DEMONSTRATION

Henry: Question: if you are off schedule, if you are involved in something, you can’t take your medication until the next day, if it’s one time a day, you will miss it. Well, no, that’s,,, there.

John: Does the tray reject automatically? Let’s start with maintenance. Any machine will malfunction or breakdown sooner or later. What about maintenance?

Ben: On the initial setup. If you put it in a home of an elderly person would a family member do the setup or would y’all do the setup as far as the keying of the information? I think that is one of the aspects you would have to look at.

Henry: It would probably be more suitable for someone who is handicapped and inactive if it could be placed where they could operate it by themselves. But for active people, I don’t know if it would be useful, because they wouldn’t be home or if you are caught in traffic, and you can’t get your medication out. I like to fish, and when you fish you go early, so I would take my medication early [If I remember]. But it’s better if you have your meds in your pocket, but unless, if you can carry it with you, but it doesn’t look like you can. It would be better for people who were limited to certain area or limited in mobility, well, then they might not mind. And it would be helpful for people who are immobile, if the person who is supposed to give them their medication wasn’t there, well then they could take it and they wouldn’t have to miss. But [for] people who are mobile, circumstances not so easily handled, that you can keep a regular schedule, and if you have a breakdown away from the home.

Ben: That would be for a situation who is confined to a home, but they have a caretaker there at all times. So, if the caretaker is in the house but away doing something somewhere in the house, then they could check the machine go off. So, I think it would help the caregiver.

John: Which would ultimately come back to the patient. Because it has the audio and light, which could alert the caregiver in the house.

Henry: My brother had an alert in the house that he could punch and it would dial 911 and get help.

John: But he would have to activate it himself. But you are saying that this machine had the technology to do it itself?

Henry: In one situation with my brother, I took him for dinner on a Wednesday, and he was sitting on the couch, and I gave him some food, And he was supposed to have dialysis on that Thursday on 9 a.m., and I was supposed to pick him up from dialysis Well, I get to piddling around and it was after 2 p.m. when I went to get him from the therapy, and they said, well, he hadn’t shown up. Well, I hurried back to check on him, and he was laying in the middle of the hall, and he had that alert but once he fell he
couldn’t get to it. When I did get him up and around I took him straight to the hospital for the dialysis. He was someone that someone had to be with. And that was almost impossible, life goes on and you find out you got less people that you can depend on. Now he was supposed to have, at one time, a nurse to visit him at least twice a week, just to make sure. As time on if he sat down he could not get up by himself, he just didn’t have the strength. So, something like that machine would be good, but not by itself.

**Moderator:** *What do you think of the various features of the device?*

[John and Ben commented generally that they thought it would all help.]

John: And the print out would help verify all that went on. I need something to see, because my brain doesn’t work that way.

Ron: I think it’s something if someone needed it, it would be the thing to use.

John: I think it could work out in a convenient spot. But you would have to work out that spot, because all of us always fill up all the space we got. I don’t think it is cumbersome to find a place.

Ben: Place at the bedside.

John: Mine would probably be in the kitchen. I am a kitchen person. Maybe where my basket is. Six are enough slots.

Henry: I think it is reasonable.

John: Maybe for someone who is taking 14 per day.

**Moderator:** *What would you pay for a device such as this one?*

Henry: My income probably. Insurance did not pay for my blood pressure or glucose monitor, and they do not pay for your test strips, and they are very expensive.

John: I don’t know what a technological device like that would cost. But Medicare provided for my electronic chair, 6,300 dollars, and no cost to me. I didn’t pay that for housing in 1968. If you could get Medicare to buy into it, I think it would be very valuable, particularly for people who live alone, and people who have memory problems. If the machine makes a beeping sound, and they realize that it is time to take their medication and you go there and the medication is already there, even if you had to have some help with loading it, it’s going to be their six or seven day capacity. So, if a person had memory problems and they live alone, and a lot of people do. Ron lives alone, Saul lives alone, and the rest of us have wives.
John related an experience about a woman he knew that had some kind of device on her chest and at some appointed time during the day the information would be transferred along the telephone line. And they could read it through the telephone.

Ben: Would that take a special jack in the phone?

John: That was the way it was with her. We were sensitive to the time when we called her. Because we knew it was going to need [the machine] a call.

Henry: You can’t use a telephone when it is making that call. It would interfere and you would need another line. Where would you put it? Well, talking about where you would put it, if you have a houseful of grand youngins, they get into everything they can reach. You would have to have it out of harm’s way.

John: You don’t know how to threaten the grandchildren?

Henry: Some of them will try to fix it. In my way, it would have to be out of the way of some of them. Sometimes it’s hard to threaten them.

Moderator: Do you feel that confidentiality is a concern with respect to the device?

John: The printout? I am sure the physicians would be more interested in this [the printout] than asking you to remember what you did for the last three months. If your medical appointments are three or six months apart, and you have a series of tapes like this, they could attach them to your chart. It actually shows what medications were dispensed, and prescription number and names. It seems like it has a lot of very useful information that would be very helpful, then if you became ill and 911 was called and the printout was there they would have some idea of what your medications were. This would be better than remembering to take all of your medications in a bag to the doctor as far as I am concerned.

John: And plus your memory, let’s not bother that fellow. I don’t remember the drugs that I take, I really don’t know. And I’ve been on some of them for four years, and I don’t remember the strengths. I can tell you the names, but I really can’t tell you the strengths. And all that can be on the printout and that would be very helpful. In that regard, that would be really good information. And if you had an emergency this would say more authoritatively what’s been going on than perhaps anyone can explain to the EMT people, because they can take a tape like this and look at it in a few minutes for the last five days, the last 10 days, the last month is on the tape. That seems to be valuable.

Henry: There is valuable information on that tape. But the information on that tape would be personal. Now, I don’t have any idea it would be very valuable if it got into hands where someone could piddle with it.
John: Well, it would be for your doctor or EMTs.

Henry: As long as it did not have an official name. Then no one could print the name of the person who was using it. You would be amazed how much—I don't know how it happens but you get mail from all this stuff. And you wonder how did they get my information? You get bombarded with all kinds of things related to your condition, and it comes from somewhere. And they talk about privacy, but someone has it. That would be a concern. And everyone has something better than what you got, and they know you need to try. And they don't mind, the older you get the weaker your mind gets, fear and anxious. Maybe I'm not doing it right, maybe I need to do it another way. And sometimes it is detrimental to your conditions. So I just wonder sometime if they got a hold of that, and find out you are taking this or that, then they can work out a menu of stuff to bombard you with.

Henry: There is risk associated with anything that is valuable. That is, everything that is valuable has some risk. You see, I am already at risk for everything, because I don’t know how that information is let out. Somebody allows that information to get out.

John: He’s already at risk without a machine. Maybe information from a rebate. I was just wondering how your information gets out. I don’t get much information about my medication at all.

Henry: But you don’t have to deal with diabetes.

John: No, I don’t. But I know if I send rebates back to the company, and I register my name and all of that.

Henry: It’s got to be valuable to someone. My brother was on dialysis for almost nine years for both kidneys; he didn't have any functioning kidneys. So, he had all kinds of pills, I used to have to count them out and we worked them in these little things for certain days and sometimes he …. It might have been useful to him if he didn't have to figure it out.. If he dropped them under the couch in his condition he may forget if he took them or not. Like I said, someone in that condition it might [the machine] be better.

John: Or at least if there was some provision for some assistance [monetary]. Medicare doesn't pay for a lot of things, and you don't have supplemental insurance, then you have an upfront cost. Most people who work with Medicare supplements, they either have to buy the insurance or pay the upfront cost. Right now, I am in my deductible period, but I usually make it before January is over, because the first week of the month I think I purchased at least 200 dollars in medications.

Moderator: How do you currently handle refilling your prescriptions?

Henry: Through the mail.
John: Mine has it on the bottle whether there are refills. The insurance won’t let you refill it early. They don’t usually give you more than a one or two day leeway. So, I run into trouble sometime in my travels, and I have to have my children pick them up and send them to me. Even with 90 day refills, you can’t go back until the 86th day or 87th day. And even if you knew two weeks ahead of time that you were going to Timbuktu they wouldn’t fill it ahead of time. And that’s not convenient.

Henry: When they give you a limited supply you have to cover all that period. And when ordering from the V.A. you have to turn in the paperwork 10 or 15 days ahead to get it but they won’t send it until the time you run out.

John: Most of us in AARP will have our medication mailed to you. But I haven’t used it.

Henry: I have used AARP until recently, and they will check with your doctor personally if they think you are abusing the prescription and they will get his opinion as to whether they should refill it—and they may not fill it.

John: Once last year the pharmacist miscounted because I ran out and I know I did not take any extra medication because I have too much medication to take where if I tried to take any extra. . . . You know, I don’t have any methamphetamines to get high or anything [joking]. So there is no advantage to taking extra. I hadn’t been counting, but I think the pharmacist must have miscounted, but I had a problem with that. It was my blood pressure medicine. Which I am afraid not to take that, because I have some problem with my blood pressure, because once it gets out, it is very difficult to get it regulated back. But it has been regulated for over two years … so I feel real special. I finally got the right combinations.

John: There are not many machines that don’t break down. The printer, the copier, the computer. I don’t know what the technological issues.
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