This presentation focuses on chronic renal insufficiency (CRI) and its complications and comorbidities, particularly anemia. Emerging data indicate that CRI-related anemia is underrecognized and undertreated in the United States. Leading nephrologists have characterized the prevalence of CRI-related anemia as an important public health concern.

In 2000, a panel of leading nephrologists described the Renal Anemia Management Period (RAMP), a concept meant to increase awareness of the importance of timely recognition and appropriate treatment of anemia and other comorbidities and complications of CRI. The RAMP concept encourages timely diagnosis, referral, and appropriate treatment of these conditions, with an emphasis on anemia, due to the serious morbidity associated with anemia-related cardiovascular changes.

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References:
The RAMP in Patients With CRI

- Chronic renal insufficiency
- Anemia and kidney disease
- Cardiovascular sequelae of kidney disease
- The Renal Anemia Management Period (RAMP)
- Benefits of anemia correction using rHuEPO
- Summary and conclusions

This presentation will address:

- Current terminology of chronic kidney disease
- Risk factors for chronic renal insufficiency (CRI)
- Prevalence and incidence of CRI
- Complications of CRI, with an emphasis on renal anemia
- Consequences of renal anemia (e.g., heart disease)
- Existing data on cardiovascular disease in CRI and end-stage renal disease (ESRD)
- The Renal Anemia Management Period (RAMP), a concept designed to increase awareness of the importance of early diagnosis and appropriate treatment of CRI-related anemia.
- Available data that support the benefits of anemia correction using recombinant human erythropoietin (rHuEPO) in CRI and ESRD
The following section addresses chronic renal insufficiency and its related complications and comorbidities.
Confusion surrounds terminology used to describe the various stages of chronic kidney disease. This presentation uses the following conventions:

*Chronic kidney disease* (CKD) is the entire continuum of kidney disease from its onset through and including end-stage renal disease (ESRD).

*Chronic renal insufficiency* (CRI) is defined as kidney disease from its onset (when kidney function is 50% of normal) through a progressive decline in kidney function to the point of, but not including, ESRD.

*End-stage renal disease* is characterized by significant, irreversible loss of kidney function in which renal replacement therapy is required to sustain life. The Health Care Financing Administration defines ESRD as a glomerular filtration rate of 10 mL/min/1.73 m² or less.

Due to a lack of consensus, this presentation avoids the terms *chronic renal failure, predialysis, pre-ESRD, pre-uremic, chronic renal disease* and many other terms commonly found in the literature. The National Kidney Foundation’s Kidney Disease Outcomes Quality Initiative, or K/DOQI, is scheduled to release Clinical Practice Guidelines in Chronic Kidney Disease by the end of 2001 and will include nomenclature changes and definitions to help clarify the staging of CKD.

**References:**
Optimal care of the patient with chronic kidney disease (CKD) requires management decisions throughout the continuum of disease. Ideally, this would include the identification of patients at risk for CKD.

The end-stage renal disease (ESRD) population in the United States continues to increase. While the incidence of ESRD was approximately 45,000 in 1989, the number of new ESRD patients almost doubled to over 80,000 by 1998. Incident counts are projected to rise to almost 173,000 by 2010. This means the total number of ESRD patients in 2010 could reach over a half million, a 77% rise in prevalence.

Diabetes mellitus is the primary etiology of ESRD in the United States, and the number of new ESRD cases due to diabetes has increased more rapidly than for any other diagnosis. For example, incidence of diabetes in hemodialysis patients rose by 9.0% between 1990 and 1994 and by 9.9% between 1994 and 1998. Diabetes accounted for over 43.1% of new cases of ESRD in 1994 through 1998.

The second most frequent primary etiology of ESRD is hypertension, which occurred in 27.3% of new ESRD cases from 1994 to 1998. Other primary diagnoses, including glomerulonephritis and polycystic kidney disease, occur in far smaller numbers of people.

Racial differences are evident in both incident and prevalent populations. While African Americans comprised 28% of the end-stage renal disease (ESRD) population in 1998, they accounted for approximately 13% of the US population.\(^1,2\) Native Americans also have high rates of ESRD compared to their numbers in the population. Additionally, between 1994 and 1998, the greatest percentage increases in the number of hemodialysis patients have been in the Native American and Asian populations.

Although not addressed in this slide, age is also a risk factor for ESRD. As the population ages, incidence will continue to rise, as will the mean age of the ESRD population.\(^1\) The percentage of the population older than age 75 comprises the fastest-growing segment of the ESRD population.

References:
Although chronic kidney disease (CKD) is a continuum, patients with chronic renal insufficiency (CRI) differ markedly from those with end-stage renal disease (ESRD):

- Systolic and diastolic blood pressures (BP) of 139 to 151 mm Hg and 86 to 91 mm Hg have been reported in large clinical trials of CRI patients. In contrast, 11% of ESRD patients in the US Renal Data System during the year 1993 had BP levels ≥ 180/110 mm Hg at the start of dialysis. Normotensive BP levels are the goal in all patients.

- The normal reference hemoglobin (Hgb) levels are: for men and postmenopausal women, 13.5 to 17.5 g/dL; for premenopausal women 12.0 to 16.0 g/dL.

- At its most extreme, secondary hyperparathyroidism manifests as overt renal osteodystrophy; however, in CRI, it can take a more subtle form as merely disordered divalent ion metabolism.

- ESRD has a considerable impact on the quality of life (QOL) of patients. However, a number of associated sequelae and comorbidities, including anemia, when treated with rHuEPO, can be counteracted to improve QOL. Many of these factors are present in CRI.

References: