

Toward understanding consumers' role in medical decisions for emerging treatments: Issues, framework and hypotheses

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Abstract

This study utilizes consumers' perspective to examine emerging treatments—those based on genetic technology and aimed at improving the quality (rather than quantity) of life—on medical decision making. We discuss market, medical, social and consumer issues that are germane to such emerging treatments in the context of growth hormone therapy for short children. Drawing from this discussion and past literature, a framework for conceptualizing medical decision processes is proposed. In so doing, we compare and contrast the proposed framework with contemporary models of medical decision making and develop hypotheses for future empirical examination. Several avenues for future research in this important area are discussed. Implications for consumer researchers interested in health care delivery and medical decision making are provided.

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1. Introduction

Over the past decade, the areas of health care technology, management, marketing and policy have witnessed changes of unprecedented proportions. In terms of health care technology, advances in genetic knowledge and biomedical engineering have greatly increased our diagnostic ability and, in some cases, have produced virtually unlimited supply of genetically derived drugs. For instance, genetic testing for a range of predispositions, including colon cancer, heart disease and Alzheimer's disease, has become a reality (Gorman, 1995), and firms specializing in genetically engineered drugs represent a fast-growing industry segment (Werner, 1987). New forms for managing health care delivery have emerged and, in many areas, now dominate conventional market arrangements (e.g., HMOs versus independent physicians). The proliferation of health care websites and direct-to-consumer advertising campaigns of pharmaceutical companies has redefined the market for medical care. Consumers are more knowledgeable, can easily access medical information and appear less prone to accept the unilateral role of the

physician in decisions affecting their health care. In regard to health care policy, recent attempts to overhaul the system, while unsuccessful in the short term, have successfully revived questions about social costs (who pays and who should?), benefits (who benefits and who should?) and quality of current health care delivery systems. Although experts debate the pros and cons of these changes, few argue that these shifts have significantly altered, perhaps irrevocably, the processes and, in some cases, the criteria utilized in arriving at medical therapy decisions. Thus, Wilfond and Nolan (1993, p. 2949) conclude that, at least for many genetically based therapies, current health care practices are driven by “independent market, professional practice, legal and consumer forces to determine utilization and reimbursement. . . [rather] than on a rational analysis of data using substantive criteria.”

What is (or should be) the role of consumers in this rapidly evolving health care arena? Does (or should) the consumer's voice count in setting health care patterns and priorities? While one could envision consumer demand as a central force that glues the health care delivery system together, in many cases, the consumer's role has been somewhat marginalized to peripheral (but important) issues such as patient satisfaction, compliance and subjective well

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being. Past research in consumer behavior (and medical sociology) reflects this emphasis as researchers have tended to study physician–patient communication patterns (Friedman and Churchill, 1987; Ben-Sira, 1980; Kaplan et al., 1989), preventive health behaviors (Moorman and Matulich, 1993; Oliver and Berger, 1979; Gelb and Gilly, 1979), health services utilization (Andersen, 1995) and patient satisfaction among other related issues (Andreasen, 1985; Ware et al., 1983; Brown and Swartz, 1989). Researchers have paid less attention to examining consumers' role in medical decision making concerning their health. Thus, Kasper et al. (1992, p. 183) observe that, “the complicating reality is that the health care dynamic involves three parties—providers, payers (or policymakers) and patients; unfortunately, much of the debate ignores the fact that the patient is a third and *coequal* party in the system.”

Although a plausible reason for the preceding state of affairs is that social convention and other considerations dictate that health care decision making rest with the physician, challenges to this belief have appeared for sometime now (Charles et al., 1999; Guadagnoli and Ward, 1998; Kelner and Wellman, 1997). For instance, McPherson (1994) has cogently argued for including patient preferences along with other scientific data (e.g., via randomized trials) in assessing treatment viability and effectiveness. Kasper et al. (1992) go as far to propose “shared decision-making programs” that facilitate patient participation (along with the physician) in making medical decisions. Other researchers argue that, while the notion of patient participation in decision making is theoretically appealing, practical issues dictate caution in an unrestrained adoption of patient control of medical decision making. For instance, Beaver et al. (1996) noted that over 52% of the patients in their breast cancer study did not desire to play an active role in medical decision making. Instead, such patients were more comfortable in a passive role. Likewise, Deber et al. (1996) found that patients scheduled for an angiogram had no inclination to participate in problem solving regarding their medical condition and decision making. Rather, they overwhelmingly favored the physician to do the necessary problem solving and make medical decisions. In an interesting study of outpatients, Beisecker and Beisecker (1990) found that, while patients desired to be informed about their medical condition and therapy, they preferred that the medical decision making be left to the physician. Underlying these contrasting positions are questions about patient competence (Welie, 2001) and medical decision accountability (Rochaix, 1998). Few studies have directly addressed these fundamental issues.

These emerging ideas motivated the present study. Specifically, we draw from recent work in medical sociology (e.g., Charles et al., 1999) to conceptualize a framework for representing the emerging notions of shared decision making and propose specific hypotheses for future research. In so doing, we explore the complexity, richness and heterogeneity of consumers' decision processes in regard to

medical decisions. We discuss these processes in the context of a genetically based therapy—growth hormone (GH) for short children—because we believe that such therapies hold great potential for an expanded role of patients in medical decision making (to be discussed). We begin with a brief discussion of emerging medical treatments with special attention to GH therapy. Understanding the nature of such therapies and the changes they portend is critical in grasping the implications they hold, and the new questions they raise for medical decision making and consumer researchers.

2. Medical treatments: new technology, new roles

Recent advances in genetic technology have led to the development of a new class of diagnostic and therapeutic agents that are likely to revolutionize medical care. The new technology enables the detection of genetic predispositions to diseases before they actually occur (e.g., breast cancer, atherosclerosis, cystic fibrosis), facilitates the medical manipulation of genetic traits (e.g., gene therapy) and allows the mass production of previously scarce products for use as potential medical treatments. Practical applications of these advances in biotechnology have begun to enter medical care and are expected to represent an increasingly large segment of diagnostic and therapeutic tools in medicine over the next decade (Werner, 1987; Holtzman, 1992). These applications include in vitro fertilization for treatment of infertility, GH therapy to increase growth and screening to detect those who harbor defective genetic traits such as cystic fibrosis.

This class of genetically based scientific advances will have important implications for consumers and, importantly, marketing researchers. First, new diagnostic modalities will enable the detection of genetic predispositions to major diseases although there is often no method to prevent the development of these diseases (e.g., breast cancer, Huntington's disease). The consumer must then weigh whether the financial and psychological cost of determining such a predisposition is worthwhile (Gorman, 1995). Second, these technological advances will provide consumers with more options for elective treatment that aims to improve the consumer's quality of life rather than (necessarily) its quantity (e.g., in vitro fertilization, GH treatment).

Consequently, the market for health care services based on these new technologies may look more like that of other sophisticated consumer products and services (e.g., education, financial services) than like conventional medical interventions. The role of the physician is also likely to involve providing advice rather than to assume full agency status for the client. In order to illuminate this shift and characterize the underlying structural factors that appear to be the key drivers of this shift, it is necessary to contextualize the problem. By “contextualizing,” we imply a description of a specific situation or “case” such that it lays bare the interplay of multiple factors involved. We

believe that, not unlike other areas of marketing research (e.g., material possessions, shopping visits, gift giving), such contextualizing is highly useful in illuminating the likely paradigmatic shift in health care field brought about by technological advances. Our context is the case of GH treatment for short stature in childhood. Several factors motivated the choice of this context including: (1) It is a genetically based treatment that does not necessarily “cure” a specific “ailment” but is likely to impact the quality of life; (2) It has been available for use now for over a decade and, as such, data on its utilization and efficacy are beginning to emerge; and (3) With the expiration of Orphan Drug status (Hilts, 1992), it is more open to market pressures of increased competition. These factors will likely influence future utilization of GH therapy and portend implications for a range of emerging treatments. Following a brief background, we discuss four key drivers of GH therapy demand.

3. GH therapy: background and key drivers

GH, produced by the pituitary gland of normal individuals, is critical for growth in children. Unfortunately, about 1 in 4000 children lack GH. Without treatment, these children are extremely stunted and may reach adult heights of 3–5 ft. Early treatment, based on GH extracted from the pituitaries of human cadavers, was highly effective as it increased adult height significantly. For many years, the major limitation of GH treatment was not its effectiveness but its scarcity. With the advent of recombinant DNA technology, GH was targeted as a drug for which increased supply would be beneficial and its mass production by recombinant DNA technology was begun by several pharmaceutical firms including Genentech, Eli Lilly, Serono, Novo-Nordisk, Pharmacia and Upjohn, Biotech General. Recombinant DNA GH did not gain Food and Drug Administration (FDA) approval for commercial use until 1985, when cadaveric GH was found to be contaminated by a protein-like particle that led to a degenerative neurological disease in some recipients. Because synthetic GH was available in large quantities, scarcity was no longer a limiting factor in its utilization. In the absence of this limitation, GH demand increased rapidly driven by four key factors namely (1) market, (2) medical, (3) social and (4) consumer factors. We discuss each in turn.

3.1. Market drivers

Possibly because many people (often incorrectly) regard GH with visions of “man-the-physiological-craftsman” (i.e., gene therapies that allow humans to craft their physiology on demand), GH therapy has received considerable attention both in the popular press (Werth, 1991; Weiss, 1994) and health policy debates (Lantos et al., 1989; Allen and Fost, 1990; Diekema, 1990).

Controversies have arisen over who should and, less frequently, should *not* receive GH treatment, leading to significant expansion of the potential market for GH. A major focus of this controversy has been short children who *do not* naturally lack GH (referred to as nonclassical GH deficiency). Many physicians suggest that the classical definition of GH deficiency may be too restrictive, and that there may be children with partial or subtle disorders of GH who do not meet the classical criteria but may benefit from GH treatment. However, despite many attempts, no new “gold standard” for defining GH deficiency has emerged (Spiliotis et al., 1984; Rose et al., 1988). In addition, the FDA recently approved GH to treat short stature in children with kidney failure (prior to kidney transplantation) and Turner syndrome, expanding the market for GH in a specific subset of short children. The result is that in recent years, estimated market expansion is highest among children who do *not* have classical GH deficiency (Wilton and Wallstrom, 1991).

More importantly, while it is primarily targeted to treat short stature in childhood at present, the market for GH has expanded to other areas. GH has been suggested or considered as a treatment to reverse certain aspects of aging (Rudman et al., 1990), to speed recovery from burns (Herndon et al., 1990), to improve the strength and weight of people with AIDS (Krentz et al., 1993) and to reduce obesity (Richelsen et al., 1994). Therefore, its potential impact on the health care market and potential consumer demand is enormous.

3.2. Medical drivers

Ambiguities exist regarding the effectiveness of GH treatment. For example, studies suggest that the majority of short non-GH-deficient children receiving GH show an increased rate of growth compared to pretreatment values, and predictions of adult height through standard techniques suggest that final adult height is likely to be increased (Van Vliet et al., 1983; Hopwood et al., 1993; Darendeliler et al., 1990). However, a few recent studies suggest that the actual increases in adult height due to GH therapy are statistically significant although their magnitude may be open to debate (Bierich et al., 1992; Guyda, 1994). At this time, definitive data are lacking about the long-term benefits and/or risks of GH therapy.

More significantly and in addition to physiological benefits (growth), GH treatment also offers psychological benefits as a major determinant of treatment use. Short stature is a disadvantage in our society. Conventional wisdom suggests that short children suffer psychologically as a result of their stature, and there are data to suggest that short stature, in some cases, may affect their emotional well being as adults (Stabler and Underwood, 1994). Accordingly, a major benefit sought by GH therapy is positive psychological impact for the child. Indeed, some believe that GH treatment would be of value if it simply gives short children a boost in growth at a critical period of their psychological

development. Thus, the promising short-term effects of GH in increasing growth in short children coupled with the ambiguities regarding its overall efficacy are issues that parents/consumers must weigh in decisions about whether to undertake this treatment.

3.3. Social drivers

GH therapy poses several societal opportunities and dilemmas. First, the number of candidates for GH and the associated cost are variable. If only children with classical GH deficiency are considered eligible for treatment, there are approximately 12,000 candidates for GH in the US. By contrast, if GH use is extended to all children below the fifth percentile in height, there are 2.4 million candidates for treatment. The overall cost for GH will range accordingly from US\$203 million to US\$40 billion/year (based on current average charges of US\$16,000/20-kg patient/year). If GH use is expanded to treat the elderly, the obese or those with AIDS, the cost will increase manifold. This makes long-term costs difficult, if not impossible, to calculate.

Second, the availability of GH treatment raises issues about short stature that obfuscate the distinction between disease states and conditions that confer cultural or societal disadvantages. In our culture, height is prized. The taller candidate tends to win elections, and tall executives earn more than shorter ones (Grumbach, 1988; Underwood, 1989). Extreme short stature clearly can be a major problem for affected individuals. Is there a cutoff point at which short stature ceases to be a disadvantage and becomes a disability, requiring therapy? How short is too short, and how tall is tall enough? This raises critical socio-ethical issues because as McLaughlin (1993, p. 3) observes, if GH therapy practices are unchecked by society, it is going to be “a drug salesman’s dream, an endlessly self-renewing market. . . [as] somebody’s always going to be the shortest.”

Third, GH therapy highlights questions raised by many new genetically derived treatments that offer the possibility of enhancing desired qualities and improving the quality of life. Social debate has focused not only on the appropriateness (when?) of GH therapy, but on what it portends—a whole class of drugs capable of genetic manipulation and affordable by the wealthy few. Not surprisingly, Allen and Fost (1990) liken GH therapy to a “Pandora’s box” and fear that “the potential of a billion dollar industry will inevitably distort critical thinking.”

3.4. Consumer drivers

Consumer (patient) demands and needs remain a major driver of GH utilization. Estimates of GH “market” range from US\$165 million to over US\$300 million (e.g., see Hamilton et al., 1990). Notably, current GH trials include burn victims, elderly, athletes, people suffering from osteoporosis, and children. Perceptions of short stature and its psychological (dysfunctional) impact mostly emerge within

families and constitute a key motivating force that drives parents to seek treatment. At the same time, GH therapy poses major questions for parents and children. For the short child who does not have classical GH deficiency, there are no established medical guidelines. Some physicians may recommend GH treatment and others may not (Cuttler et al., 1995). Parents must, therefore, weigh at times differing advice, while bearing in mind that there may be a limited period of time during which GH may have the potential of augmenting their child’s growth. To these decisions, individual parents bring their own attitudes about stature, and the extent to which they view height augmentation treatment as either a “cosmetic” therapy or an important vehicle for remedying physical impairment. In making decisions about GH treatment, parents must weigh what is known about the treatment’s efficacy with its possible risks, its expense, its burden of treatment (daily injections for months or years) and the attitude of their child towards short stature and GH therapy. Therefore, whether to undertake GH therapy for short children or not represents a complex decision-making process.

Current (or contemporary) models of medical decision making fail to fully account for complexities of medical decision making inherent for emerging treatments such as those elaborated for GH utilization. These complexities pose interesting challenges for medical decision making, including: (1) clear physiological/medical guidelines for GH therapy are lacking, and its efficacy and risks are uncertain; (2) the “disease” is dominated by psychological (dysfunction) concerns such that the relative significance of purely physiological (medical) factors is reduced; (3) market efforts of pharmaceutical firms and media reports have resulted in a high degree of easily accessible knowledge about GH therapy, thereby narrowing the knowledge gap between physicians and consumers; and (4) because parents often carry a significant payment burden for treatment, they are highly motivated to drive the decision making process, thus potentially reducing physician control. Models of medical decision making are rooted in medical and health sociology literatures exemplified by the works of Freidson (1970), Gafni, Charles and Whelan (1998) and Guadagnoli and Ward (1998), and in commentaries by Laforet (1976), Delee (1976) Leeb et al. (1976) and Rochaix (1998). Early models emphasized physician autonomy and control. Researchers have attacked this paradigm because, they argue, it “flies in the face” of the doctrine of informed consent (Kaufmann, 1983; Speedling and Rose, 1985). Subsequently, several alternative models have been proposed, ranging from “perfect agent” model to the “informed decision-making model” (Gafni, Charles and Whelan, 1998; Guadagnoli and Ward, 1998). Although we discuss a contemporary model in greater detail below, it is appropriate to note that there is no consensual paradigm of medical decision making in the literature. Instead, several different alternatives have been proposed that draw from different theoretical, societal and individual positions to propose mostly normative frame-

works for patient–physician interaction in medical decision making. However, from a pragmatic, positivist standpoint, much of medical decision making remains dominated by the physician. The contemporary model discussed here represents one such model that has drawn considerable attention in recent years.

More importantly, in Section 4, we outline the elements of an alternative model that builds on the shared decision-making model proposed by Charles et al. (1999) and demonstrate its relevance for emerging treatments. In addition, we draw comparisons with the contemporary model. We believe that this discussion will serve as an important foundation for marketing researchers to engage in this important area of research and develop a programmatic research agenda.

4. Conceptual framework and hypotheses

Table 1 captures the key differences between the contemporary model of medical decisions and emerging model in which consumers and physicians interact in making decisions about therapy. In order to keep the discussion focused, we explicate only the role of consumers (patients) in both models although the emerging model is recognized to have implications for other involved role members (e.g., physicians). In addition, the proposed emerging model is not a normative recommendation for health care decision making, that is, how health care decisions *should* be made.

Table 1
Role of consumers in the competing models of health care decision making

	Contemporary model	Emerging shared decision-making model
(1) Objective	Obtain relief from pain and/or ailment.	Make choices to alter future probabilities of well being.
(2) Information about		
Medical status	High but imperfect.	High and imperfect.
Medical therapy	Low and imperfect.	High and imperfect.
(3) Capabilities	Limited to observation and feeling. Process treatment information if packaged appropriately.	Significant within therapies. Complex cognitive structures involving therapy attributes, risk and efficacy.
(4) Preferences	Not easily accessible. Require physician effort. Largely homogeneous within therapies.	High motivation to express preferences. Heterogeneous within therapies.
(5) Role in physician interactions	Provide information.	Provide and seek information.
(6) Role in decision making	Passive but involved.	Active and engaged.
(7) Timing	Crisis-induced.	Need- and desire-based.
(8) Motivation	Prolong life, pain-free if possible.	Superior quality, not necessarily quantity, of life.

Neither is it a positive model for all medical decisions involving all (types of) patients. Rather, the emerging model is posited as a positive portrayal of some medical treatment decisions, that is, how some consumers (patients) *actually* approach decisions concerning some medical treatments. Thus, as a positive model, it is open to empirical investigation and, if supported, its usefulness and normative implications can be debated and thoughtfully considered. We first begin with a discussion of the contemporary model.

4.1. Contemporary model

Current debates about medical decision making vacillate between the “perfect agent” and “informed decision-making” models. In a perfect agent model, the patient acts as the principal who contracts with the physician as an agent to secure appropriate treatment to fulfill patient’s goals (Pontes, 1995). Drawing heavily from agency theory, this model builds on the notion of information asymmetry between the principal and agent wherein the agent holds crucial information that the principal can not easily access. However, in a deviation from agency theory, the perfect agent model does not assume that the agent succumbs to opportunism to maximize individual gains even at the cost to the principal (e.g., by shirking, misrepresentation). Rather, the physician–agent is assumed to curb all opportunistic moves and be committed to the best interest of the patient–principal (hence, perfect agent). In order to implement the patient’s best interest, the physician’s role is to secure the patient’s preference structure about different treatment options and then make a decision based on the technical knowledge of various treatments and his/her experience. Notably, the patient is not expected to make the medical decision itself; instead, the patient provides preference information to facilitate the perfect agent’s task of making such decisions (Gafni, Charles and Whelan, 1998).

By contrast, the informed decision-making model reverses the agency dynamics of the perfect agent model by positing that the principal–patient need not communicate his/her preference information to the agent–physician. Rather, the physician provides the principal–patient with needed information about treatment options, benefits and drawbacks. The patient, in turn, processes this treatment information in light of his/her preference structure and arrives at an optimal medical decision that the physician supports. In this sense, the agent–physician only provides (technical) information that the principal–patient lacks. However, the patient is assumed to be knowledgeable to receive, process and integrate such information. Although significant attempts have been made to facilitate the transmission of treatment information to patients (Holzman, 1992), the premises of the informed decision model rest on the notions that (a) knowledge asymmetry favors the patient rather than the physician because treatment information is easier to communicate than preference information; (b) motivational factors favor the patient as the patient is

highly committed to engage in effortful search for an optimal solution; and (c) information processing demands do not pose significant impediments for patients such that most patients have the ability to evaluate different treatment options with respect to their individual preference structure and reliably reach an optimal medical decision (Gafni, Charles and Whelan, 1998; Rochaix, 1998).

From a pragmatic, positivist standpoint, empirical studies report that actual medical decision making lies somewhere in between the extremes of “perfect agent” and “informed decision-making” models (Guadagnoli and Ward, 1998). In particular, three characteristics of medical decision making have been consistently reported, which appear to suggest that a variation of “perfect agent” model is more plausible than the “informed decision-making” model. These characteristics include (a) patient motivation, (b) patient competence and (c) health care as a multiprincipal system (Rochaix, 1998). In terms of patient motivation, empirical studies have consistently noted that a majority of patients in a wide range of treatment conditions are not interested in making medical decisions (Guadagnoli and Ward, 1998). Rather, patients are satisfied if they are informed about treatment choices, and the physician actively seeks their preferences before making a medical decision for them (Elwyn et al., 2001). In terms of patient competence, empirical studies have painstakingly elaborated on the content of patient competence (cognitive or emotional or both) and provided multidimensional measures for its measurement (Welie, 2001). Such studies raise questions about the general prevalence of patient competence of a level that would support careful and appropriate evaluation of different treatment choices. Finally, in terms of multiprincipal system, it is recognized that health care is a collective good (Rochaix, 1998). As such, multiple “principals” contract with the physician–agent to deliver health care including the patient, insurance company (or HMO) and policy regulators (e.g., Medicare/Medicaid). In these situations, an optimal decision for a single principal may be suboptimal for other principals. Consequently, the physician–agent is increasingly asked to balance the needs of multiple principals and seek a medical decision that achieves a system wide optimality.

The contemporary model represented in Table 1 is closer to this pragmatic, practical portrayal of medical decision making. The consumer (patient) is a principal in a multiprincipal health care system who contracts with a physician–agent to obtain relief from pain and/or ailment. The patient lacks competence about medical diagnosis and treatments, and acts primarily as a source of information to facilitate physician diagnosis and assessment. The physician, however, is generally the ultimate decision maker who weighs the pros and cons of potential treatments in the context of his/her clinical assessment and chooses the one that he/she thinks is most appropriate given the patient’s communicated preferences. This model is based on conventional wisdom of asymmetrical knowledge and relative

power imbalance in patient–physician relationships (McPherson, 1994). That is, a physician has more knowledge about medical practice than a patient, and this knowledge can neither be acquired in a short period of time nor searched easily. In addition, in physician–patient interactions, a physician has greater relative power since certification procedures and the legal environment vest the power to prescribe treatments only with the physician. This position is aptly captured by Freidson’s (1970) observation that “to utilize a doctor in the first place requires that one in some degree concede[s] his value and authority in advance and that one in some degree already shares the doctor’s perspective on illness and its treatment.”

4.2. The emerging shared decision-making model

The emergent model does not deny either the power of the physician to prescribe treatments nor undermine his/her role. Instead, it expands the role of the patient to an active participant. As an active participant, a patient actively seeks information about possible treatments, side effects and other factors that impinge on the focal decisions. Moreover, an active patient voices his/her preferences to the physician and, in a way, negotiates his/her treatment decision. In this sense, the emergent model posits joint decision making between the physician and patient in so far as the medical treatment of the focal patient is concerned. Readers should not confuse this notion of joint decision making with research findings from the physician–patient communications (Friedman and Churchill, 1987) or the health services utilization (Andersen, 1995) literature. The former focuses on the interpersonal communications between the two parties but, in so far as the medical decision making is concerned, it views the patient as a passive yet involved partner. In contrast, the emerging model views the patient as an active and engaged decision maker. In regard to the latter, Andersen (1995, p. 1) clearly notes that his model was “designed to explain the use of formal personal health services rather than to focus on the important interactions that take place as people receive care.”

Why would we expect the patient to be an active, engaged and involved partner in medical decision making given the empirical literature on patient involvement? We posit that the very nature of emergent treatments is such that it evokes a high level of patient involvement. We identified several forces under social and consumer drivers for GH therapy that are rooted in patient’s deep concerns about their child’s growth, psychological well being and long-term quality of life. Empirical studies provide strong support for this proposition (Singh et al., 1998).

Table 1 summarizes the contrasts between the emerging and contemporary models of medical decision making along eight distinct characteristics. In order to simplify discussion, the characteristics are presented as bipolar contrasts although it is recognized that these characteristics vary along a continuum. We discuss each in turn.

4.3. Contrasting the emerging and contemporary models of medical decision making

4.3.1. Health care objectives

As to the objective of health care, the contemporary model views that patients aim to primarily obtain relief from a current or impending ailment that is likely painful and/or debilitating. In a sense, a painful or debilitating ailment is thought to trigger the patient to take on a principal role and seek an agent who can deliver appropriate health care. By contrast, the emerging model posits that consumers aim to make health care choices today that are likely to alter future (either short- and/or long-term) probabilities of well being and quality of life. For instance, one may decide to consider GH therapy for his/her child as it may increase the probability that the child will have a higher adult height which, in turn, may increase his/her probability of success in life. Note the means – ends distinction; in the contemporary model, the elimination of a painful and/or debilitating condition is an end in and of itself, while in the emerging model, the health condition (height) is only a means to a desirable end (e.g., quality of life).

Based on the preceding discussion, we propose the following hypothesis concerning health care objectives:

Hypothesis 1a: A current or impending medical symptom is *not* a necessary condition (but may be sufficient) for a consumer to seek health care.

Hypothesis 1b: The greater the probability of positively influencing one's quality of life (either now or in the future), the higher the likelihood of the consumer seeking medical care.

4.3.2. Information capacity and capability

The second and third characteristics relate to the information capacity and capabilities of the consumer. The contemporary model considers that consumers have high informational capacity to assess their medical status (except in cases such as psychological disorders) but they are sometimes prone to erroneous inferences due to (incorrect) attributions and confusing associations with causations (Redelmeier et al., 1993). In part, this is probably because, as per the contemporary model, (novice) consumers have little (and imperfect) knowledge about medical therapies as this knowledge is acquired over a long period of certification by (expert) physicians. In this sense, consumers' information capabilities are limited to (imperfect) sensory perceptions including observation and feelings. In addition, communication issues may hinder information exchange between the physician and patient (Friedman and Churchill, 1987). In contrast, the emerging model views consumers as cognitively rich partners who have significant ability to acquire, store, organize and utilize information within specific therapies that interest them deeply. Across therapies, their information is probably highly limited, severely defi-

cient and probably replete with erroneous beliefs. In other words, a consumer who is considering GH therapy may have developed a rich cognitive schema involving attributes and efficacy data for GH therapy, but his/her cognitive structures for other therapies (e.g., in vitro fertilization) may be underdeveloped and ill-defined. The current information-rich environment with internet access and networked communities allows significant opportunities for a motivated consumer to acquire, chunk and process relevant information for his/her desired therapy. Moreover, within therapies, consumers' informational content and schemas may not be perfect by some medical standards; our point is merely that they are complex and dynamic as consumers are motivated to obtain better and more information.

Based on the preceding discussion, we propose the following hypotheses concerning consumers' information capacity and capabilities:

Hypothesis 2a: For specific therapies that are of high involvement to them, consumers would evidence a high degree of treatment knowledge (e.g., complexity) relative to low-involvement consumers.

Hypothesis 2b: Across a wide range of therapies, consumers would evidence a low level of treatment knowledge.

Hypothesis 3: For high-involvement therapies, consumers would evidence a range of capabilities for handling cognitively rich information including knowledge of (a) multiple dimensions, (b) weighing factors and (c) inherent tradeoffs.

4.3.3. Nature of consumer preferences

The contemporary model postulates that consumer preferences are largely homogeneous within therapies such that once a medical condition is identified, relatively few and uniform standards can be prescribed. This, of course, is the basis of DRG groupings that classify medical conditions by their (medical) characteristics and, once so classified, a few, uniform standards for treatment (e.g., hospital stays, testing, operative procedures) are expected within a DRG group. By focusing on medical characteristics, this approach reduces the significance of individual's preferences. In contrast, the emerging model considers that consumer preferences are heterogeneous within therapies. That is, even for conditions characterized by similar medical symptoms, consumer preferences are likely to depict considerable variability as they reflect individual needs/desires and risk/benefit tradeoffs. Thus, in the context of GH therapy, the emerging model accepts that two families with a short child of nearly identical medical history and diagnosis (e.g., bone age, growth rate, predicted adult height) may evidence disparate preferences for GH therapy (want/delay/do not want therapy). The contemporary model places less emphasis on such possibilities.

The preceding contrast probably explains why, in some previous studies, patient satisfaction and compliance behavior have been found to be inversely related (Woolley et al.,

1978; Wartman et al., 1983). That is, patients who are satisfied with the physician encounter tend to evidence lower compliance with prescribed therapy regimens. This counterintuitive relationship probably occurs because, while patients are “satisfied” with the ability of the physician to communicate concern, warmth and interest, they are unable to influence the therapy decision in accord with their individual preferences. Lack of mechanisms to understand and account for patient heterogeneity is likely to reduce patient commitment to therapy regimens. There is some support for these linkages in the literature as Speedling and Rose (1985, p. 117) observe that, “many so called ‘good’ patients actually feel helpless because they cannot exert personal influence over the situation.”

Hypothesis 4a: For any given set of medical conditions/symptoms, consumers would evidence a high degree of heterogeneity (i.e., variability) in preferences for different therapies.

Hypothesis 4b: In general, the concept, satisfaction with the prescribed therapy, is conceptually and empirically distinct (i.e., achieves discriminant validity) from satisfaction with the physician.

4.3.4. Physician interaction and decision making

The contemporary model views the consumers’ role as largely providing information and passive acceptance of the medical decision concerning their health. As such, questions such as how information provision can occur effectively (Ben-Sira, 1980) and how compliance with prescribed therapy can be achieved (Woolley et al., 1978) are the types of research issues that stem from this approach. In contrast, the emerging model contends that consumers provide and seek information regarding specific therapies, and remain actively engaged in the decision-making process. Thus, information exchange—not just information provision, and joint decision making—not unilateral action, are the focus of study in the emerging model.

Hypothesis 5: In physician–patient communications, information flows are bidirectional. In other words, each role partner (e.g., patient) provides and seeks information.

Hypothesis 6: In general, obtaining medical therapy is a high-involvement decision for a patient. As such, patients are highly motivated to be active participants and engage in external information search.

4.3.5. Timing of health care decisions

Unlike the contemporary model, which implies that search for health care is crisis-induced (as when you are struck by an ailment), the emerging model places needs and desires at the center of health care decisions. Such needs and/or desires may not be based purely on medical (physiological) criteria, but may include psychological and emotional considerations as well. Such is the case with GH therapy. There is no “gold

standard” for short stature. More importantly, history demonstrates with exemplary figures from Napoleon Bonaparte to Danny DeVito that short stature is not equally dysfunctional and its influence is closely interlinked with the personality of the individual. This demands that individual needs and desires drive the timing, and have a major influence on, GH therapy decisions.

Hypothesis 7: The demand for medical therapies is not completely determined by physiological factors and medical crises. Instead, it is influenced by individual characteristics including demographic, psychological and emotional considerations.

4.3.6. Underlying motivation

Finally, the underlying motivation for seeking health care in the contemporary model appears to be to prolong life (without pain, if possible). In contrast, the emerging model focuses on the quality of life, not merely its quantity. These disparate motivations capture the contrasting dispositions of involved patients. By characterizing patients’ motivation as limited to prolonging life, the contemporary model seeks to make medical decisions “value-free”—free from the values of the individual patients. This, in turn, facilitates a medicinal approach to decision making where patient values do not matter; only their medical condition does. In contrast, the emerging model is “value-laden”—it recognizes that patients are motivated by their own values (definitions) of superior quality of life, and these values are neither assumed to be uniform across patients nor taken for granted. Precisely because patients are driven by their values, the emerging model views patients with an active and engaged disposition who seek and process relevant information, formulate preferences (based on their values) and are competent to participate in medical decisions. We remind readers that the emerging model does not propose that all patients will (or can) be similarly disposed, only that the proposed model is a viable alternative for some patients and for some therapies. The contrast between the contemporary and emerging model of medical decision making parallels somewhat the contrasting views of attitude change captured by the peripheral and central routes of information (e.g., advertising messages) processing in the Elaboration Likelihood Model (Petty, Cacioppo and Schumann, 1983). Like Petty et al. (1983), we agree that, although the contrast between the contemporary and emerging models helps clarify the underlying mechanisms, in reality, most medical decisions can be arranged along a continuum that is anchored on one end by the contemporary processes and the other end by the emerging processes.

Hypothesis 8: For some patients, prolonging life is not a necessary and sufficient goal for seeking medical therapy. Quality-of-life considerations may be equally compelling goals.

Given the preceding hypotheses, the critical questions are: Does the emerging model hold any empirical relevance? Does it matter in medical decision making? In the medical literature, more often than not, researchers have argued against these possibilities. For instance, in a detailed review, Kaufmann (1983) noted that this opposition is based on three arguments: (1) Information concerning specific medical treatments (e.g., risk, efficacy) is difficult to acquire and comprehend; (2) If this information is disclosed by the physician, it may raise questions in the mind of the patient concerning the competence of the physician; and (3) Even if the information is acquired somehow, risk and efficacy information may increase patients' anxiety levels, causing them to "reject treatments which are essential to their health" (p. 1662). Likewise, Redelmeier et al. (1993) have argued that most patients are prone to make errors in (1) interpreting risk data because, among other things, information such as "one chance in 20,000" is an "abstract notion" to most people, and (2) arriving at sound medical judgments because they are unduly influenced by "extraneous" factors including framing and presentation effects and hindsight bias. Interestingly, there is growing recognition in the medical literature that physician judgments are also unduly influenced by "extraneous" factors. The most systematic work involves the study of small area variations, that is, variability in admission rates for specific disorders for hospitals located in well-defined "small" geographical areas. The limited geographical area helps control for background, noise factors. Evidence from such small area studies suggests that, for a whole range of medical disorders, the probability of a specific medical decision varies widely, indicating a high level of uncertainty in physician medical decision making (see Wennberg et al., 1992; McPherson, 1994). For instance, in one four-state survey, the frequency of heart bypass operations varied by a factor of three. This has led some observers to paradoxically conclude that the "information base of medical practice is extremely poor" (Faltermayer, 1992, p. 48). As a result, these researchers note that patient preferences may lack heterogeneity as they respond to common "extraneous" factors rather than distinct "intrinsic" differences.

On the other hand, some researchers see normative value if the key principles underlying an emerging model are adopted by physicians. McPherson (1994, p. 12) goes as far as to say that if medical "treatment policy [is] driven ultimately by the supplier (physician) imposing a set of preferences that are different from those of a well informed consumer of [medical] services, then treatment choice may be suboptimal." Others have argued that if the patient is directly involved in the decision making, not only would the treatment choices be optimal, but this participation in and of itself may have therapeutic benefit and enhance compliance (Fuller et al., 1983). Probably for this reason, Wennberg and Gittlesohn. (1982) have begun to develop interactive video discs that are designed to provide medical information and efficacy data to patients

so that they can be informed and be active participants in their medical decision making (also see Kasper et al., 1992).

While medical researchers like Wennberg et al. push the normative boundaries of the emerging model of medical decision making, it is useful to consider what implications, promises and challenges this model portends for health care marketing professionals and researchers. We address this issue next.

5. Implications for health care marketing professionals and researchers

Four broad implications for research and practice follow from the proposed shift in the model of medical decision making that can be phrased in question form as follows. Readers would note that given the emerging nature of the proposed model, the following discussion is conjectural in nature with the aim to identify areas of possibilities and promises:

- What processes are involved in the perception of the "need" for emerging treatments? Who are the primary decision makers in these processes, how do they decide and how can these decisions be facilitated for maximal effectiveness?
- What is the degree of preference heterogeneity among "consumers" for different treatments (within therapies) and how can providers and payors deal with this heterogeneity?
- Does consumer heterogeneity introduce inefficiencies in health care delivery with significant collective costs?
- What is the role of information provision in the emerging model of decision making and what challenges and opportunities does this present for health care organizations, pharmaceutical firms and third party insurance firms?
- Who should control, if at all, the nature, type and amount of medical information available to consumers?
- What is the notion and relevance of "customer orientation" in the context of emerging (and perhaps traditional) treatments and how will it impact the health care environment and delivery systems?
- How can we simultaneously optimize individual and collective outcomes?

Emerging treatments offer promises and challenges. It is unclear how the need for such treatment arises, takes hold and generates active pursuit among consumers. Because most emerging treatments involve psychological well being and long-term quality-of-life considerations, it is likely that multiple factors representing social, emotional, personal values and physiological considerations fuse along unpredictable pathways to generate motivational energy in consumers. More work is needed to understand patterns of

motivational pathways, how they are sustained and what impediments wane such efforts.

Preference heterogeneity, while intuitively plausible and meaningful, requires empirical verification. Questions remain about the depth of preference heterogeneity—how deep is it? Does each consumer represent a distinct, unique pattern of preferences? Or are there common patterns that significantly reduce the depth of heterogeneity for most emerging treatments? Hard data on these issues appear essential for developing practice guidelines and policy recommendations for balancing the apparently competing pressures of individual and collective optimality. Promising work has begun to appear for modeling and searching for patterns in consumer preferences for health care products drawing from the rich tradition in marketing. Marketing researchers hold the potential to offer significant contributions to resolve this individual-collective dilemma.

Issues of information provision and processing are central topics in marketing and consumer behavior. Yet marketing researchers have generally hesitated to apply their knowledge and findings to the intense, ongoing debate about the appropriate provision of medical information to patients to facilitate shared decision making. Clearly, the nature and scope of information itself varies across these contexts—in marketing, the information is largely about product attributes and benefit/cost tradeoffs, while in the health care, the information is largely about human physiology (read “product”) and the pros and cons of different therapeutic options (read: “benefits and costs”). In addition, the medical information is relatively more complex and technical in nature compared to marketing information. Nevertheless, the research questions are remarkably parallel—how can information be provided to facilitate accurate processing? How do consumers integrate information from different sources? What approaches are effective for updating and enhancement of consumers’ knowledge schemas? By drawing upon the vast literature in marketing, researchers can illuminate new insights to these questions in the context of emerging treatments.

Finally, over the last 10 years, the marketing literature has witnessed heightened interest in promoting customer or market orientation of firms. This interest stems from the marketing concept and posits that by adopting the perspective of a customer, a firm can be more effective in its strategy focus and long-term economic return. How does this translate into the context of emerging treatments? In many instances, the need for emerging treatments may remain latent, lacking sufficient social and consumer drive to pursue such treatments. Is it appropriate, in these instances, to reach out to consumers in order to activate their latent needs? Does customer orientation imply marketer responsibility to bring such latent needs to the level of consumer consciousness? Are we doing a disservice to our communities by leaving the activation of such latent needs to random, idiosyncratic events? Or do marketers run the risk of being perceived as aggressive, profit-hungry promoters of faddish

emerging treatments that nobody really needs but perhaps most want? What is the appropriate role of marketers in these contexts? Society awaits answers to these fundamental questions. Marketing researchers are best suited to fill this void.

6. Conclusion

This study has provided a conceptual framework—the emerging model—to crystallize and elucidate a plausible portrayal of consumers’ role in medical decision making that stands in stark contrast to the contemporary model (or approach) of medical decision making. Although some researchers and professionals in the medical sciences literature have already adopted one or more elements of the emerging model (Kasper et al., 1992; McPherson, 1994; Mulley, 1989), a detailed, clear and compelling explanation or assessment of the emerging medical decision making model has not been published as yet. Our study has taken the first step to fill this gap. Does the emerging model of medical decision making matter? Our study provides several directions for examining this questions. First, because we delineate the key postulates of the emerging model, future research in the medical, health care, public health and consumer psychology literatures concerning the conceptual development, validity and applicability of this model can occur in a systematic and programmatic manner. Second, our discussion of GH therapy indicates that the proposed emerging model has positive merit. This is because, in seeking this therapy, patients are neither motivated by a medically induced crisis nor by considerations of prolonging life. Rather, they are motivated by improving their future quality of life. At the same time, not all patients identified for treatment actually go on therapy. However, the emerging model is not posited as relevant for all medical therapies and/or patients. Questions remain about when (e.g., for what therapies) and for whom (e.g., for what patients) is the proposed model most relevant. Finally, the emerging model reveals clear opportunities for consumer researchers to contribute to this important area, and challenges them to become engaged in the evolving research on medical decision making. As Wennberg et al. aptly observes, while this research “can’t rationalize all medical care, it can create islands of rationality in a sea of uncertainty and supplier-induced demand.”

References

- Allen DB, Fost NC. Growth hormone therapy for short stature: panacea or Pandora’s box? *J Pediatr* 1990;117:16–21 (August).
- Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav* 1995;36:1–10 (March).
- Andreasen AR. Consumer responses to dissatisfaction in loose monopolies. *J Consum Res* 1985;12:135–41 (September).
- Beaver K, Luker KA, Owens RG, Leinster SJ, Degner LF, Sloan JA. Treat-

- ment decision making in women newly diagnosed with breast cancer. *Cancer Nurs* 1996;19:8–19.
- Beisecker AE, Beisecker TD. Patient information-seeking behaviors when communicating with doctors. *Med Care* 1990;28:19–28.
- Ben-Sira Z. Affective and instrumental components in the physician–patient relationship: an additional dimension of interaction theory. *J Health Soc Behav* 1980;21:170–80 (June).
- Bierich JR, Nolte K, Drews K, Brugmann G. Constitutional delay of growth and adolescence. Results of short-term and long-term treatment with GH. *Acta Endocrinol* 1992;127:392–6.
- Brown SW, Swartz TA. A gap analysis of professional service quality. *J Mark* 1989;54:71–84 (January).
- Charles C, Gafni A, Whelan T. Decision making in the physician–patient encounter: revisiting the shared treatment decision making model. *Soc Sci Med* 1999;49:651–61.
- Cuttler L, Silvers JB, Singh J, Finkelstein B, Marrero U, Neuhauser D. The management of short stature and the use of growth hormone (GH): a national study. *Pediatr Res* 1995;37:87A (April).
- Darendeliler F, Hindmarsh PC, Brook CGD. Non-conventional use of growth hormone: European experience. *Horm Res* 1990;33:128–36.
- Deber R, Kraetschmer N, Irvine J. What role do patients wish in treatment decision making? *Arch Intern Med* 1996;156:1414–20.
- DeLee ST. “Malpractice and Informed Consent—a Legal Ploy: The Meaning of Informed Consent and Why It is a Deterrent to Sound Medicine.”. *Intern Surg* 1976;61(6–7):331–2.
- Diekema DS. Is taller really better? *Perspect Biol Med* 1990;34:109–23 (Autumn).
- Elwyn G, Edwards A, Mowle S, Wensing M, Wilkinson C, Kinnersley P, Grol R. Measuring the involvement of patients in shared decision making: a systematic review of instruments. *Patient Educ Couns* 2001;43:5–22.
- Faltermayer E. Let’s really cure the health system. *Fortune* 1992;46–58 (March 23).
- Freidson E. *The profession of medicine*. New York: Dodd, Mead, 1970.
- Friedman ML, Churchill GA. Using consumer perceptions and a contingency approach to improve health care delivery. *J Consum Res* 1987;13:492–510 (March).
- Gafni A, Charles C, Whelan T. “The Physician-patient Encounter: The Physician as a Perfect Agent Versus the Informed Treatment Decision-Making Model.”. *Soc Sci Med* 1998;47(3):347–54.
- Gelb BD, Gilly M. The effect of promotional techniques on purchase of preventive dental care. *J Consum Res* 1979;6:305–8 (December).
- Gorman C. The doctor’s crystal ball. *Time* 1995;60–2 (April 10).
- Grumbach MM. Growth hormone therapy and the short end of the stick. *N Engl J Med* 1988;319:238–41 (July).
- Guadagnoli E, Ward P. Patient participation in decision making. *Soc Sci Med* 1998;47:329–39.
- Guyda HJ. Use of growth hormone in children with short stature and normal growth hormone secretion: a growing problem. *Trends Endocrinol Metab* 1994;5:334–40 (October).
- Hamilton J, Freundlich N, Carey J. The many personalities of gene-spliced drugs. *Bus Week* 1990;66–9 (July 30).
- Herndon D, Barrow R, Kunkle K, Broemeling L, Rutan R. Effects of recombinant human growth hormone on donor site healing in severely burned children. *Ann Surg* 1990;212:424–31.
- Hilts PJ. Seeking limits to a drug monopoly. *NY Times* 1992;1 (Section D, May 14).
- Holtzman NA. The diffusion of new genetic tests for predicting disease. *FASEB J* 1992;6:2806–12 (July).
- Holzman D. Interactive video promotes patient–doctor partnership. *Bus Health* 1992;29–42.
- Hopwood NJ, Hintz RL, Gertner JM, Attie K, Johnson AJ, Baptista J, Kuntze J, Blizzard R, Cara J, Chernausk S, Kaplan S, Lippe B, Plotnik L, Saenger P. Growth response of children with non-growth hormone deficiency and marked short stature during three years of growth hormone therapy. *J Pediatr* 1993;123:215–22 (August).
- Kaplan SH, Greenfield S, Ware J. Assessing the effects of physician–patient interactions on the outcomes of chronic disease. *Med Care* 1989;27:S110–27.
- Kasper JF, Mulley AG, Wennberg JE. Developing shared decision making programs to improve the quality of health care. *QRB, Qual Rev Bull* 1992;183–90 (June).
- Kaufmann CL. “Informed Consent and Patient Decision Making: Two Decades of Research.”. *Soc Sci Med* 1983;17(21):1657–64.
- Kelner M, Wellman B. Health care and consumer choice: medical and alternative therapies. *Soc Sci Med* 1997;45:203–12.
- Krentz A, Koster F, Crist D, Finn K, Johnson L, Boyle P, Schade D. Anthropometric, metabolic, and immunological effects of recombinant human growth hormone in AIDS and AIDS-related complex. *J Acquir Immune Defic Syndr* 1993;6:245–51 (January–June).
- Laforet EG. “The Fiction of Informed Consent.”. *JAMA* 1976;235(15):1579–84.
- Lantos J, Seigler M, Cuttler L. Ethical issues in growth hormone therapy. *JAMA* 1989;261:1020–4 (February).
- Leeb D, Bowers Jr DG, Lynch JB. “Observations on the Myth of ‘Informed Consent.’””. *Plast Reconstr Surg* 1976;58(3):280–2.
- McPherson K. The best and the enemy of the good: randomized controlled trials, uncertainty, and assessing the role of patient choice in medical decision making. *J Epidemiol Community Health* 1994;48:6–15.
- Moorman C, Matulich E. A model of consumers’ preventive health behaviors: the role of health motivation and health ability. *J Consum Res* 1993;20:208–28 (September).
- Mulley Jr AG. “Assessing Patients’ Utilities: Can the Ends Justify the Means?.”. *Med Care* 1989;27(Suppl 3):S269–81.
- Oliver RL, Berger PK. A path analysis of preventive health care decisions. *J Consum Res* 1979;6:113–22 (September).
- Petty RE, Cacioppo JT, Schumann D. “Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement.”. *J Consum Res* 1983;10(2):135–46.
- Pontes MC. “Agency Theory: A Framework for Analyzing Physician Services.”. *Health Care Manage Rev* 1995;20(4):57–67.
- Redelmeier DA, Rozin P, Kahneman D. “Understanding Patients’ Decisions: Cognitive and Emotional Perspectives.”. *JAMA* 1993;270(1):72–6.
- Richelsen B, Pederson S, Borglum J, Moller-Pederson T, Jorgensen J, Jorgensen JO. Growth hormone treatment of obese women for 5 week: effect on body composition and adipose tissue LPL activity. *Am J Physiol* 1994;266:E211–6 (February).
- Rochaix L. The physician as perfect agent: a comment. *Soc Sci Med* 1998;47:355–6.
- Rose S, Ross JL, Uriate M, Barnes KM, Cassorla F, Cutler G. The advantage of measuring stimulated as compared with spontaneous growth hormone levels in the diagnosis of growth hormone deficiency. *N Engl J Med* 1988;319:201–7 (July).
- Rudman D, Feller A, Nagraj H, Gergans G, Lalitha P, Goldberg A, Schenler R, Cohn L, Rudman I, Mattson D. Effects of human growth hormone in men over 60 years old. *N Engl J Med* 1990;323:1–6 (July).
- Singh J, Cuttler L, Shin M, Silvers JB, Neuhauser D. Medical decision making and the patient: understand preference patterns for growth hormone therapy using conjoint analysis. *Med Care* 1998;36(8):AS31–45 (August).
- Speedling EJ, Rose DN. “Building an Effective Doctor-Patient Relationship: From Patient Satisfaction to Patient Participation.”. *Soc Sci Med* 1985;21(2):115–20.
- Spiliotis BE, August GP, Hung W, Sonis W, Mendelson W, Bercu B. Growth hormone neurosecretory dysfunction. *JAMA* 1984;251:2223–30 (May).
- Stabler B, Underwood LE. *Growth, stature, and adaptation: behavioral, social, and cognitive aspects of growth delay*. Chapel Hill (NC): The University of North Carolina, 1994.
- Underwood LE. The social cost of being short: societal perceptions and biases. *Acta Paediatr Scand Suppl* 1989;362:18–23.
- Van Vliet G, Styne D, Kaplan S, Grumbach M. Growth hormone treatment for short stature. *N Engl J Med* 1983;309:1016–22 (October).
- Ware JE, Snyder MK, Wright WR, Davies AR. Defining and measuring

- patient satisfaction with medical care. *Eval Program Plann* 1983;6: 247–63.
- Weiss R. Are short kids sick? *Washington Post* 1994;10 (Section WH, March 15).
- Welie SPK. Criteria for patient decision making (In)competence: a review of and commentary on some empirical approaches. *Med Health Care Philos* 2001;4:139–51.
- Wennberg J, Gittlesohn A. “Variations in Medical Care Among Small Areas,”. *Sci Am* 1982;246(4):120–34.
- Werner RG. “Biobusiness in the Pharmaceutical Industry,”. *Arneimittelforschung* 1987;37(9):1086–93.
- Werth B. How short is too short? *NY Times Mag* 1991;14 (Section 6, June 16).
- Wilfond BS, Nolan K. “National Policy Development for the Clinical Application of Diagnostic Technologies: Lessons from Cystic Fibrosis,”. *JAMA* 1993;270(24):2948–54.
- Wilton P, Wallstrom A. An overview of the diagnoses in the Kabi Pharmacia international growth study. *Acta Paediatr Scand Suppl* 1991;379: 93–8.
- Woolley FR, Kare RI, Hughes CC, Wright DD. The effects of doctor–patient communication on satisfaction and outcome of care. *Soc Sci Med* 1978;12:123–8.