Dialysis Rationing and the Just Allocation of Resources: An Historical Primer

Tamara Estes Savage, MSW, Teri Browne, PhD, MSW, NSW-C, University of South Carolina, Columbia, SC

Historically, dialysis was a rationed medical resource. Access to treatment was restricted and based on perceived medical suitability and judged social worth of the patient. With the passage of P. L. 92-603, the federal government solved the problem of access by providing dialysis to all in need. However, the federal government avoided the core issue of how to justly allocate a scarce medical resource. Today, Medicare is a major federal government expenditure vulnerable to drastic budget cuts. Given the current political climate concerning the reduction of Medicare, the purpose of this paper is to examine the early allocation of kidney dialysis, discuss the federal government's policy reaction at that time, and begin a discussion regarding the implications of the just allocation of dialysis in the event of health care rationing.

INTRODUCTION

End-stage renal disease (ESRD) is a chronic illness that currently affects 571,000 people in the United States (USRDS, 2011). In 2009, 370,274 patients were using hemodialysis as an ESRD treatment regimen (USRDS, 2011). Since 1972, most patients diagnosed with ESRD are eligible for Medicare to cover the costs of dialysis.

Prior to federal government intervention in 1972, hemodialysis was viewed as experimental and funded primarily through donations and the private funds of patients (Browne, 2012; Peitzman, 2001). There were many more ESRD patients needing treatment than available dialysis machines or funds to pay for treatment expenses. As a result, dialysis was rationed. Rationing is the allocation of a needed, yet scarce, resource (Jonsen & Edwards, 2010). The end result of rationing is that some people receive the resource and others do not. In the case of dialysis, treatment was allocated based on medical suitability and perceived social worth of the patient. The use of social worth criteria for rationing dialysis in the early years is criticized as being unfair, unequal, and unjust. The rationing of dialysis during this time was not allocated in a just manner, resulting in an unfair distribution of resources (Emanuel, 2000).

There was a public outcry based on the inherent injustice of dialysis allocation, and the federal government responded with Public Law (P. L.) 92-603 in 1972. P. L. 92-603 established the U.S. ESRD program, mandating Medicare coverage for dialysis patients, regardless of age or ability to pay (Browne, 2012). End-stage renal disease patients, their families, nephrologists, and the American public vigorously supported the passage of Public Law 92-603. The federal government avoided the ethical question of who was to receive an expensive, scarce resource, and instead provided the resource to everyone who needed it with the passage of the law. The government determined that kidney disease was different from other chronic diseases and deserved full monetary coverage by taxpayers. In addition, given cost predictions, it appeared in 1972 that the cost of treatment for ESRD patients could be covered by taxpayers well into the future.

According to Puckrein and Norris (2007), the congressional debate concerning the cost of the U.S. ESRD program began soon after the passage of the 1972 law. The cost predictions proved inadequate, and the number of people in need of dialysis increased dramatically. During the congressional debate regarding the proposed law, the National Kidney Foundation projected that costs for the first year of the ESRD program would range from \$35 to \$75 million (Blagg, 2007). However, the actual cost for the first year of the program was \$241 million (Rubin, 1984). Also, nephrology experts thought that the population of ESRD patients would increase from 5,000 to 7,000 upon implementation of the ESRD program. However, the number of ESRD patients totaled 10,300 in the first year of the program (Rubin, 1984). In addition, Senator Hartke (D-IN), a supporter of the bill, estimated that costs of the ESRD program would decrease over time as technological advances occurred. He argued that these advances would lead to cheaper methods of dialysis and transplantation (Blagg, 2007). This has not transpired.

Currently, health care is a primary political and budgetary concern. Much political debate has ensued regarding the amount of the national budget allocated to Medicare. Some politicians are calling for large budgetary cuts in Medicare, as well as other government programs that aid Americans in covering their health care costs. Such conversations create the following questions: What if funding for the ESRD program was significantly reduced? What if dialysis were once again a scarce and rationed resource? How could dialysis be justly allocated?

The purpose of this paper is to use the theory of distributive justice to examine the early allocation of kidney dialysis and discuss the federal government's policy at that time. In addition, given the current political climate concerning the reduction of federal government health care expenditures, the purpose of this paper is to begin a conversation regarding the implications of a just allocation of dialysis in the event of health care rationing.

THEORY OF DISTRIBUTIVE JUSTICE

According to Roemer (1996), the theory of distributive justice is the determination of how scarce resources are allocated among members of a society or group when such members have competing interests. Therefore, distributive justice involves the just allocation of resources. Distributive justice has evolved from the Aristotelian notion that scarce resources should be allocated based on individual merit to the modern notion that all members of society should be guaranteed a "certain level" of resources (Roemer, 1996, p. 4). The crux of the modern ethical debate is how to define a "certain level."

In the area of health care, the just distribution or allocation of resources is particularly pertinent given the current economic condition of the U.S. With attempts to contain health care expenditures, attempts may also be made to limit health care resources to those most in need. If health care resources become scarce, how can they be allocated in a just fashion?

SOCIAL WORK ETHICAL CONSIDERATIONS

The theory of distributive justice is a potential guide to decisions regarding the allocation of scarce medical resources. As social workers, we are also guided by our professional ethical values and principles. Ethical values, such as social justice and respecting the dignity and worth of a person, are integral to any resource allocation decisions that we make (NASW, 2008). Further, the NASW Code of Ethics that guides social work practice is clear that social workers must practice within its principles when addressing social problems and challenging social injustice.

Social justice is defined as the condition where citizens receive equal benefits and burdens in a society (Barker, 1999). Social workers are ethically mandated to advocate for clients to ensure that they receive an equal share of benefits. Therefore, social workers must advocate for vulnerable clients when they are denied access to or are in danger of losing access to scarce medical resources.

Respecting the dignity and worth of a person means that social workers hold their clients in high esteem, honor their personal story, and respect their uniqueness (Saleebey, 1997). Social workers also work with clients to ensure that they are treated fairly and respectfully in the broader society. Therefore, when health care resources are scarce, social workers work to ensure that clients receive the resources to which they are entitled and that they require.

MEDICAL ETHICAL CONSIDERATIONS

In addition to social work ethical considerations, there are also medical and ethical considerations. In their article, *Principles for Allocation of Scarce Medical Interventions* (2009), Persad, Wertheimer, and Emanuel outline core ethical values that can be applied to the just allocation of resources. The first ethical value is treating people equally. According to the authors, treating people equally involves ensuring that each person has an equal chance at medical services (Persad, Wertheimer, & Emanuel, 2009). The second ethical value considered in a just allocation of resources is favoring the worst-off. Those considered the worst-off are those who are presently or throughout their lives bereft of "valuable goods" (Persad, Wertheimer, & Emanuel, 2009, p. 424). The third value is maximizing total benefits, which can be achieved through maximizing the number of lives saved, the number of years of life saved, or the adjusted years of life saved (CDC, 2011; Persad, Wertheimer, & Emanuel, 2009).

HISTORY OF EARLY ALLOCATION OF KIDNEY DIALYSIS

In 1943, Willem Kolff invented the first artificial kidney (Friedman, 1998). The artificial kidney unit was expensive to produce and maintain; thus, few were created. The artificial kidney required physical access to the circulatory systems of patients. Patients were surgically connected to the artificial kidney. Surgical connections were only feasible for shortterm use due to the possibility of surgical wound infections. Given these constraints, Kolff and the medical community envisioned the artificial kidney as only useful for patients suffering from acute renal failure who would recover with a few treatment sessions (Friedman, 1998). Patients suffering from chronic kidney failure were not considered appropriate candidates for treatment. Therefore, allocation decisions were based on medical diagnosis (Friedman, 1998).

In the 1950s, allocation expanded to include some patients with chronic kidney disease. By this time, pharmaceutical companies had begun manufacturing and offering more affordable artificial kidney units. Kolff and his colleagues offered treatment to chronic kidney disease patients only if their present physical deterioration was caused by something other than the chronicity of their disease, such as surgery or acute infection (Peitzman, 2001). Therefore, the medically appropriate criteria expanded. However, no codified medical standards of care existed. Doctors were left to make individual decisions as situations arose, with little guidance from the medical community.

In 1960, Scribner revolutionized kidney dialysis with his invention of the dialysis shunt (Peitzman, 2001). The shunt was a device surgically inserted under the skin of the forearm, which allowed constant access to patients' circulatory systems. This technological advance meant that dialysis could be offered to patients with chronic kidney disease on an outpatient basis. However, dialysis was still quite expensive. In the early 1960s, the cost of dialysis was \$15,000 per person per year (Fetherstonhaugh, 2009). Scribner obtained funding from the Hartford Foundation and began offering community dialysis through the Seattle Artificial Kidney Center (SAKC) in 1962 (Peitzman, 2001).

Throughout the 1960s, several community dialysis centers began operation, but little is written about them. The SAKC was the exception, with its history being well documented. Upon opening, the SAKC was inundated with chronic kidney disease patients in need of dialysis. In the early 1960s, it was estimated that 40,000 people were dying a year from ESRD (Fetherstonhaugh, 2009). To choose who would receive dialysis, Scribner and his colleagues devised a twotiered patient selection system. The first tier of the selection process was based on the following criteria: patients had to be stable, emotionally mature, uremic adults under the age of 45, without long-standing hypertension and vascular complications, willing to cooperate with the dialysis and low protein/low sodium dietary regimens, and with stable or slowly deteriorating renal function (Blagg, 2007, p. 485).

The medical criteria also included a psychological assessment to ascertain if the patients had the ability to "...take an active role in their own well-being; have the potential for rehabilitation" (Fetherstonhaugh, 2009, p. 89). Rehabilitation was defined by the doctors as having the potential to be a productive citizen and live a "useful life" (Fetherstonhaugh, 2009, p. 89). Furthermore, young adults who could not financially support themselves were rejected. Children were not considered candidates for dialysis for two reasons. First, the procedure presented too many complications with children, and Scribner and his colleagues wanted those patients with the best chances of survival to receive dialysis (Blagg, 2007). Second, those at SAKC making the selection decisions thought it unfair to allow a child to receive dialysis and deny dialysis to a patient who was the head of a household consisting of many children (McGough, Reynolds, Quinn, & Zenilman, 2005).

The second tier of the selection process involved the Admissions and Policies Committee. This was an anonymous committee comprised of seven community members that included a "...lawyer, a minister, a banker, a housewife, an official of state government, a labor leader, and a surgeon" (Alexander, 1962, p. 107). The committee members were also described as being white, Protestant, middle-class citizens (McGough et al., 2005). The task of the committee was to make final patient selection decisions. The committee based their decisions on many factors, including level of education, marital status, net worth of patients, work performance and history, and number of dependents. The committee selected patients who they thought had the most potential to remain, or become, productive community members. The determining factor was how important the committee thought each applicant was to the community. In other words, they used social worth as their standard of measure.

For the committee members, social worth was narrowly defined by their own backgrounds and value systems. This was evidenced by the patients whom they chose to receive dialysis. The committee overwhelmingly chose men who were white, middle class, married fathers with many children, who were active in church and the community, and who had a history of positive performance at work (Blagg, 2007; Fetherstonhaugh, 2009; McGough et al., 2005). It is important to keep in mind that those they did not choose, those who did not correspond to these values, died.

Months after the SAKC began providing outpatient dialysis, Shana Alexander (1962) wrote an article for *Life* magazine (Blagg, 2007). In it, she described SAKC's mechanism for dialysis allocation. The public was appalled that patients were selected to live because of their apparent usefulness to society (Blagg, 2007). Interestingly, the medical criteria, although scrutinized today, was considered at inception to be value-free and without bias. Therefore, the focus of public outrage and resulting ethical conversations centered on the injustice of using social worth as a criteria for dialysis rationing.

THE REACTION OF THE FEDERAL GOVERNMENT

According to Blagg (2007), the federal government's reaction to this outrage was threefold. First, the federal government gave grants to SAKC and a Brooklyn community dialysis center in 1963. Second, dialysis units were established in 30 Veterans Administration hospitals. Third, the Committee on Chronic Kidney Disease, headed by Dr. Carl W. Gottschalk, was established in 1966 to advise the federal government on how to proceed with efforts concerning kidney dialysis and transplantation. The Gottschalk Committee reported that dialysis was no longer experimental but a viable, life-sustaining treatment for patients with chronic kidney disease, and that it should be funded by the federal government through the Medicare program (Blagg, 2007). By 1968, however, the nation was embroiled in the Vietnam War, and the report received little notice. In addition, the SAKC dissolved the Admissions and Policies Committee, but it continued to select patients for dialysis based on social worth, even though the center was receiving federal grant monies (McGough et al., 2005).

In 1971, the Nixon administration introduced the idea of a national health care plan. During the congressional debates concerning the feasibility of a national health care plan, the Gottschalk Committee report was released again, and kidney dialysis was once again part of the national consciousness (Blagg, 2007). Various congressional members, who had friends who were on dialysis, championed Medicare funding for dialysis. The Ways and Means Committee began hearings to explore the issue further. Patients and family members from the National Association of Patients on Hemodialysis (NAPH) and nephrologists spoke during the committee hearings. At one point during the hearings, the vice president of NAPH dialyzed before the committee members (Blagg, 2007).

The Ways and Means Committee dialysis hearings were reported widely by the press, and the bill amending the Medicare program was introduced to Congress. The bill was passed by both the House and Senate with little debate. On October 30, 1972, President Nixon signed the bill establishing the ESRD Medicare program (Blagg, 2007). The ESRD Medicare program avoided the ethical dilemma of how to fairly allocate dialysis to ESRD patients by funding the dialysis of all ESRD patients. Therefore, no ESRD patient would be denied dialysis based on inability to pay for services. All rationing ended when the bill became law in 1972.

JUST ALLOCATION OF RESOURCES

Since the passage of P. L. 92-603, the federal government has subsidized the vast majority of kidney dialysis in the United States (SSA, 1972). Medicaid, private insurers, and state kidney health programs also contribute to dialysis reimbursement; however, the principal responsibility of reimbursement falls on Medicare. In 2009, Medicare paid 83% of medical costs for the ESRD population (USRDS, 2011). The cost of ESRD rose 3.1% in 2009 and comprised 5.9% of the total Medicare budget, totaling \$42.5 billion (USRDS, 2011).

In addition, the population in need of dialysis services is increasing. There was a 2.1% increase in those diagnosed with ESRD in 2009, and a 3.2% increase from 2008 to 2009 of those enrolled in the Medicare ESRD program (USRDS, 2011). Also, the cost for ESRD increased 3 to 4% per person in 2009 (USRDS, 2011).

There has been a political debate regarding the rising costs of health care and the federal responsibility for health care costs. In the annual summary report concerning the status of Social Security and Medicare, Geithner et al. (2011) reported that Medicare reserves for hospitalization insurance would be depleted in 2025, and the reserves for outpatient and pharmaceutical costs are diminishing. Geithner et al. (2011) also cited an increase in the number of aging U.S. citizens and a continual rise in health care costs as the chief reasons for the depletion of Medicare. Reducing government health care expenditures means reducing Medicare expenditures since Medicare is a large federal health care program. In addition, since Medicare is the primary payer for ESRD patients, it is quite possible that budget cuts would profoundly impact the ESRD community.

The final rule of the Centers for Medicare and Medicaid Services (CMS) restricting Medicare reimbursement to dialysis centers was enacted in January 2011 (Centers for Medicare and Medicaid Services, 2010). The rule complies with P. L. 110–275 of 2008, which is the Medicare Improvements for Patients and Providers Act (MIPPA, 2008). The final rule of CMS increases the amount of money that some patients will have to pay toward their dialysis medications and dialysis laboratory tests (Centers for Medicare and Medicaid Services, 2010). Puckrein and Norris (2007) argue that some of the cost-cutting strategies concerning ESRD patients may include limiting provider choices and restructuring ESRD physician reimbursement systems. They also maintain that ESRD services may once again be rationed through stricter eligibility criteria, leading to exclusions of vulnerable populations, such as poor people of color (Puckrein & Norris, 2007). Rationing would involve a decrease in the budgetary allotment for Medicare, affecting the ESRD program on the macro level. Less money for the program would result in reduced life-sustaining services for ESRD patients on the micro level. How these services are distributed or rationed, once it is determined that the present ESRD program is not monetarily sustainable by the taxpayers, is the crux of a potential ethical dilemma in health policy.

The political debate concerning health care budget reductions has potential consequences for the ESRD population that may affect their quality of services, eligibility for services, and types of services available; in effect, services may be rationed. These are not simply health care expenditure issues but allocation of resource issues. Therefore, the consequences of the political decisions have deep ethical ramifications. How can ESRD resources be justly allocated if dialysis were once again rationed?

Rationing often occurs in the United States. Hospitals, organ donation organizations, and government agencies routinely devise rationing criteria for scarce resources. Choices are made concerning who receives the last bed in the intensive care unit or the available organ when there are several people who are in need. Vaccines, influenza drugs, and antiretroviral drugs are given to some and withheld from others. However, the rationing criteria are generally referred to as distribution criteria or eligibility criteria. In addition, as the demand for scarce resources increases, hospitals, organ donation organizations, and government agencies meet this new obstacle by devising stricter eligibility requirements. In other words, the rationing criteria become less inclusive even as these entities try to meet the need for fairness or just allocation.

In Seattle, the ESRD community was subjected to unfair resource allocation prior to the Medicare ESRD program. The criteria used to allocate the scarce resource, dialysis, were based on the social worth of the individual. Ethicists resoundingly agree that social worth is not a fair criterion for allocation of resources (American Medical Association's Council on Ethical and Judicial Affairs, 1995; Beauchamp & Childress, 2009; Gillion, 1985; McKneally, Dickens, Meslin, & Singer, 1997). If not social worth, then what should the criteria be?

Unfortunately, there are no concrete rules for the just allocation of resources. In addition, it appears that all criteria are subject to manipulation and distortion. Jonsen and Edwards (2010) note that the SAKC attempted to ration dialysis in a fair manner during their first-tier selection by using the criteria of "likelihood of medical benefit" (p. 2). However, even this apparent value-free medical concept of benefit is not actually free of bias. Persad, Wertheimer, and Emanuel (2009) argue that all decisions about medical need are really value-based judgments. They maintain that doctors and medical staff are not free from acquired cultural and societal values; therefore, all of their decisions are valueladen. Although the SAKC is not often criticized for its practice of rationing based on potential medical benefit, this criterion is not a completely fair and just means of resource allocation.

CONCLUSION

The prospect of rationing dialysis is an unwelcome one. However, as mentioned before, health care has and will continue to ration care as available resources dictate. Many different models of rationing have been implemented and even more proposed. Availability and cost are generally the two drivers of such rationing. Anticipated technological advances have not delivered the hoped-for decrease in dialysis costs. Instead, the cost of dialysis and the need for dialysis continues to escalate.

After 40 years of dialysis coverage, some patients are now being asked to pay a higher share of the dialysis burden. Given our nation's current fiscal plight, dialysis rationing does not seem so preposterous. How, then, to do it to the satisfaction of all? Or, failing that (as seems most likely), what improved model should replace the social worth criteria of the 1960s?

Any acceptable rationing model would need to be cognizant of the influences of values, norms, and culture in forming rationing decisions. The model must eliminate (as much as possible) extraneous criteria that are not relevant, and it must involve the stakeholders. In addition, it must make the process as transparent as possible.

The three ethical values involved in just allocation of resources—treating people equally, favoring the worst-off, and maximizing total benefit—must be incorporated to every extent possible into this model. Paradoxically, these values can oppose each other as the complete satisfaction of or use of any one value exclusively will violate the tenants of the other two. For example, using a lottery system (treating people equally) will not favor the worst-off or maximize total benefits.

Any system that takes these values into account will satisfy no one value completely. Instead, as with most human systems and endeavors, compromises will have to be made. The discussion of those compromises should start now so the nation is prepared should rationing prove necessary. As social workers dedicated to working with patients with ESRD, we must address the issue of just allocation of dialysis and life-sustaining medications before a crisis erupts. The fiscal constraints imposed by the federal government on the ESRD program appear to be persistent and ever-deepening. Therefore, social workers have a unique opportunity to begin the conversation concerning just allocation of dialysis for the sake of our current and future ESRD clients.

REFERENCES

- Alexander, S. (1962). They decide who lives, who dies: Medical miracle puts moral burden on small committee. *Life*, *53*, 102–125.
- American Medical Association's Council on Ethical and Judicial Affairs. (1995). Ethical considerations in the allocation of organs and other scarce medical resources among patients. *Archives of Internal Medicine*, 155, 29–40.
- Barker, R. L. (1999). *The social work dictionary* (4th ed.). Washington, D.C.: NASW Press.
- Beauchamp, T. L., & Childress, J. F. (2009). *Principles* of biomedical ethics (6th ed.). New York: Oxford University Press.
- Blagg, C. R. (2007). The early history of dialysis for chronic renal failure in the United States: A view from Seattle. *American Journal of Kidney Diseases*, 49(3), 482–496.
- Browne, T. (2012). Nephrology social work. In S. Gehlert, & T. Browne (Eds.), *Handbook of Health Social Work* (2nd ed., pp. 468–497). Hoboken, New Jersey: John Wiley and Sons.
- Centers for Disease Control and Prevention (CDC). (2011). Ethical considerations for decision making regarding allocation of mechanical ventilators during a severe influenza pandemic or other public health emergency. Retrieved from www.cdc.gov/od/science/intergrity/ phethics/docs/Vent_Document_Final_Version.pdf
- Centers for Medicare and Medicaid Services. (2010). ERSD Payment. Retrieved from http://www.cms. gov/Medicare/Medicare-Fee-for-Service-Payment/ ESRDpayment/End-Stage-Renal-Disease-ESRD-Payment-Regulations-and-Notices-Items/ CMS1237726.html
- Emanuel, E. J. (2000). Justice and managed care: Four principles for the just allocation of health care resources. *Hastings Center Report*, 30(3), 8–16.
- Fetherstonhaugh, D. (2009). Dialysis: A paradigm case of rationing medical treatment. *Renal Society of Australasia Journal*, 5(2), 88–94.
- Friedman, E. A. (1998). Kolff's contributions provoked the birth of ethics in nephrology. *Artificial Organs*, 22(11), 940–944.
- Geithner, T. F., Solis, H. L., Sebelius, K., Astrue, M. J., Blahous, C. P., & Reischauer, R. D. (2011). Status of the Social Security and Medicare programs: A summary of the 2011 annual Social Security and Medicare Trust Fund reports. *Actuarial Publications*, p. 1–15. Retrieved from http://www.ssa.gov/oact/TRSUM/ index.html
- Gillon, R. (1985). Justice and allocation of medical resources. *British Medical Journal*, 291, 266–268.
- Jonsen, A. R., & Edwards, K. A. (2010). Resource allocation. Ethics in medicine: University of Washington School of Medicine. Retrieved from http://depts. washington.edu/bioethx/topics/resall.html

- McGough, L. J., Reynolds, S. J., Quinn, T. C., & Zenilman, J. M. (2005). Which patients first? Setting priorities for antiretroviral therapy where resources are limited. *American Journal of Public Health*, 95(7), 1173–1180.
- McKneally, M. F., Dickens, B. M., Meslin, E. M., & Singer, P. A. (1997). Bioethics for clinicians: 13. Resource allocation. *Canadian Medical Association Journal*, 157(2), 163–167.
- Medicare Improvements for Patients and Providers Act of 2008. PL 110–275 (MIPPA), 15 JULY 2008. Retrieved from http://www.gpo.gov/fdsys/pkg/ PLAW-110publ275/content-detail.html
- National Association of Social Workers (NASW). (2008). *Code of ethics of the National Association of Social Workers.* Retrieved from http://www.socialworkers. org/pubs/code/code.asp
- Peitzman, S. J. (2001). Chronic dialysis and dialysis doctors in the United States: A nephrologist-historian's perspective. *Seminars in Dialysis*, 14(3), 200–208.
- Persad, G., Wertheimer, A., & Emanuel, E. (2009). Principles for allocation of scarce medical interventions. *Lancet*, 373, 423-431.
- Puckrein, G. A., & Norris, K. (2007). Medicare endstage renal disease program: Why we must have a paradigm shift in health care. Retrieved from http:// www.nmqf.org/Statements%5CConsensusStateme nt071210.pdf
- Roemer, J. E. (1996). *Theories of distributive justice*. Cambridge, MA: Harvard University Press.
- Rubin, R. J. (1984). Epidemiology of end-stage renal disease and implications for public policy. *Public Health Reports*, 99(5), 492–498.
- Saleebey, D. (1997). *The strengths perspective in social* work practice. New York: Longman.
- Social Security Amendments (SSA) of 1972. PL 92–603, 30 Oct. 1972. Stat. 086-1-1. Retrieved from http://www. ssa.gov/OP_Home/comp2/F092-603.html
- U.S. Renal Data System (USRDS). (2011). Annual data report. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Retrieved from http://www.usrds. org/adr.aspx