



To: President-elect Obama's NIH Transition Team
Date: January 5, 2009
Re: Suggested priorities for disease prevention and remediation
From: Iron Disorders Institute

Iron Disorders Institute (IDI) is a national nonprofit organization engaged in providing educational, diagnostic and therapeutic information to health-care professionals, their patients and the public. IDI's mission is focused on the prevention, treatment and management of diseases caused by iron-out-of-balance.

In performing its mission, IDI has worked with several of the Institutes of Health and Centers for Disease Control and Prevention resulting in significant research findings. At IDI's Centers of Excellence at Penn State University, research into iron's role in neurodegenerative disease has yielded discoveries that could ultimately generate cures, better drug efficacy and disease prevention. We must have restored and improved funding to continue research of this magnitude and to expand research of iron's role across a wide spectrum of human diseases and disorders.

In focusing on disease prevention, IDI has observed that the current practice of compartmentalizing diseases and disorders in distinctive "silos" is not optimal when dealing with preventable, common causes affecting sometimes *apparently* unrelated diseases and disorders. Iron is a common element that is routed in many such ways. Summarized below is a brief description of how iron is commonly found in the pathogenesis of many such "different" conditions. Iron's causal commonality typically presents as cell and tissue damage caused by oxidative stress leading to inflammation, fibrogenesis, cell death and DNA mutation.

Evolving research has already shown that iron-out-of-balance, particularly iron overload, even in what is *still* thought to be normal or sub-clinical ranges, provides significant causal and/or contributing influence to a number of diseases and conditions, including (among others) heart and vascular failure, diabetes mellitus, liver diseases, stroke, osteoarthritis, osteoporosis (and other conditions of aging including osteopenia, sarcopenia, and Alzheimer's disease), cancer (initiation and promotion), neurodegenerative diseases and hormonal imbalances, primarily hypothyroidism and hypogonadism. In addition, surplus iron also "feeds" infectious diseases promoted by bacterial, fungal and parasitic agents. Iron toxicity is exacerbated by alcohol, unhealthy diet, obesity environmental influences and genetic predisposition to multiple (including autoimmune) diseases.

Unfortunately, most physicians seldom order the simply blood tests needed to properly measure iron balance, thereby often failing to observe the critical early warning signs. Even when the proper tests are used, results within the upper "normative" ranges are sometimes incorrectly interpreted as *normal*, when that determination is contrary to consensus research findings. Importantly, iron reduction therapy as tested fairly extensively in controlled research has emerged as an extremely effective therapy in limiting and reversing disease development, particularly when stored iron levels are reduced to the lower ranges of normal. Iron reduction therapy utilizing inexpensive phlebotomy has been proved effective in improving insulin resistance (a key pathogenic feature of diabetes), liver and vascular



function, atherosclerotic disease, as well as other indicia of debilitating processes including those relating to cancer.

A large study recently conducted by the NIH surveyed more than 100,000 ethnically diverse Americans for the genotype and phenotype predisposing to (and/or predicative of) hereditary hemochromatosis, an iron storage disease commonly through to affect mainly people having northern and eastern European ancestry. Surprisingly, the results of this large study, together with subsequent published findings, revealed that individuals within America's largest minority populations (African American, Native American, Hispanic American and Asian American) are equally affected by iron overload when compared to their Caucasian counterparts. These findings warrant expanded surveillance for iron overload disorders, particularly focused on individuals at increased risk for liver, heart diseases and cancer, or having risk factors predisposing diabetes mellitus. These "unanticipated" findings certainly provide foundation for targeted disease surveillance and awareness education, which IDI is positioned to further develop and disseminate.

IDI suspects that there are causes and conditions linked to the etiology of other preventable diseases that work in ways similar to how replete iron stores mediate the progression and clinical aggressiveness of certain diseases. IDI believes that directed infrastructure modifications within the NIH should become a priority of the new Administration. These changes will result in improved screening algorithms covering all early stage diseases. Some changes could be enacted intramurally, utilizing resources in place; others will require new adjunctive partnerships, including third party (both public and private) and interagency cooperative arrangements.

Such targeted infrastructure modifications could accommodate a major paradigm shift to encompass research aimed at prevention and cost-effective remediation, achieved by establishing uniform cost and benefit measures, including evaluation metrics such as quality life years saved and increased productivity. This can be accomplished in unison with the continuation of existing and new research in the established direction of treatment and cure through and including all phases of clinical care.

The optimal execution of such a shift will require adept coordination between the variously affected (NIH) Institutes and other governmental agencies currently responsible for the research and surveillance of specific diseases and conditions under existing program formats. When enacted, this proposal would also better link surveillance and prevention to larger, more meaningful population studies that would best identify and treat causes found common to multiple diseases before their inevitable and costly progression toward irreversibility and/or premature death.

In Summary, Iron Disorders Institute recommendations are as follows:

1. Ensure that leadership of our government health agencies will investigate and address redundancy among agencies.
2. That policies fostering collaboration between all government health agencies and the public are jointly to investigate and establish directed research, epidemiology, surveillance, education, and best practice guidelines.
3. Ensure the availability of funds necessary to achieve these goals.