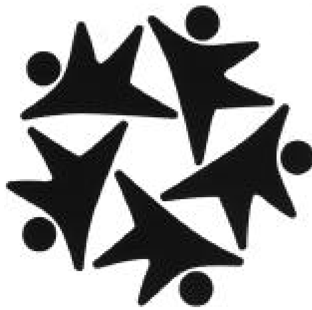
# Summary Description of NACHRI Classification of Congenital and Chronic Health Conditions *

## April 29, 1999



NACHRI

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### Purpose

The purpose of the Classification of Congenital and Chronic Health Conditions (CCCHC) is to provide a conceptual and operational means through ICD-9-CM diagnosis codes and ICD-9-CM/CPT-4/HCPCS procedure codes to classify patient populations by:

1. Presence of chronic health condition(s)

2. Type of chronic health condition(s)

3. Severity of chronic health condition(s)

4. Presence of significant acute health condition(s)

### Uses

The CCCHC is a population based classification system. It is intended primarily for use at the health plan and community level and for health providers assuming responsibility for delivering defined services to specific population groups for a period of time. There are essentially four uses of the CCCHC:

1. Tracking congenital/chronic disease prevalence rates.

2. Profiling health service utilization and physician practice patterns.

3. Pricing and capitation risk adjustment.

4. Linkage to measures of patient satisfaction/quality tracking.

The CCCHC is a population based classification system, which must be distinguished from encounter or episode of care classification systems. The CCCHC classifies individual persons, while an encounter or episode of care system classifies visits or services. These are very different systems but can be used in complementary ways. To illustrate, the CCCHC can be used to classify

patient populations while classification systems such as Ambulatory Patient Groups and Diagnosis Related Groups can be used to describe outpatient and inpatient services.

## Data Requirements

The CCCHC grouper requires two types of information:

1. Enrollee demographic and coverage information. Data elements include: unique enrollee identification number, date of birth, sex, first date of coverage, last date of coverage.

2. Enrollee encounter data for all services over a defined period of time (e.g., 6 to 12 months or longer). Data elements include: all diagnoses and procedure codes for each encounter, date of service, site of service, provider type, and principal diagnosis flag (if inpatient).

The CCCHC does not use charges, costs or payment data to group individuals. At the same time charges, costs, payments and other measures of service utilization are necessary if the CCCHC is to be used for any applications involving resource use. For a more complete description of data requirements see NACHRI document, “Description of Data Element Requirements for 3M Episode Classification System and NACHRI Classification of Congenital and Chronic Health Conditions, March 19, 1999”.

## Design and Structure

The CCCHC is a *categorical clinical model* that classifies individuals into *mutually exclusive categories*. The CCCHC reads all diagnoses codes from detailed claims and encounter files and assigns each code to a diagnostic category (acute or chronic) and to a body system. Based upon all of the diagnostic category assignments, the individual patient is classified to a hierarchically defined core health status group and then to a specific risk adjustment category and severity level.

The final version of the CCCHC contains 9 core health status groups, 31 body systems, and 273 risk adjustment categories. The chronic condition categories are divided into severity levels - either 2, 4 or 6 levels depending upon type of condition. The significant acute categories are divided into single and multiple significant acute categories. All other individuals are classified as healthy. The full CCCHC categorization yields 1,083 different groupings or cells.

Following is a listing of the core health status groups along with the number of base risk adjustment categories, severity levels and total number of cells in the full CCCHC categorization.

1. Catastrophic: 11 base categories; 4 severity levels; 44 cells.

2. Dominator or Metastatic Malignancy: 23 base categories; 4 severity levels; 92 cells.

3. Chronic Triplet: 21 base categories; 6 severity levels; 126 cells.

4. Multiple Significant Chronic Pair: 61 base categories; 6 or 4 severity levels; 324 cells.

5. Single Dominant or Moderate Chronic: 109 base categories; 4 or 2 severity levels; 406 cells.

6. Multiple Minor Chronic Pair: 1 base category; 4 severity levels; 4cells.

7. Single Minor Chronic: 40 base categories; 2 severity levels; 80 cells.

8. Significant Acute: 6 base categories; no severity levels; 6 cells.
   [Note, there are no severity levels but there are categories for multiple significant acute conditions.]

9. Healthy: 1 base category; no severity levels; 1 cell.

The *severity assignment algorithm* is specific to each chronic condition category and takes into account a variety of factors associated with a more severe or advanced form of the condition. This includes: a more severe form of the chronic condition as identifiable through ICD-9-CM diagnoses codes; comorbid chronic and acute conditions from the same body system; chronic conditions from other body systems when they are secondary to and caused by what is judged to be the primary chronic condition; acute illnesses from other body systems when they are specifically related to the chronic condition or a reliable indicator of general health status; age if it relates to a specific disease progression; and selected therapies and service utilization if they relate to a more severe form or stage of the condition. Severity is defined with respect to the expected complexity and costliness of health care services in the upcoming 12 months.

The CCCHC can be used at *multiple levels of aggregation* depending upon intended uses and the size of the population in the data base. To illustrate, for profiling health service utilization and practice patterns it may be helpful to use the full categorization of the system, but for other applications such as

capitation risk adjustment or linkage to broad measures of patient satisfaction it may be most helpful to aggregate the categorizations to a broader level.

The full CCCHC categorization yields 1,083 groupings or cells. In addition, the CCCHC generates rolled up categorizations with 370, 131 and 35 cells respectively. Each level of aggregation starts with the same 9 core health status groups and maintains a severity level assignment but rolls up to either a body system level (370 cells), super body system level (131 cells), or to the core health status group (35 cells). Each user can further customize these roll-ups to suit specific applications. For example, a user might wish to aggregate to the core health status groups but maintain a breakout for physical versus mental conditions (40-50 cells). A user can also stratify any or all of the CCCHC categorizations by age and sex or any other variable deemed relevant.

The CCCHC is a categorical clinical model, not a regression model. This presents several very important advantages. First, it assigns all patients to mutually exclusive categories that are clinically recognizable and can support multiple applications. Second, it avoids the problem of dependence on coefficients derived from a development data base which occurs with a regression model.

The CCCHC has been developed with a special focus on children and the Medicaid population but has been designed to be inclusive of all individuals and has been tested on all age individuals. The rationale for this is that a classification system will have the most value to health plans, payors and providers if it can be used to view all age individuals.

## Data Base Testing

The CCCHC has been data base tested to validate and refine the clinical specifications for the system. The primary data base for the testing of the CCCHC has been a two year claims paid data base from the state of Washington Medicaid program containing 250,000 non-institutionalized recipients, age 0-64 years. In addition, the specifications for the CCCHC have been tested on a four year Medicare claims data base with approximately 1,250,000 recipients and on a four year private sector claims data base of adults and their dependents with approximately 250,000 recipients.

## Software

The software for the CCCHC has been developed by 3M Health Information Systems. 3M HIS has also been in the process of developing and testing a similar classification system for capitation risk adjustment and physician

practice profiling. The two primary data sets for its testing have been the 1,250,000 recipient Medicare claims data base and the 250,000 recipient private sector claims data base described above.

The focus of the last phase of NACHRI's research and development effort has been to integrate the CCCHC with 3M HIS's classification system. This was completed in January 1999. The name of the combined system is Clinical Risk Groups or CRGs. Commercial software for the CRGs is expected to be available from 3M HIS in late summer or fall 1999. Until such time as the commercial software is available, 3M HIS will be undertaking a limited number of test projects using its in-house version of the software to group claims data for collaborating research or pilot demonstration organizations.

Organizations interested in obtaining and using the classification system should begin now with the effort to examine the data element requirements for the system and the completeness, specificity and reliability of diagnostic and procedure information in their claims and encounter data bases. If an organization does not have a full service claims and encounter data base, then it must partner with another organization that has such a data base.

## Summary

The CCCHC can be thought of as a grouper with memory and an elaborate set of clinical decision rules that classify individuals into mutually exclusive risk adjustment categories based upon all the information available from claims and encounter data bases. The testing of the system has yielded very encouraging results, both in its ability to produce clinically recognizable information and its ability to predict the costs of medical treatment for groups of individuals in a future time period. Further information on the structure, performance and data element requirements of the system is available by contacting Lisa Turner, Associate, Classification Research, NACHRI at 401 Wythe Street, Alexandria, VA 22314, (703) 684-1355.