Continuing review of data trends assessed by the United States Renal Data System and the National Health Interview Survey as reported in the Centers for Disease Control and Prevention (CDC)’s Weekly Morbidity and Mortality Report strongly indicate that between 1990 and 2002, there has been a sharp decline in incidence rate of the number of persons with diabetes who develop end stage renal disease (ESRD). It is unclear whether this improvement should be attributed to therapeutic regimens that in composite proffer what has been termed renoprotection. While components of renoprotection including careful regulation of hypertensive blood pressure, improved glycemic control, and life style modification emphasizing cessation of smoking and weight reduction have each been found beneficial, no evidence based explanation for this important epidemiologic change has yet been reported. Nevertheless, should the decrease in incidence of ESRD attributed to diabetes continue, there will follow a reduction in demand for patient services that will ease the previously enormous projected stress on medical and socioeconomic resources in the immediate future.

Persons with diabetes are at great increased risk of kidney disease. Concern over what has transformed from an endemic disorder to the dominant cause of renal failure has grown throughout the course of a unique federal program established as a component of Medicare, which, since 1972 funds treatment for end stage renal disease (ESRD) by maintenance hemodialysis, peritoneal dialysis, and renal transplantation. When the federal ESRD program began in the 1970s, diabetes mellitus was reason for exclusion from ESRD treatment in the belief that rehabilitation and/or life prolongation was unlikely. Once this negative view yielded to positive reports of successful life extension diabetes emerged as a continuously expanding treatable cause of renal failure to the extent that 44% of incident treated patients in 2003 had recognized diabetes as recorded by the United States Renal Data System (USRDS) [U.S. Renal Data System 2005] [26]. Adding to this number an additional 6.5% of patients commencing ESRD therapy in whom diabetes was not noted on their Medicare Report Form, plus a further 10% of incident ESRD patients in whom diabetes was diagnosed during their first year of ESRD treatment results in the present reality that a minimum of six out of ten new ESRD patients suffer diabetes. It follows that ESRD and diabetes are intertwined as drains on health resources.

Epidemiologists reporting for the World Health Organization (WHO) predict a sustained sharp global expansion of diabetes incidence and prevalence. By 2050, they estimate, more than 300 million persons worldwide...
de will have diabetes raising the specter of a "Pandemic" threatening imminent collapse of socioeconomic and fiscal resources available to confront the disease onslaught. The most recent WHO projections are that while in 2000 170 million people worldwide had diabetes, by 2030 the number afflicted will reach 370 million. The two nations with more than 1 billion population, India and China, top the "endangered" list of countries with more than 120 million persons predicted to manifest diabetes in those two countries alone.

Until the present, other than expression of alarm, there have been minimal structured efforts to prepare for a diabetes pandemic. As earlier alarm, in 2003 observed that: "Europe is locked in the grip of a pandemic of diabetes that now engulfs the new world [13]. In registries of causes of ESRD maintained by the United States, Japan, and most nations in industrialized Europe, diabetes mellitus tops the list. National registries report that both glomerulonephritis and hypertensive renal disease rank below diabetes in frequency of diagnosis among new ESRD patients, substantiating the wise realization by Mauer and Chavers, in 1985, that "Diabetes is the most important cause of ESRD in the Western world [17]." Without any proactive plan to confront a diabetes induced ESRD pandemic, the United States and other developed nations have assumed a posture of "watchful waiting".

As reported by the United States Renal Data System (USRDS) there has been a continuing increase in the number of new cases of ESRD between 1984 and 2003. The major diagnosis driving the upward curve is in persons with diabetes.

Figure 2
According to data analyzed by the United States Renal Data System (USRDS) when depicted as incident rate per million population rather than as actual number of cases, the horizontal curves for the most recent three years may signal a leveling off to the epidemic of ESRD driven mainly by progressive increases of ESRD in persons with diabetes.

The Centers for Disease Control and Prevention (CDC)'s Weekly Morbidity and Mortality Report constructed from data compiled by the USRDS and the National Health Interview Survey (NHIS) for 1990 to 2002 focused on this "good news" at the end of 2005 remarking that: "Although the number of new cases of ESRD in persons with diabetes increased overall, the incidence of ESRD-DM among persons with diabetes is not increasing among black, Hispanics, men, and persons aged 65-74 years, and is declining among persons aged <65 years, women, and whites (figure 3) [20]." Indeed, employing as denominator all persons known to have diabetes with new incidence of ESRD as numerator revealed a remarkable sharply downward slope from a peak of 305 per 100,000 in 1996 to 232 in 2002 (P<0.01). Should these trends continue, in may be predicted that as the total United States population continues to increase, the number of diabetic persons will also increase but the proportion (rate) of diabetic individuals who will develop ESRD is falling and, by trend analysis, should continue to decrease. An explanation for this encouraging transformation is taking place is a provocative cause for speculation. Attributing the reduction in incidence rate of ESRD in persons with diabetes to renoprotection, the term applied to application of several measures that have been incorporated into a standard of care for diabetes [19] is attractive. For persons with diabetes, key components of renoprotection include:

1. Normalizing elevated blood pressure and/or treating microalbuminuria with an angiotensin-converting enzyme inhibitor or receptor blocker [24]. Hypertension unquestionably accelerates the decline in renal function during the course of intrinsic renal disease of any etiology is broadly appreciated. Normalizing a hypertensive blood pressure is a bedrock component of all regimens for contemporary renal care. In persons with diabetes, improvement in both the quantity of protein "leaked" into urine and the extent of normalization of hypertensive blood pressure are enhanced by treatment with an angiotensin converting enzyme inhibitor and/or an angiotensin receptor blocker. The American Diabetes Association Clinical Practice Recommendations for 2006 were devised based on all clinical trials to date sustaining inclusion of an angiotensin-converting enzyme inhibitor and/or receptor blocker as first line medications in a reno-
NEW ONSET ESRD in PERSONS with DIABETES

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>5000</td>
<td>3000</td>
</tr>
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Figure 3
A key inference indicating a favorable trend in the pandemic of diabetes is evident as both incident number and incident rate of new onset ESRD per 100,000 persons with diabetes shows sharp decline in the incident rate starting in 1995. This observation was noted in the Centers for Disease Control and Prevention (CDC)/Weekly Morbidity and Mortality Report in November, 2005.

From this finding is the ongoing subsidence of the pandemic of ESRD in persons with diabetes.

References
18. McCarter R.J., Hampe J.M., Chaluv S.A.: Mean blood glucose and biological variation have greater influence on HbA1c levels than glucose instability: an analysis of data from the Diabetes Control and

In the second half of the first decade of our new century, we continue to positively anticipate the promise of curing diabetes by molecular intervention, stem cell or islet cell infusion, or xenogeneic pancreas-kidney solid organ transplantation. Lacking this magic, resort to arduous renoprotective regimens, as described above, is a rational and effective means to ensure that patients with diabetes today maximize their number of tomorrows.


