



RESOURCE AND PATIENT MANAGEMENT SYSTEM

# **IHS PCC Suite**

**(BJPC)**

## **QMan User Manual** **Volume I: Mastering the Basics**

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## Preface

The purpose of this manual is to provide information specific to the QMan, Mastering the Basics.

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## 1.0 Introduction to QMan

In the early 1980's, the Indian Health Service (IHS) undertook an ambitious program to install an advanced, computer-based health record system in all of its facilities. The official name of this new technology is the Patient Care Component of the Resource and Patient Management System. We know it as the PCC.

The PCC contains a “gold mine” of patient information. In this document, you will learn about a special “mining tool” called QMan which makes it easy for you to locate and extract the hidden treasures of PCC. To hit “pay dirt,” you carry on a simple, intuitive dialogue with QMan. This “conversation” enables you to define ad hoc search criteria and generate reports.

QMan users do not need to be PCC experts; i.e., there is no need to understand the MUMPS computer language or the FileMan database management system. However, you must have a working familiarity with QMan's terminology and methods. The purpose of this chapter is to get you started with the basics.

### 1.1 Queries: Fundamental Concepts and Terms

When you use QMan, your primary goal is to generate a “query.” Each query consists of four basic elements: subject, attribute, condition, and value.

**Subject**      *What you are searching for.* In QMan Version 2 this can be patients, a specific subset of patients (e.g., infants, males, etc.), a specific patient (e.g., Alpha Martin), provider(s), or visit(s).

**Attribute**      *A distinguishing characteristic of the subject.* The relationship between the subject and attribute can be “one to one,” known as demographic or patient identifying attributes, (e.g., age, sex, tribe) or “one to many,” known as clinical attributes, (e.g., diagnoses, measurements, prescriptions).

**Condition**      *A logical operator used to delimit a particular value.* Usually this is a word or symbol which is used to establish a basis of comparison (e.g., greater than, equals, after, =, >, etc.).

**Value**      *A quantity or state used with the condition to indicate the status of a particular attribute.* The value can be words, a date, or a number, and it may or may not include units of measurement (e.g., 250 lbs., 4+, 1/5/46, Apache).

Together the attribute, condition, and value identify a specific subset of subjects. Here are some examples.

| Subject     | Attribute       | Condition    | Value             |
|-------------|-----------------|--------------|-------------------|
| provider    | discipline      | is           | registered nurse  |
| patients    | diagnosis       | is           | hypertension      |
| women       | age             | over         | 40                |
| Lisa Martin | serum glucose   | greater than | 300               |
| patients    | tribe           | is           | Navajo            |
| visit       | clinic location | is           | San Xavier clinic |

For a complete list of attributes and conditions, see Appendix B.

The way you specify the elements of a search is to carry on a dialogue with QMan. Below is a typical QMan session.

```

***** WELCOME TO QMAN: THE PCC QUERY UTILITY *****

Query utility: IHS QMAN Ver. 2
Current user: DEMO
Chart numbers will be displayed for: (your facility)
Access to demographic data: PERMITTED
Access to clinical data: PERMITTED

To begin we press RETURN to select the default "LIVING PATIENTS" as our subject. For
the first attribute we enter "AGE" and "OVER" for the condition and "70" for the age
in years. QMan shows you a search summary for this first attribute.

What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENTS: AGE <Enter> AGE
Condition: OVER <Enter> GREATER THAN
Age: 70 <Enter>
Computing Search Efficiency Rating

      PATIENT INFORMATION
      AGE GREATER THAN 70      [SER = 93]

Attribute of LIVING PATIENTS: SEX <Enter> SEX
CHOOSE FROM:
      M      MALE
      F      FEMALE
Value: F <Enter> FEMALE

Computing Search Efficiency Rating.

      PATIENT INFORMATION
      AGE GREATER THAN 70      [SER = 93]
      SEX IS FEMALE      [SER = .39]

Attribute of LIVING PATIENTS:

```

```

***** QMAN OUTPUT OPTIONS *****

Select one of the following:

1      DISPLAY results on the screen
2      PRINT results on paper
3      COUNT 'hits'
4      STORE results of a search in a FM search template
5      SAVE search logic for future use
6      R-MAN special report generator
9      HELP
0      EXIT

Your choice: DISPLAY// 1 <Enter>

...EXCUSE ME, THIS MAY TAKE A FEW MOMENTS...

PATIENTS          CHART      AGE   SEX
(Alive)          NUMBER
-----
GRANT, TESS       103101   90   FEMALE
ROBERTS, FLORENC* 102494   89   FEMALE
LINCOLN, LORI*   102224   85   FEMALE
JONES, TANYA*    100902   72   FEMALE
. . .
WHEELWRIGHT, MIL* 100249   71   FEMALE
BURR, GLORIA*    103153   71   FEMALE
LINCOLN, GLADYS  100714   71   FEMALE
Total: 43
Press RETURN to continue or '^' to exit:

```

Figure 1-1: Sample of a typical QMan session

## 1.2 Searches and Search Efficiency

A **search** consists of multiple queries “and’ed” together. All of the queries in a search must share the same subject. In an “and’ed” search, QMan checks to see if the subject meets the conditions of the first query. If the conditions are met QMan goes on to the second query. If these are met, the search goes on to the third and so on down through the series until it registers a hit or a miss.

Consider the following search, which consists of three queries:

```

AGE OVER 40
and
SEX = FEMALE
and
TRIBE = NAVAJO

```

Figure 1-2: Sample Query

In this case, a 41-year-old Navajo woman would be a “hit,” but a 40-year-old Navajo man would be a “miss.”

From a purely logical perspective, the order of the queries does not matter. If the queries of a search were like cards in a deck, you could shuffle them in any order and always reach the same outcome. This is true as long as the queries are “and’ed” together.

From QMan’s point of view, the order of queries *does* make a difference, not because of *outcome*, but because of *efficiency*. QMan wants to eliminate as many non-hits as possible during the first query of the search. This strategy will reduce the analytic load on subsequent queries.

Keep in mind the following:

- Search efficiency is maximized by using the most powerful query first.
- The power of a query is determined by the prevalence of the attribute and cross references.

### Search Optimization

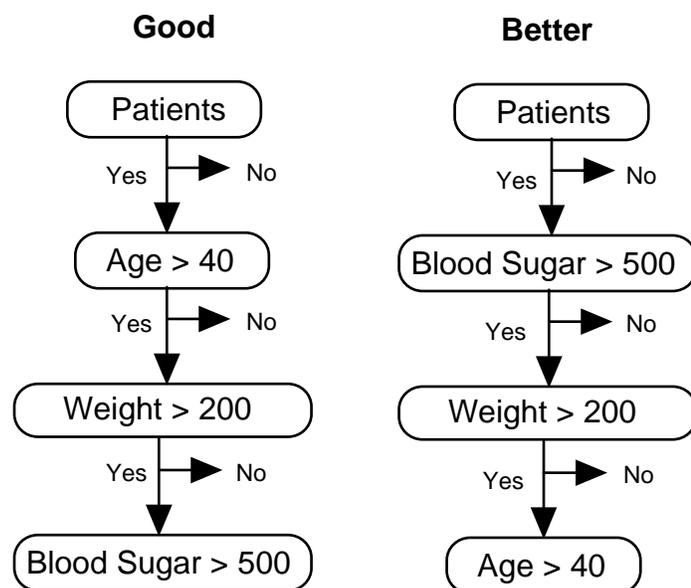


Figure 1-3: Illustration of search optimization

The rate at which potential hits are eliminated is also influenced by how difficult it is to locate pertinent information in the database. Consequently, indices and pointers (see Appendix A: Understanding the IHS Data System, if these terms are unfamiliar) also play a role in determining search efficiency.

Each time you generate a query, QMan samples the database and assigns a “search efficiency rating” that is based on the prevalence of the attribute and the availability of cross references. You will know when this is happening because at the end of each query, during the sampling process, QMan will display the following message:

```
Computing search efficiency rating
```

Occasionally, QMan will know if a rating is going to be very high or very low without sampling the database. In these cases, the message will appear only briefly. When all queries in the search have been entered, QMan reshuffles them so that the queries are taken in order of their efficiency rating. No user intervention is required. It is not unusual for this process to improve the search efficiency by 3 or 4 orders of magnitude.

Users often ask what the search efficiency rating (SER) number means. It is a purely relative term with no purpose other than to put the queries of a search in proper order.

- A rating of 0 means that the query is not particularly effective in reducing the size of a target population.
- A value of 1 means that the query is reasonably discriminatory.
- In extreme cases the value can be as low as minus 100 or as high as 100.

## 1.3 Taxonomies

In a preceding section, you saw an example of an attribute with a set of predefined, discreet values: TRIBE. If you want to generate a query based on tribe, you do not have the freedom to specify any tribe you can think of. In fact, the only tribes you are allowed to select are the ones already recorded in the PCC file of TRIBES. If you try to select a tribe that is not in this file, you will get “beeped.” Attributes like tribe, with values that must be looked up in a table or file, are called “**set-of-values**” attributes.

TRIBE is only one of many “set-of-values” attributes in the PCC. Whenever QMan sees this type of attribute, he does two special things. First, the system assumes that the condition used in the query is always going to be “=.” Therefore, the system does not ask you to specify a condition. Second, the system allows you to specify *more than one value* for the attribute.

For example, you could specify only one value for tribe, `TRIBE = NAVAJO`. Or you could specify, say, three values; `TRIBE = NAVAJO or HOPI or APACHE`. What does this mean? If a person is a member of any of the three specified tribes, the query will evaluate as a “hit.” Note that this query employs “or” logic.

```
IF NAVAJO
or
IF HOPI
or
IF APACHE
then
“HIT”
```

A group of values “or’ed” together is called a **taxonomy**. Taxonomies only exist for set-of-values attributes.

## 1.4 Clinical Attributes

So far we have only talked about attributes where there is a one-to-one relationship between the subject and the attribute. For example, a subject (say, a patient) can only have one current community, one Tribe of membership, and one sex. We call this class of attributes “demographic” attributes.

What about cases where there can be a “one-to-many” relationship between the subject and an attribute? This typically happens with clinical attributes. One patient can have multiple diagnoses, multiple prescriptions, multiple blood pressures, multiple weights, and so on. We call this class “clinical” attributes.

## 1.5 Templates and Cohorts

The output of QMan is typically a list of patients. Like taxonomies, these lists can be saved and reused in both QMan and FileMan applications. FileMan calls these lists “search templates.” The word template implies a set of instructions that can be recycled. Spreadsheet users will understand this concept, because a template is similar to a “macro.” In fact, the list of patients is a cohort, not a template. The use of “template” in this context is a serious misnomer, but because PCC is based on FileMan, we are stuck with it.

## 1.6 QMan Data Types

QMan attributes can be categorized according to **data type**. At this point you should be aware of the following data types:

- Numbers
- Dates
- Binary: a small, predefined set of alternatives with each alternative defined by a code; (e.g., “F” = Female and “M” = Male)
- Set-of-values: a large predetermined set of alternatives where each alternative is an entry in a predefined file or table (e.g., ICD9 diagnoses, marital status, etc.)
- Free text: any letters, numbers, or words that the user wants to enter
- Scalar: Neg., Trace, 1+, 2+, 3+, 4+

Each data type is evaluated with a different set of conditions. As a result, the way in which you must deal with each data type is slightly different.

## 1.7 Confidentiality and Data Security

QMan is the PCC user’s most powerful tool for accessing clinical data. When the user elects to exercise this power, the user also accepts the responsibility to protect patient confidentiality. In order to keep sensitive patient data from falling into the wrong hands, QMan employs a four-level security system.

Access to QMan is gained through your Site Manager on a need-to-know basis. First, an access code and a verify code are required to log on to the PCC. Next, users must hold a special electronic key to have QMan show up as a menu option. In addition, users must have a clinical security key to view health-related attributes. Finally, the Site Manager can identify a set of secure output devices that restricts the locations where QMan reports can be printed.

How do you receive an access code, verify code, QMan key, and clinical security key? These are all assigned by your Site Manager.

Each time you log on to QMan, you will see a warning:

```
*****
** WARNING...QMan produces confidential patient information.      **
** View only in private. Keep all printed reports in a secure area.**
** Ask your site manager for the current QMan Users Guide.        **
*****
```

Figure 1-4: Warning after accessing QMan

In addition, each printed report will have the name of the person who requested the report on every page. If the report gets out of a secure area, it is easy to track down the person at fault. Those printing reports for others can have a QMan security key that allows them to indicate the name of the person for whom the report is being printed. In that way, both participants responsible for the report being generated will appear on the report cover page.

Even though an elaborate electronic security system is in place, the ultimate responsibility for maintaining confidentiality rests with you, the user.

**Do not ever share your access/verify codes with another user!**

Anyone caught doing this should have their PCC access privileges immediately revoked.

When you receive printouts from QMan, treat them the same way you would treat a patient chart, psychiatric report, or letter from a consultant.

**Keep the reports in a secure area.**

Do not give the report to another person unless you are certain that this individual will maintain confidentiality. If that person breaks confidentiality, you will be held responsible!

**Shred each report as soon as it is no longer needed.**

Do not leave it on your desk, and do not file it somewhere where it might be forgotten and discovered years later.

You are subject to fines of up to \$5,000 for inappropriate use or disclosure of confidential patient data. In addition to criminal prosecution, you are personally liable for punitive damages resulting from civil lawsuits. A serious breach of security could cause the entire PCC system to be shut down.

**Please, Take Security Seriously!**

A lot of new concepts have been introduced in this section. If you understand the following terms, you are ready to start work at the keyboard:

| Term           | Term       | Term              | Term         |
|----------------|------------|-------------------|--------------|
| access code    | clinical   | search efficiency | set of codes |
| attribute      | attributes | rating (SER)      | demographic  |
| condition      | operator   | search template   | attribute    |
| electronic key | query      | (cohort)          | subject      |
| hit            | search     | security code     | taxonomy     |

At this point, it is a good idea to check with your Site Manager to confirm that everything is in order. If the Site Manager gives the “okay,” you can proceed to the next section. Be sure you fully understand the security warnings outlined in the previous section.

## 2.0 Release Notes

BJPC Version 2.0 Patch 2 contains the following modifications and enhancements. The identification number listed in the parentheses (e.g., CR274) refers to the specific change request (CR) requirement.

### 2.1 Designated Provider Specialty Management (BDP)

The following modifications apply to the BDP application:

- Do Not Display Flag: Added functionality to allow the site to flag a provider category to not be displayed in the Demographic component of the health summary. This was accomplished by adding a new field to the BDP DESG SPEC PROV CATEGORY file called “DISPLAY ON HEALTH SUMMARY.” The option called Add Local Provider Categories was renamed Add/Edit Provider Categories and this field was added to the list of data elements to update. (CR295)
- New Specialty Categories: Added three new categories: HIV Case Manager, HIV Provider, and Public Health Nurse. (CR274 and CR102)
- Populate New Specialty Categories: Added a post-init action that copies the existing HIV Case Manager and HIV Provider from the HIV Management System to this package. (CR274)

### 2.2 PCC Data Entry (APCD)

The following changes apply to the APCD application.

#### Family History Modifications

- Modified the FHX mnemonic to be a list manager-based interface that allows the user to add, edit, or delete Family History entries.(CR216 and CR320)
- Modified the entry of family history to stuff the ICD narrative if no provider narrative is entered. (CR 324)

#### 2.2.1 Visit Re-Linker Log

Created a log to track all visits modified through the visit re-linker process. These visits have had one or more V File entries moved or re-linked to another visit. A report lists all visits that were modified by the re-linker process, and options are provided to purge the log and to display a visit by its Internal Entry Number (IEN) to make review of the visits easier. This is a prospective change, meaning that only visits affected by the re-linker after the installation date of this version (Version 2.0) of the IHS PCC Suite will be logged and reported. (CR013)

## 2.2.2 Visit Delete/Merge Log

Created a log to keep track of all deleted or merged visits. A report lists all deleted or merged visits, and an option to purge the log is provided. The visit delete option was modified to prompt for a reason for the visit deletion; this prompt is optional. This is a prospective change, meaning that only visits deleted or merged after the installation date of this version (Version 2.0) of the IHS PCC Suite will be logged and reported.

These options can be found on the following menu under the PCC Supervisor menu: (CR239)

- VRLR List of Visits Modified by the Visit Re-Linker
- PVRL Purge Visit Re-linker Log
- PVDM List of Visits Deleted/Merged
- PUDM Purge Visit Delete/Merge Log
- VIEN Display a Visit by Visit IEN

## 2.2.3 3M Present on Admission

Added Present on Admission as a prompt in the 3M coder interface. (CR254)

## 2.2.4 Personal History (PHX)

Added two new fields: Multiple Birth? and Multiple Birth Type to the PHX mnemonic. (CR244)

## 2.2.5 Problem List Note Narrative Length

Expanded the Note Narrative to 160 characters. (CR323)

## 2.2.6 Provider Narrative Length

All mnemonics that prompt for provider narrative will accept up to 160 characters for the provider narrative. This has been increased from 80 characters.

## 2.2.7 Patient Education (PED): Readiness to Learn

Added Readiness to Learn and re-sequenced the prompts according to the Education workgroup recommendations. (CR242)

## 2.2.8 Asthma Control (ACON)

Added a new mnemonic, ACON, to update and record a patient's asthma control. (CR240)

## 2.2.9 POV Stage

Disabled the stage prompt for asthma severity when an asthma diagnosis is entered; this function has been moved to the new Problem List Classification. (CR278)

## 2.2.10 Problem List Classification Field

Added a new field in the BGP ASTHMA DXS taxonomy, Classification, to be prompted for when an asthma diagnosis is entered. Allowable values are 1, 2, 3, or 4, which stand for 1-Intermittent, 2-Mild Persistent, 3-Moderate Persistent, and 4-Severe Persistent. The following mnemonics were updated: PL, PO, and MP. (CR207, CR276)

## 2.2.11 Reproductive Factors Mnemonics

FP and RF mnemonics have been restructured to prompt for reproductive history with individual fields rather than a string.

## 2.3 PCC Health Summary (APCH)

The following changes apply to the APCH application.

### 2.3.1 Patient Wellness Handout Management

Created a new menu for managing patient wellness handouts (PWHs). The user can now select from 14 components to create a customized PWH.

#### Menu

- PWH - Generate a Patient Wellness Handout
- DEF - Update Default PWH for a Site
- AAP - Print Asthma Action Plan
- MPWT - Create/Modify Patient Wellness Type
- TPWH - Number of PWHs Given to Patients Report

The following PWH components are available:

|                        |                        |
|------------------------|------------------------|
| ACTIVITY LEVEL         | HEIGHT/WEIGHT/BMI      |
| ALLERGIES              | HIV SCREENING          |
| ASK ME THREE QUESTIONS | IMMUNIZATIONS DUE      |
| BLOOD PRESSURE         | IMMUNIZATIONS RECEIVED |
| CANCER SCREENING       | MEDICATIONS            |
| CHOLESTEROL            | PATIENT GOALS          |

|               |                                             |
|---------------|---------------------------------------------|
| DIABETES CARE | QUALITY OF CARE<br>TRANSPARENCY REPORT CARD |
|---------------|---------------------------------------------|

Two standard PWH types are distributed with this version:

- **Adult Regular:** Contains all 14 components
- **Medication Reconciliation:** Contains Medications and Allergies

A PWH log was created. Each time a PWH is generated, the log records the patient to whom the handout was given, the date, the location, and the user who generated the handout. A report has been developed to tally PWH production.

The default wellness handout to be used at a site can be defined by updating that field in the PCC Master control file using option DEF Update Default PWH for a Site.

### 2.3.2 Health Summary Component (New) for Tallying Patient Wellness Handouts

Created a new component to list the PWHs given to a patient.

### 2.3.3 Health Summary Component (New) for Patient Wellness Handout

Created a component to display the full PWH for a patient.

### 2.3.4 Health Summary Component (New) for Meds - Controlled Substances

Created a component to list all prescriptions for controlled substances.

### 2.3.5 Health Summary Component Modification: Lab

Added the date and time of lab results to both the LAB DATA - MOST RECENT BY DATE and the LABORATORY DATA - MOST RECENT components. (CR171)

### 2.3.6 Health Summary Component Modification: Medication

Modified the text “on hold” to “active but not yet dispensed.”

### 2.3.7 Health Summary Component Modification: Family History

Modified the format to sort by the new Relationship field and display the new fields, and renamed the component to FAMILY HEALTH HISTORY. The component now displays the following fields: Relationship (to patient), Relation Description, Status (e.g., Living, Deceased, etc.), Diagnosis, Age at Onset; Multiple Birth (Y/N), and Type (e.g., Twin, etc.). If Status is “deceased,” Age at Death and Cause of Death are displayed. (CR225, CR325)

### 2.3.8 Health Summary Component Modification: Reproductive Factors

The previous Reproductive Factors (REPFAC) string display (GPLCSATA) has been changed to the following string, which is a concatenation of the new Reproductive History Component fields with each field separated by a semicolon. The entire string will be displayed for any patient who has *at least one value* in any of the Component fields.

Total number of Pregnancies; Full Term; Premature; Abortions, Induced; Abortions, Spontaneous; Ectopic Pregnancies; Multiple Births; Living Children

### 2.3.9 Reminder (New): Osteoporosis Screening

Added a reminder for osteoporosis screening in women ages 65 and older; the logic is consistent with the Clinical Reporting System (CRS) performance measure. The screening is due every two years. The reminder is turned off in the default package; to see this reminder on a health summary a site must activate the reminder and attach it to the summary types. (CR237)

### 2.3.10 Reminder (New): Assessment of Function

Added a reminder for assessment of function as an annual screening for patients 65 and older. Assessment of function includes assessing ability for toileting, bathing, shopping, etc. This data is captured in PCC using the EL mnemonic and it populates the V Elder file. The reminder is turned off in the default package; to see this reminder on a health summary, a site must activate the reminder and attach it to the summary types. (CR188)

### 2.3.11 Reminder Modification: Pap and Mammogram Reminders

Modified the Pap and Mammogram health maintenance reminders to use the next due date in Women's Health only if it is more current than the due date in Health Summary reminders. (CR257)

### 2.3.12 Reminder Modification: Alcohol Screening

Added a check for Current Procedural Terminology (CPT) codes using the BGP ALCOHOL SCREENING CPTS taxonomy (99408, 99409, G0396, G0397, and H0049) in both PCC and the Behavioral Health module, making the reminder more consistent with the CRS performance measure. (CR109)

### 2.3.13 Reminder Modification: Adult MMR 2-DOSE Version

Fixed this reminder to look for CPT codes, diagnosis codes, and procedure codes for the measles, mumps, and rubella (MMR) vaccines. (CR109)

### 2.3.14 Reminder Modification: Diabetes Screening

Changed category to “General.” (CR109)

### 2.3.15 Reminder Modification: Colorectal Scope/XRAY

Modified logic to reference BGP COLO PROCS and BGP SIG PROCS taxonomies, rather than individual procedure codes. (CR109)

### 2.3.16 Asthma Action Plan (New Report)

Added the asthma action plan from the asthma register system to the health summary. This menu option can be found under the new PATIENT WELLNESS HANDOUT menu. The action plan has been redesigned according to the Asthma Workgroup specifications and includes new fields added in this PCC version as well as the previous version. (CR281)

### 2.3.17 Problem List Display

Added classification to the problem list display if it is entered. (CR277)

### 2.3.18 Supplement Modifications: Asthma

Redesigned the asthma supplement according to the Asthma Workgroup specifications and included new fields added in this PCC version as well as the previous version. (CR289)

### 2.3.19 Reminders and Best Practice Prompts Text Modifications

Updated the description, logic, display text, and tooltips for all reminders and Best Practice prompts.

### 2.3.20 Best Practice Prompts Modifications

Updated the logic and text for the following Best Practice prompts:

- ASTHMA: ACTION PLAN
- ASTHMA: ADD/INCREASE INHALED STEROIDS
- ASTHMA: CONTROL CLASSIFICATION
- ASTHMA: FLU SHOT
- ASTHMA: INCREASED RISK FOR EXACERBATION
- ASTHMA: PRIMARY CARE PROVIDER
- ASTHMA: SEVERITY CLASSIFICATION

## 2.4 PCC Management Reports (APCL)

The following changes apply to the APCL application.

### 2.4.1 Activity Reports

Modified certain reports to prompt the user for two additional filters, Location of encounter and Clinic, which limit the report to a selected set of locations or clinics. The following reports, listed by discipline group, were updated: (CR205)

- TSPR Time and Patient Services by Provider
- TSSU Time and Patient Services by Service Unit
- PPPR Primary Problem by Provider
- PPLO Primary Problem by Facility
- PPSU Primary Problem by Service Unit
- INPR Number of Individuals seen by Provider
- INSU Number of Individuals seen by Service Unit
- AGE Patient Services by Age and Sex
- TEN Top Ten Primary Diagnoses
- TSCR Time and Services by Provider for Chart Reviews

### 2.4.2 DEMO PATIENTS Report Filter

All PCC Management reports have been updated to prompt users whether to include a site's Demo/Test patients in their reports.

To use this feature, the site's demo patient search template must be updated to include all of its Demo/Test patients. This option is locked with the security key APCLZ UPDATE DEMO TEMPLATE, which should be assigned to the user or users who manage this list of patients. Choosing the new option, DPST Update the Demo/Test Patient Search Template (under OTH Other PCC Management Reports/Options in the PCC Management Reports menu), adds the Demo/Test patients to the list.

The following prompt now displays when a management report is run:

```
Select one of the following:
  I      Include ALL Patients
  E      Exclude DEMO Patients
  O      Include ONLY DEMO Patients
Demo Patient Inclusion/Exclusion: E//
```

Type **E** to exclude any patient who is on the Demo/Test patient list from the report. Type **I** to include all patients, including the Demo/Test patients, or type **O** to include only the Demo/Test patients. (CR287)

### 2.4.3 PGEN/VGEN Menus

Updated to allow the user to select one of three menu display options for the Selection, Print, and Sort items: (1) in a predefined order (the original display option); (2) in alphabetical order by item title; or (3) in order by category group. (CR251)

### 2.4.4 PGEN/VGEN

Added the new Select/Sort/Print options listed below:

- Date of Last Osteoporosis Screen: Added as a PGEN Select, Sort, and Print item because it is a new health maintenance reminder. (CR226)
- Readiness to Learn: Removed as a Health Factor PGEN and VGEN Select, Sort, and Print item, because it is no longer a health factor. (CR242)
- Upcoming Appointments: Added as a PGEN Select and Print item and a VGEN Print and Sort item. When used as a Select item, the user can select the appointment date range and appointment clinics. The report lists only patients who have an appointment in one of those clinics during that date range, and the Print item displays only upcoming or pending appointments. Walk-in and chart requests are excluded from the pending appointment display in the Print item. (CR126)
- Problem List Date of Onset: Added as a PGEN and VGEN Select and Print item. If used as a Select item, the user must enter the beginning and ending date and may specify a particular set of diagnoses. When used as a Print item, the system prints all entries from the problem list with the date of onset, unless this item was also used as a Select item. In this case only the problem list entries matching the selected diagnoses will be printed. (CR072)
- Family History-related: Family History Dx, Family Hx and Relation, Family History Relation, Family Hx Narrative and Family Hx Description (diagnosis, narrative, age at onset, relation) were all added as PGEN and VGEN Select and Print items. (CR Child315)
- Present on Admission (POA): Added as a VGEN Select and Print item. (CR062)

- CPT Modifier: Added as a VGEN Select and Print item.

## 2.5 QMAN (AMQQ)

The following changes apply to the AMQQ application:

- Added DV as a synonym for IPV.
- Changed attribute text from PRIMARY PROVIDER to PRIMARY CARE PROVIDER
- Added upcoming appointments as a Print item when printing a list of patients in QMan.
- Corrected the diagnosis display for the IHS Prediabetes Register.
- Added Family History as a search option.
- Updated Health Factor selection to allow the user to enter a category to retrieve a list of its health factors.
- Added the ability to create a delimited output of the QMan results by having the output print to a screen, and then taking a screen capture of the delimited output.
- Added the ability to go directly to VGEN or PGEN's print output from QMan by creating a search template in QMan. When template creation is complete, the user is transferred to PGEN or VGEN.

## 2.6 General Database (AUPN)

- V Asthma: Added field .14 – Asthma Control. (CR206)
- V Lab: Added field 1502 – FINDINGS to the V LAB file. This field will be populated by the Procedure Workflow Tracking System (BTPW) when the software is deployed. (CR239)
- V Patient Education: Added Readiness to Learn as field 1102. (CR242)
- V Radiology: Added field 1502 – FINDINGS to the V RADIOLOGY file. This field will be populated by the Procedure Workflow Tracking System (BTPW) when the software is deployed. (CR239)
- Personal History: Added field .06 – MULTIPLE BIRTH? to the Personal History File. Patient Multiple Birth?: Yes/No/Unknown. (CR244)
- Personal History: Added field .07 – MULTIPLE BIRTH TYPE to the Personal History file. Multiple Birth Type values: Twin, Unspecified (TU); Identical Twin (IT); Fraternal Twin (FT); Triplet (TR); Other Multiple (OTH). (CR244)
- Problem: Expanded Note narrative to 160 characters. (CR323)
- Provider Narrative: Expanded narrative to 160 characters. (CR258)

- **FAMILY HISTORY FAMILY MEMBERS:** Created new file with the following fields: (CR 199/CR 322)

|     |                      |
|-----|----------------------|
| .01 | RELATIONSHIP         |
| .02 | PATIENT              |
| .03 | RELATION DESCRIPTION |
| .04 | STATUS               |
| .05 | AGE AT DEATH         |
| .06 | CAUSE OF DEATH       |
| .07 | MULTIPLE BIRTH       |
| .08 | MULTIPLE BIRTH TYPE  |

- **FAMILY HISTORY:** Modified the existing file (CR 199/CR 322):
  - Moved the Status field to the new FAMILY HISTORY FAMILY MEMBER file.
  - Added an asterisk (\*) in front of the STATUS field to alert users that it will be going away.
  - Added field .09, which is a pointer to the Family History Family Member file.
  - Inactivated field .07 – Relationship.
  - Added new MULTIPLE BIRTH and MULTIPLE BIRTH TYPE fields. (CR199)
  - Added CAUSE OF DEATH field, which is displayed if the STATUS field is DECEASED. (CR199)
  - Added new AGE AT ONSET and AGE AT DEATH fields with the following choices:

|               |              |
|---------------|--------------|
| In Infancy    | At age 40-49 |
| Before age 20 | At age 50-59 |
| At age 20-29  | 60 and older |
| At age 30-39  | Age Unknown  |

- Inactivated the numeric Diagnosis Onset Age field.
- Changed field .01 to allow only ICD Diagnosis codes V16\*; V17\*; V18\*; and V19\*. (CR245)
- **REPRODUCTIVE FACTORS:** Implemented requested changes to Reproductive Factors fields.

- Added and/or activated the following new fields: Full Term (previous request); Premature Births (previous request for Preterm Births); Ectopic Pregnancies; Multiple Births.
- Inactivated Parity and Abortions/Miscarriages/Ectopic Pregnancies fields.
- V Telehealth: Created new file with the following fields:

|      |                       |
|------|-----------------------|
| .01  | Primary Modality      |
| .02  | Patient Name          |
| .03  | Visit                 |
| .04  | Originating Date/Time |
| .05  | Service Date/Time     |
| .06  | Secondary Modality    |
| .07  | Case ID               |
| .08  | Originating Provider  |
| .09  | Requesting Provider   |
| .11  | Service Delivery      |
| .12  | Originating Visit     |
| .13  | Status Field          |
| .14  | Duration              |
| 1101 | Comments              |
| 1102 | Link To Case          |

### 2.6.1 Table Changes

- PCC RELATIONSHIPS: Created new table for Family History.
- TELEHEALTH: Created new tables for Modality and Service Category.
- EXAM: Inactivated the following exam codes: (CR241)
  - 2.7 23 - Audiometric Screening
  - 2.8 08 - Heart Exam
  - 2.9 05 - Neck Exam
- HEALTH FACTORS: Modified the Health Factors file to display the category when a lookup is performed on the file, and to allow the user to type the category name to retrieve a list of health factors to choose from. (CR255, CR256, CR217)

Changed the name of the following Health Factors: (CR234)

| <b>Old Name</b>                         | <b>New Name</b>           |
|-----------------------------------------|---------------------------|
| ASTHMA TRIGGER-AIR POLLUTANTS           | AIR POLLUTANTS            |
| ASTHMA TRIGGER-ANIMAL                   | ANIMAL                    |
| ASTHMA TRIGGER-COCKROACHES              | COCKROACHES               |
| ASTHMA TRIGGER-DUST MITES               | DUST MITES                |
| ASTHMA TRIGGER-EXERCISE                 | EXERCISE                  |
| ASTHMA TRIGGER-MOLD                     | MOLD                      |
| ASTHMA TRIGGER-POLLEN                   | POLLEN                    |
| ASTHMA TRIGGER-TOBACCO SMOKE            | TOBACCO SMOKE             |
| BARRIERS TO LEARN-BLIND                 | BLIND                     |
| BARRIERS TO LEARN-DEAF                  | DEAF                      |
| BARRIERS TO LEARN-DOESN'T READ ENGLISH  | DOESN'T READ ENGLISH      |
| BARRIERS-FINE MOTOR SKILLS DEFICIT      | FINE MOTOR SKILLS DEFICIT |
| BARRIERS TO LEARN-HARD OF HEARING       | HARD OF HEARING           |
| BARRIERS TO LEARNING-INTERPRETER NEEDED | INTERPRETER NEEDED        |
| BARRIERS TO LEARNING-NO BARRIERS        | NO BARRIERS               |
| BARRIERS TO LEARNING-VALUES/BELIEFS     | VALUES/BELIEFS            |
| BARRIERS TO LEARN-VISUALLY IMPAIRED     | VISUALLY IMPAIRED         |
| SELF MONITORING BLOOD GLUCOSE-NO        | NO                        |
| SELF MONITORING BLOOD GLUCOSE-REFUSED   | REFUSED                   |
| SELF MONITORING BLOOD GLUCOSE-YES       | YES                       |
| LEARNING PREFERENCE-DO/PRACTICE         | DO/PRACTICE               |
| LEARNING PREFERENCE-READ                | READ                      |
| LEARNING PREFERENCE-SMALL GROUP         | SMALL GROUP               |
| LEARNING PREFERENCE-TALK                | TALK                      |

| Old Name                     | New Name                |
|------------------------------|-------------------------|
| LEARNING PREFERENCE-VIDEO    | MEDIA                   |
| RUBELLA IMMUNE               | IMMUNE                  |
| RUBELLA NON-IMMUNE           | NON-IMMUNE              |
| RUBELLA STATUS INDETERMINATE | STATUS<br>INDETERMINATE |
| TB-TX COMPLETE               | TX COMPLETE             |
| TB-TX INCOMPLETE             | TX INCOMPLETE           |
| TB-TX UNKNOWN                | TX UNKNOWN              |
| TB-TX UNTREATED              | TX UNTREATED            |

Added the following Health Factors: (CR234)

| Factor                                    | Category        |
|-------------------------------------------|-----------------|
| CHANGE IN WEATHER                         | ASTHMA TRIGGERS |
| MENSES                                    | ASTHMA TRIGGERS |
| OTHER TRIGGER                             | ASTHMA TRIGGERS |
| STRONG EMOTIONAL EXPRESSION               | ASTHMA TRIGGERS |
| VIRAL INFECTION                           | ASTHMA TRIGGERS |
| LESS THAN 6 <sup>TH</sup> GRADE EDUCATION | ASTHMA TRIGGERS |
| RETIRED                                   | OCCUPATION      |
| TX IN PROGRESS                            | TB STATUS       |

Inactivated the following Health Factors: (CR234)

| Factor                                 |
|----------------------------------------|
| BARRIERS TO LEARN-COGNITIVE IMPAIRMENT |
| DOES NOT SPEAK ENGLISH                 |
| EMOTIONAL IMPAIRMENT                   |
| BARRIERS-SIGN INTERPRETER NEEDED       |
| READINESS TO LEARN-NOT READY           |
| READINESS TO LEARN-PAIN                |
| READINESS TO LEARN-RECEPTIVE           |
| READINESS TO LEARN-SEVERITY OF ILLNESS |

| Factor                         |
|--------------------------------|
| READINESS TO LEARN-UNRECEPTIVE |
| 7-FOOD AND EXERCISE (MAINTAIN) |

## 2.10 Other Changes

### 2.10.1 Asthma Severity Conversion

Used a conversion to move asthma severity from the V POV file to the Problem List. (CR207)

### 2.10.2 Taxonomies

The following national taxonomies were added for use with the Asthma Supplement, Action Plan, and Best Practice Prompts:

- BAT ASTHMA SHRT ACT RELV NDC (reliever)
- BAT ASTHMA SHRT ACT RELV MEDS (reliever)
- BAT ASTHMA SHRT ACT INHLR NDC (reliever)
- BAT ASTHMA SHRT ACT INHLR MEDS (reliever)
- BAT ASTHMA LEUKOTRIENE NDC (controller)
- BAT ASTHMA LEUKOTRIENE MEDS (controller)
- BAT ASTHMA CONTROLLER NDC (controller)
- BAT ASTHMA INHLD STEROIDS NDC (controller)

### 2.10.3 New APIs for the VA Reminders

Added APIs for the VA Reminders package to retrieve the last of each item. (CR172)

Each call is in the following format:

S X=\$\$linelabel^APCLAPIR(dfn, beginning date, ending date)

where

dfn = Patient DFN

beginning date = internal fileman date to begin searching for the item; if blank, DOB will be used.

ending date = internal fileman date to end searching for the item; if blank, DT (today's date) will be used.

The output of each call is in the following format:

1 or 0^date^item^value^visit ien^file^file ien

where

piece 1 = 1 if item found, 0 if no item found in the date range

piece 2 = date of last item found

piece 3 = text of item found

piece 4 = result

piece 5 = ien of visit on which item was found

piece 6 = file in which item was found (usually a V File )

piece 7 = ien of V File in which entry was found

The following APIs have been added:

|                                     |                       |
|-------------------------------------|-----------------------|
| Alcohol Screening                   | \$\$REMALSC^APCLAPIR  |
| Depression Screening                | \$\$REMDEPS^APCLAPIR  |
| Assessment of Function              | \$\$REMAOF^APCLAPIR   |
| Blood Pressure                      | \$\$REMBP^APCLAPIR    |
| Breast Exam                         | \$\$REMBRST^APCLAPIR  |
| Cholesterol                         | \$\$REMCHOL^APCLAPIR  |
| Dental Exam                         | \$\$REMDENT^APCLAPIR  |
| Diabetes Screening                  | \$\$REMGLUC^APCLAPIR  |
| Intimate Partner Violence Screening | \$\$REMIPVS^APCLAPIR  |
| EPSDT Screening                     | \$\$REMEPSDT^APCLAPIR |
| Head Circumference                  | \$\$REMHC^APCLAPIR    |
| Hearing Exam                        | \$\$REMHEAR^APCLAPIR  |
| Height                              | \$\$REMHT^APCLAPIR    |
| Influenza Immunization              | \$\$REMFLU^APCLAPIR   |
| Mammogram                           | \$\$REMMAMM^APCLAPIR  |
| Osteoporosis Screening              | \$\$REMOSTEO^APCLAPIR |
| Pap Smear                           | \$\$REMPAP^APCLAPIR   |
| Pelvic Exam                         | \$\$REMPEVL^APCLAPIR  |
| Physical Exam                       | \$\$REMPHYS^APCLAPIR  |
| Pneumovax                           | \$\$REMPNEU^APCLAPIR  |
| Rectal Exam                         | \$\$REMRECT^APCLAPIR  |
| Rubella                             | \$\$REMRUBEL^APCLAPIR |
| TD                                  | \$\$REMTD^APCLAPIR    |
| Tobacco Screening                   | \$\$REMTOBS^APCLAPIR  |
| Tonometry                           | \$\$REMTON^APCLAPIR   |

|                    |                     |
|--------------------|---------------------|
| Visual Acuity Exam | \$\$REMVAE^APCLAPIR |
| Weight             | \$\$REMWT^APCLAPIR  |

### 2.10.4 Family History Data Conversion

Added a post-init routine to perform the following tasks: (CR199 and CR321)

- Convert the relationship and status data from the Family History file and move it to the new Family History Family Member file.
- Stuff a family member of UNKNOWN into the Family member field for all entries that currently have no Relation/Family member entered.
- Convert the existing numeric diagnosis onset age (if any) to the corresponding new Age of Onset codes.

### 2.10.5 Reproductive History String Conversion

Converted the existing Reproductive History field to new fields. If the existing Reproductive History field is populated with a number, including the "0" option, any existing values in the string are copied to new fields as follows:

- G = Gravida
- P = Full Term
- LC = Living Children
- SA = Spontaneous Abortions
- TA = Therapeutic Abortions

## 3.0 QMan Rules and Conventions

Right now, you probably have access to a PCC computer and have some knowledge of how to use the system. If this is not the case, **Stop Here** and get some basic training from your Site Manager.

For those who are familiar with FileMan (or a FileMan-based system like the PCC), QMan dialogue instructions will be easy to learn. QMan dialogues look a lot like FileMan dialogues. This chapter will explain which standard FileMan conventions are used by QMan, introduce conventions specific to QMan, and point out specific FileMan conventions *not* used by QMan.

### 3.1 Conventions Shared by QMan and FileMan

You control QMan by carrying on a conversation with it. This is accomplished through a series of prompts, or questions, posed to you by QMan. Your responses to the prompts or questions determine what QMan will do for you.

#### 3.1.1 Double Slash (//) and the Enter/Return Key

Frequently, QMan will ask you a question, followed by a prompt, followed by two slashes (//). The option displayed before the two slashes is the default for that question. On the first screen of QMan, illustrated below, the default response is LIVING PATIENTS. Pressing the Enter key will select the default (this is so you do not have to type it out). QMan will always display your choice and then provide the next prompt.

```
What is the subject of your search? LIVING PATIENTS // <Enter> LIVING PATIENTS
```

Figure 3-1: Sample prompt from QMan

If you do not want to take the default value (or if no default value is presented with double slashes) simply type in your response and then press the Enter key.

#### Important Instructions!

Whenever you see **boldface type like this** in samples of display screens, it indicates what you would enter, then press the Enter key to obtain the displayed response from QMan. If the display screen sample shows only the prompt followed by a colon (:), or two double slashes (//) without any boldface type, simply press the Enter key without entering anything. The previous example (Figure 3-1) shows that pressing the Enter key automatically selects the default subject of LIVING PATIENTS. Note that the default selection is followed by the conventional double slashes (//).

**Note:** Whenever you type in a response, nothing will happen until you press the Enter key.

### 3.1.2 Uppercase (Capital) Letters

Note that the phrase, LIVING PATIENTS, is in all uppercase (capital) letters. As with most PCC applications, using all caps when interacting with QMan is a must. Use the shift lock key whenever you log on to any PCC application. Remember that a computer keyboard acts differently than a typewriter keyboard. The shift lock only affects letters, but has no effect on numbers or punctuation keys.

### 3.1.3 Single Spaces between Words

Spaces are meaningful to FileMan and QMan. They expect *single* spaces between words. In the example below, QMan does not recognize the first two responses because of spacing errors.

```
Subject of your search? LIVING PATIENTS // DEADPATIENTS ??
Subject of your search? LIVING PATIENTS // DEAD PATIENTS ??
Subject of your search? LIVING PATIENTS // DEAD PATIENTS

Subject of search: PATIENTS
NOT ALIVE TODAY [SER = .01]
```

Figure 3-2: Example of spacing errors in QMan

### 3.1.4 Online Help

If you want to know what other options are available besides PATIENTS in this example, you could enter a question mark (?) and then press Enter. Doing this will make QMan display a help screen. If you enter two question marks (??) at a prompt, a second, more detailed level of help is displayed. In some cases, entering three question marks, or occasionally even four question marks, will provide even more extensive help.

```

What is the subject of your search?  LIVING PATIENTS // ? <Enter>

Enter the subject of your search.  This is usually a PATIENT or a set of PATIENTS.

If, in fact, you are searching for PATIENTS, enter a term like 'PATIENTS', 'MALES',
'INFANTS' etc.  You can also enter the name of a specific individual, e.g., 'JOHN
DOE'.

You can also search for clinical information.
An individual provider may be identified by name, e.g., 'JOHN SMITH'.

If I find that your request is ambiguous, I will ask questions to resolve the
ambiguity.

In some cases, it is possible to enter a simple request such as 'SHOW ME JOHN DOE'S
LAST 20 BLOOD SUGARS'.  This doesn't always work, but it is worth a try!!

To display all choices, type '??'.

What is the subject of your search?  LIVING PATIENTS // ?? <Enter>

Possible choices:
  DEAD PATIENTS
  FEMALES
  INFANTS
  LIVING PATIENTS
  MALES
  PATIENT
  PROVIDER
  RANDOM SAMPLE OF PATIENTS
  RANDOM SAMPLE OF VISITS
  VISIT
  WOMEN OF CHILDBEARING AGE

```

Figure 3-3: Entering question marks to receive online help

The best strategy for beginners is to start with the first level of help, and progress through the next levels only as necessary.

### 3.1.5 Backspace Key

In QMan, your Backspace key should operate normally; that is, it should move the cursor to the left, erasing characters as it goes. On some systems, the backspace key will be non-functional, and another key (e.g., the Delete key) will take its place. If you are having problems with the backspace key, check with your Site Manager.

### 3.1.6 Up Arrow (Halting at Prompts)

A special character, the carat symbol ( ^ ), often referred to as the “up arrow”, is created by simultaneously pressing the SHIFT + 6. The caret symbol is used to stop a particular activity or exit from a data entry sequence. Entering the “^” at any prompt will usually take you back to the preceding prompt or menu level. The “^” can also be used to exit from a long list of results scrolling across the screen.

### 3.1.7 Time and Date Conventions

When a QMan prompt calls for the entry of a specific date, there are several ways that the information may be entered. To enter May 20, 1988, you could type any one of the following:

May 20, 1988  
5/20/88  
05-20-88

Generally, it is best to select one style of date entry and use it all the time. Choose the form that you find easiest to work with. QMan will consider the date May 20, 1988 to begin one second after midnight, or 12:00:01 AM.

There is one format which you should avoid. Do not separate day, month, and year by spaces; for example, 1 23 87. Spaces have a special meaning to QMan outside of the context of dates. Under certain circumstances, this format will confuse QMan.

FileMan users will be happy to know that QMan supports the “T” syntax. Simply entering a T or “TODAY” in response to a date prompt will cause the system to use the current date. Enter T with a (+) or (-) value will cause QMan to use a value of today’s date plus or minus the indicated number of days. For example, if the current date is May 20, 1990, entering T-10 would cause QMan to use a date of May 10, 1990. Entering T-365 is a quick way to signify “one year ago.”

Time is entered using the “@” character; e.g., 1/5/46@1830 means January 5th, 1946 at 6:30 PM. Another way to enter this same date/time is 1/5/46@630pm. Unless otherwise indicated, QMan assumes that all times fall between the hours of 6 a.m. and 6 p.m. Thus, if you enter “@3” in response to a prompt, the system will convert this to 3:00 PM. An entry of “@9” will become 9:00 AM. If you need to enter a time such as 9:00 PM, you must type in the entire entry. Enter “NOW” to signify the current date and time.

### 3.1.8 Synonyms

QMan has a synonym dictionary to help you build queries more easily. There are over a thousand “root” words and each of these may have several synonyms. For example, you could express the logical operator “greater than” as “>,” “more than,” “over,” or “higher than.”

### 3.1.9 Logic and Boolean Symbols

FileMan's logical symbols, as well as the Boolean symbols, are recognized by QMan.

| Logical Symbols | Boolean Symbols    |
|-----------------|--------------------|
| '&' (and)       | '>' (greater than) |
| '!' (or)        | '<' (less than)    |
| '"' (not)       | '=' (equals)       |
|                 | '<>' (between)     |

You can modify any Boolean symbol with the word "NOT" or the not character "' ' (apostrophe); for example,

"NOT GREATER THAN = ">" and "NOT EQUALS" = "!=".

### 3.1.10 "Left Bracket" Syntax

"Left bracket" syntax is used to restore lists (templates and taxonomies) that have been saved during previous sessions. This esoteric feature will be discussed later in the appropriate context.

### 3.1.11 Partial Entries

A convenient function that QMan borrows from FileMan is the ability to recognize partial entries. You do not always have to type in a complete word or phrase in response to a prompt. For example, you could type "COM" for COMMUNITY. QMan will complete the word for you or give a list of choices that begin with the letters "COM." If you typed "VIS" for visit, the computer would probably give you a choice of "VISIT" or "VISION." So, the more of the word you type, the more likely an accurate match. You will learn as you go, which partial typing shortcuts your system allows.

Here's what your system would offer if you entered "CO" for an attribute:

```

What is the subject of your search? LIVING PATIENTS // <Enter>

Attribute of LIVING PATIENTS: CO <Enter>
  1 CO(2) CO2
  2 COCCI ANTIBODIES COCCIDIODES AB
  3 COHORT COHORT
  4 COLOR OF URINE URINE COLOR
  5 COMMUNITY CURRENT COMMUNITY
TYPE '^' TO STOP, OR
CHOOSE 1-5:

```

Figure 3-4: Sample list of choices from the partial entry of CO

## 3.2 QMan Conventions Not Used by FileMan

The following provides information the QMan conventions not used by FileMan.

### 3.2.1 Control+C (Emergency Bailout)

There can come a time when you just want to stop QMan when you are not at a prompt. You will probably be asking for a report and realize you made a mistake, or simply have a reason to stop whatever you have asked QMan to do. Use Control+C to do this. Hold down the Control key (just like you would the Shift key) and simultaneously press “C.” Keyboards can vary, so be sure you know which key is your Control key before you begin using QMan.

Think of Control+C as your emergency brake, like on a train, or a parachute that lets you “bail out” of whatever you are doing. When you Control+C out, the session is aborted, and you are returned to the opening question. Also, please understand that the Control+C convention is not usually available in other PCC applications, so do not be upset if it fails to work outside of the context of QMan.

|                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Note:</b> Control+C is strictly for emergency halts in the middle of an ongoing procedure. If you are at a prompt, use the carat symbol (^) rather than Control+C.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3.2.2 “<>” (Pause marker)

A prompt specific to QMan is the “<>” (“less than” and “greater than” symbols combined). This prompt at the cursor means you should press the Enter key to continue. It is usually found in lists at the bottom of a screen. Pressing Enter each time the pause marker (<>) appears will make QMan continue the list, screen after screen, until QMan reaches the end.

### 3.2.3 “\*” (Wild card character)

Sometimes you will not want to select one particular value, but rather wish to see all values. To accomplish this, enter an ampersand symbol (\*) or the word “all,” when prompted for a value.

### 3.2.4 Error Management

Do not confuse QMan with Superman. QMan does occasionally get confused and it is possible that certain dialogues could cause QMan to “bomb;” that is, break. In the unlikely event that this happens, QMan will tell you that it does not understand what you want, and it will return you to an earlier place in the dialogue. At this point you should rephrase the query and try again.

On very rare occasions, an error may invalidate the entire search. When this happens, QMan will appear to have brain damage; that is, it will fail to recognize even the simplest request. If you encounter these strange symptoms, go back to the main menu and start over. This action will “reset” QMan and invariably cure the problem.

## 3.3 FileMan Conventions Not Used by QMan

The following provides information about FileMan conventions not used by QMan.

### 3.3.1 Space Bar

In FileMan, the space bar can be used to tell the system to reuse a previous response or use previously entered data. QMan does not use this convention.

### 3.3.2 @ Symbol

The special delete key, the @ symbol, used by FileMan to delete an existing entry in a file, is not used by QMan.

### 3.3.3 Accent Grave

The accent grave (`), used by FileMan as a shortcut to identify specific file entries by number, is not recognized by QMan.

## 4.0 Your First QMan Sessions

This section is for those who are ready to jump into some examples of how to use QMan. Read through the samples carefully because some new concepts beyond conventions and standards will be introduced. If you have access to a demonstration database, it is recommended that you try these examples yourself, then move on to subsequent sections.

### Important Reminder

Before we actually start conversing with QMan, there are two procedural points to clear up.

First, when you log on to QMan, pay attention to the *Version Number* displayed in the opening screen. In this document, we reference the current version of QMan as 2, but the actual version number you are using could be higher.

**If your version of QMan is less than 2, stop here and notify your Site Manager.**

Do not proceed until the current version is installed!

Second, whenever you see **boldface type like this** in sample dialogues, it indicates your typed response to the prompt. Assume that this includes pressing the Enter key at the end of the response. If you see only the prompt without any boldface type, it means to press the Enter key without entering anything else.

**Boldface** = type the boldface characters, then press the Enter key.

## 4.1 Logging-on to QMan

### 4.1.1 Access and Verify Codes

To log on to QMan you must first gain access to the PCC menu system. Your Site Manager will assign an ACCESS CODE and a VERIFY CODE. The verify code must be changed every six months.

*Never* share these codes with any other person; to do so compromises PCC security and could possibly lead to criminal prosecution.

### 4.1.2 Access to QMan: Allotment of “Keys”

The QMan option must appear on one of your menus. This will only happen if your Site Manager assigns you a QMan Users Key. This key will give you access to demographic data but not to clinical information. To have access to clinical information, you will also need to hold a second key, the QMan Clinical Users Key.

Once you have arranged with your Site Manager to receive access keys, you are ready to select QMan from the appropriate menu and get started. The appearance of these menus varies greatly from site to site, so do not expect your menu to look like the one shown in Figure 4-1.

```

                                HEALTH CARE OPTIONS

(PAT)      Patient registration
(PCC)      Patient Care Component
(SCH)      Scheduling Menu
(CHS)      Contract Health System
(CMS)      Case Management System
(QMAN)     QMan (PCC Query Utility)

Select Health Care Option: QMAN <Enter>

```

Figure 4-1: Sample healthcare options menu, Selecting the QMAN option

### 4.1.3 The Primary QMan Menu

After you select the QMan option the following menu is displayed. Select the first choice, “SEARCH PCC Database.” The other choices will be discussed later.

```

                                IHS Query Manager: QMan
                                Version 2
                                Site set to (your facility)

Select one of the following:

1          SEARCH PCC Database (dialogue interface)
2          FAST Facts (natural language interface)
3          RUN Search Logic
4          VIEW/DELETE Taxonomies and Search Templates
5          FILEMAN Print
9          HELP
0          EXIT

Your choice: SEARCH// 1 <Enter>

```

Figure 4-2: Sample primary QMan menu, selecting the SEARCH option

**Note:** This is your first look at a QMan menu. Unlike FileMan menus, all choices are numbered. Make your selection by typing in the number or the first word. Partial entries are accepted. Context sensitive help is available by entering “9”, “?”, or “??.” Enter “0” to go back to the previous menu.

#### 4.1.4 The Startup Screen

Whenever you select the search option from the QMan main menu, the following message will be displayed.

```
***** WELCOME TO QMAN: THE PCC QUERY UTILITY *****  
  
Query utility: IHS QMAN Ver. 2  
Current user: DEMO  
Chart numbers will be displayed for: (your facility)  
Access to demographic data: PERMITTED  
Access to clinical data: PERMITTED  
Programmer privileges: NO
```

Figure 4-3: Sample QMan startup screen

- The first line indicates the version of QMan you are using. Remember, the information in this manual is for Version 2 or higher.
- The second line confirms that you are the current user. When a patient's name appears on a report, QMan will also print a chart number.
- The third line tells you which facility's chart number will be shown on your reports.
- The last three lines indicate which areas of information are accessible to you as a user. Normally, clinical data is only available to healthcare professionals. If you attempt to access clinical data without proper security clearance, QMan will “beep” at you and prevent you from including any clinical attribute in the query.

#### 4.1.5 Specifying the Subject and Attributes of the Search

Now you are ready to enter the query. The first step is to enter the subject of the search. The default is LIVING PATIENTS, but PATIENTS (includes living and dead) is also commonly used. Other choices, such as VISITS and PROVIDERS, will be discussed in detail later.

```
What is the subject of your search? LIVING PATIENTS //  
Attribute of LIVING PATIENTS:
```

Figure 4-4: Sample Subject and Attribute

After entering the subject, QMan will repeatedly ask you to enter attributes. Remember, that these attributes are “and’ed” together. QMan’s synonym dictionary and partial entry recognition capabilities make it easy to respond to his questions. When in doubt, enter anything you think might be close to what you want and chances are QMan will understand what you mean. If not, the computer will simply beep at you and give you an opportunity to try another entry. Do not be afraid. There is no way that you can harm the computer or do any damage while using QMan!

If you need help, enter one or more question marks.

```

What is the subject of your search?  LIVING PATIENTS //
Attribute of PATIENT:  AGE  AGE
Condition:  ? <Enter>

"CONDITION" refers to the Boolean condition used to test this attribute.
Typical conditions are: =, >, <, etc.  Type "??" to see the conditions for
this attribute.

Condition:  ?? <Enter>

Possible choices:
  BETWEEN (inclusive)
  GREATER THAN
  IS
  LESS THAN

Condition:  ABOVE <Enter>  GREATER THAN
Age:  30 <Enter>
Computing Search Efficiency Rating.

```

Figure 4-5: Specifying attributes in QMan

A dictionary of synonyms used by QMan may be found in Appendix B.

#### 4.1.6 A Simple Search

Let's embark on our first search.

Remember that a "search" is a series of queries that (1) share the same subject and (2) are "and'ed" together. QMan will look for those patients that have all of the attributes you designate. In this search, we will create a list of patients who are over the age of 70 (the first attribute) and female (the second attribute). We will proceed through the search, step by step, showing you what would appear on your computer screen if you were actually performing the example.

#### 4.1.7 Entering the Search Criteria

We start with your opening screen.

```

*****  WELCOME TO QMAN: THE PCC QUERY UTILITY  *****

Query utility:  IHS QMAN Ver. 2
Current user:  DEMO
Chart numbers will be displayed for:  (your facility)
Access to demographic data:  PERMITTED
Access to clinical data:  PERMITTED

```

Figure 4-6: Sample QMan opening screen

To begin, press Enter to select the default LIVING PATIENTS as the subject. For the first attribute type AGE, type OVER for the condition, and type 70 for the age in years. QMan shows you a search summary for this first attribute.

```

What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENTS: AGE <Enter> AGE
Condition: OVER <Enter> GREATER THAN
Age: 70 <Enter>
Computing Search Efficiency Rating.

      PATIENT INFORMATION
      AGE GREATER THAN 70      [SER = 93]

```

Figure 4-7: Sample search summary for given attribute

Note that the Search Efficiency Rating can be quite different than the one shown in the example. This is due to the wide variations between patient populations at various sites.

For the second attribute type SEX, and type F for the value. Another search summary is displayed.

```

Attribute of LIVING PATIENTS: SEX <Enter> SEX
CHOOSE FROM:
      M      MALE
      F      FEMALE
Value: F <Enter> FEMALE
Computing Search Efficiency Rating.

      PATIENT INFORMATION
      AGE GREATER THAN 70      [SER = 93]
      SEX IS FEMALE           [SER = .39]

```

Figure 4-8: Sample search summary for given attribute

When finished entering attributes, press the Enter key at the “Attribute” prompt.

### 4.1.8 Displaying the Results

You will then see the following “Output Options” menu displayed. Press the Enter key again to select the default “Display results on the screen.” We will discuss other forms of output later.

```

***** QMAN OUTPUT OPTIONS *****

Select one of the following:

    1      DISPLAY results on the screen
    2      PRINT results on paper
    3      COUNT 'hits'
    4      STORE results of a search in a FM search template
    5      SAVE search logic for future use
    6      R-MAN special report generator
    9      HELP
    0      EXIT

Your choice: DISPLAY// 1

...EXCUSE ME, THIS MAY TAKE A FEW MOMENTS...

```

Figure 4-9: Sample QMan output options menu

As you can see QMan will “think” about your query briefly, usually only a few seconds, and then display the results on your terminal screen.

You can interrupt the display at any time. To stop a search as it is running (when there is no prompt on the screen), press CONTROL+C. If you want to stop a report at the screen prompt “<>” enter the carat symbol ( ^ ) and press Enter.

| PATIENTS<br>(Alive)                      | CHART<br>NUMBER | AGE | SEX    |
|------------------------------------------|-----------------|-----|--------|
| GRANT, TESS                              | 103101          | 90  | FEMALE |
| ROBERTS, FLORENC*                        | 102494          | 89  | FEMALE |
| LINCOLN, LORI*                           | 102224          | 85  | FEMALE |
| JONES, TANYA*                            | 100902          | 72  | FEMALE |
| . . .                                    |                 |     |        |
| WHEELWRIGHT, MIL*                        | 100249          | 71  | FEMALE |
| BURR, GLORIA*                            | 103153          | 71  | FEMALE |
| LINCOLN, GLADYS                          | 100714          | 71  | FEMALE |
| Total: 43                                |                 |     |        |
| Press RETURN to continue or '^' to exit: |                 |     |        |

Figure 4-10: Sample results screen

This is a typical QMan report. The patient is listed in the first column. An ampersand (\*) next to the patient's name means that the patient has at least one alias and might be known by another name.

The local chart number is always shown in the second column (even though you did not request it). The chart number is printed to avoid mistaken identities. If the patient does not have a local chart number, the entry space will be blank. Other data requested in the report will appear to the right of the chart number.

At the end of the search, a total is displayed, followed by the "Press RETURN to continue or '^' to exit:" prompt. Pressing Enter here will place you back at the top of the QMan search menu. Of course, the report above would actually have all 43 names on it. To save space, demo reports in this manual are abbreviated.

#### 4.1.9 Global Functions

This is a quick review of generic, or global, functions. The following table shows how "all," "any," and "null" globals operate.

| Function | Results                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------|
| All      | All attribute values on record                                                                        |
| Any      | Patients who do not have an attribute value recorded + patients who do have attribute values recorded |
| Null     | Patients who do not have an attribute value recorded                                                  |

### 4.1.10 All Global

You might want to display an attribute without specifying a condition. For example, instead of displaying only females, you might want to display the sex of each patient, without specifying male or female. To do this, enter the word “all” when prompted for a condition or value. If the attribute exists for that patient, the query will evaluate as a hit and all results will be printed.

```

Subject of search: PATIENTS
      ALIVE TODAY  [SER = .01]

Attribute of LIVING PATIENTS: SEX <Enter>
CHOOSE FROM:
      M          MALE
      F          FEMALE
Value: ALL <Enter>
Computing Search Efficiency Rating..

      Subject of search: PATIENTS
            ALIVE TODAY  [SER = .01]
            SEX EXISTS   [SER = 0]

Attribute of LIVING PATIENTS:

```

Figure 4-11: Entering “all” at Value prompt

This query produces the following results:

| PATIENTS<br>(Alive) | CHART<br>NUMBER | SEX    |
|---------------------|-----------------|--------|
| ADAMS, AMANDA       | 101500          | FEMALE |
| ADAMS, ANDY         | 101926          | MALE   |
| ADAMS, BARNEY       | 101988          | MALE   |
| ADAMS, BRIAN        | 101981          | MALE   |
| ADAMS, BRUCE        | 101765          | MALE   |
| ADAMS, CALVIN       | 101945          | MALE   |
| ADAMS, CANDY        | 100420          | FEMALE |
| ADAMS, CARRIE       | 101955          | FEMALE |

Figure 4-12: Sample report

### 4.1.11 Null Global

Sometimes, you may want to find patients with no attribute value. For example, “Find all patients with no date of birth recorded in the PCC.” To do this, type NULL when prompted for a condition or value. QMan understands “null” to be the opposite of “all.”

```

What is the subject of your search?  LIVING PATIENTS //

  Subject of search: PATIENTS
    ALIVE TODAY    [SER = .01]

Attribute of LIVING PATIENTS:  DOB <Enter>
Condition:  NULL <Enter>
Computing Search Efficiency Rating.

  Subject of search: PATIENTS
    ALIVE TODAY    [SER = .01]
    DOB: NONE EXIST  [SER = 1]

Attribute of LIVING PATIENTS:

```

Figure 4-13: Entering “null” at Condition prompt

### 4.1.12 Any Global

There are times when you may want to display every result for a given attribute, including null. To do this, type ANY when prompted for a condition or value. “Any” is useful for displaying demographic attribute values on a report, when you are entering the demographic attribute for display and not for the purpose of screening out a patient based on that attribute's value.

```

Attribute of LIVING PATIENTS:  MEDICARE NUMBER <Enter>
Condition:  ALL//  ANY <Enter>

  Subject of search: PATIENTS
    ALIVE TODAY    [SER = .01]
    MEDICARE NUMBER (ANY VALUE INCLUDING 'NULL')

Attribute of LIVING PATIENTS:

```

Figure 4-14: Entering “any” at Condition prompt

This query produces the following results:

| PATIENTS<br>(Alive) | CHART<br>NUMBER | MEDICARE<br>NUMBER |
|---------------------|-----------------|--------------------|
| ADAMS , AMANDA      | 101500          | 987456771          |
| ADAMS , ANDY        | 101926          | -                  |
| ADAMS , BARNEY      | 101988          | 223878232          |
| ADAMS , CHRISTOPHE  | 102342          | -                  |
| ADAMS , DANIELLE    | 101702          | -                  |
| ADAMS , DEE         | 100572          | -                  |
| ADAMS , EVE *       | 103074          | -                  |
| ADAMS , FELIX       | 103126          | 123461234          |
| ADAMS , FRANCIS     | 101798          | -                  |
| ADAMS , FRANCIS     | 101913          | -                  |
| <>                  |                 |                    |

Figure 4-15: Sample report

## 4.2 A Quick Review

Time for a quick review before we go any further.

There will always be a definite pattern to your searches. You will always have

- a Subject
- an Attribute
- a Condition
- a Value

Queries are “and’ed” together to build a search. Multiple values of an individual attribute are “or’ed” together to form a taxonomy. Use ALL as a condition to view only those attributes with a value associated with them. Use ANY as a condition to view the attribute regardless of the result, that is, whether or not a value exists. Use NULL to view attributes with no value currently recorded.

## 5.0 Demographic Attributes

Demographic attributes have a one-to-one relationship with the subject of the search. Patients only have one date of birth, one sex, one social security number, etc. There are five demographic attribute data types that deserve special attention: numeric, date/time, free text, binary, and set-of-values. QMan deals with each data type slightly differently, and this is reflected in the dialogue and in the logical conditions you have available for the query.

### 5.1 Numeric Attributes

Numeric attributes are expressed as integers or decimals. Negative numbers are allowed in the appropriate context. Four logical operators can be used as conditions:

- greater than
- less than
- equals (=)
- between (inclusive)

The “not” modifier can be applied to any of these operators; for example, not greater than, not less than, not =, not between.

```

What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENTS: AGE <Enter> AGE
Condition: NOT OVER <Enter> NOT GREATER THAN
Age: 70 <Enter>
Computing Search Efficiency Rating.

      PATIENT INFORMATION
      AGE '>70      [SER = .11]
etc...

```

Figure 5-1: Entering numeric attributes into QMan

### 5.2 Date/Time Attributes

Four logical operators apply to date/time:

- before
- after
- equals (on the same day)
- between (inclusive)

The “not” modifier can be applied to all of these conditions. Date and time can be expressed in a FileMan compatible format.

Two exceptions should be noted. The format that uses spaces to separate day, month, and year should not be used (e.g., 1 5 46). Also, do not enter an incomplete date such as 1946 or 1952. The month and day must be included.

Time is entered with the “@” syntax. Relative time can be expressed with FileMan’s “T-” and “T+” syntax (see Section 3.1.7 for a review).

```

What is the subject of your search?  LIVING PATIENTS // <Enter>

  Subject of search: PATIENTS
    ALIVE TODAY  [SER = .01]

Attribute of LIVING PATIENTS:  DOB <Enter>
Condition:  AFTER <Enter>
Exact date:  1/1/65 <Enter>  (JAN 01, 1965)
Computing Search Efficiency Rating.

    DOB AFTER JAN 1,1965  [SER = .79]

```

Figure 5-2: Entering date/time attributes into QMan

### 5.3 Free Text

It is usually difficult to do meaningful searches on free text attributes. However, QMan supplies the following free text conditions so that at least some conditional free text retrievals can be made.

Assume that the “file text” is the value of a free text attribute in the database, and the “test text” is the value specified in the query.

**STARTS WITH:** The test text matches the beginning of the file text.

**ENDS WITH:** The test text matches the end of the file text.

**CONTAINS:** The file text contains the test text.

**FOLLOWS:** The file text follows (alphabetically) the test string.

**PATTERN MATCH:** The test text is MUMPS code for a pattern match (programmers only).

For example, suppose you are looking for all patients who live on Main St. The test text is “Main St.” and the operator is CONTAINS. If the file text for a given patient is “456 S. Main St.,” the query will evaluate it as a hit.

The “not” modifier can be applied to all 5 conditions. Whenever you select a free text attribute such as Social Security Number or Street Address, QMan will give you “all” as the default condition. Why? Because most users want to view the value of a free text attribute rather than use the value to “filter out” potential hits. You can override the default “all” by entering one of the free text operators shown in this section.

```

What is the subject of your search?  LIVING PATIENTS // <Enter>

  Subject of search: PATIENTS
    ALIVE TODAY  [SER = .01]

Attribute of LIVING PATIENTS:  STREET ADDRESS (MAILING) <Enter>
Condition: ALL// ?? <Enter>

Possible choices:
  BETWEEN,ALPHABETIC (inclusive)
  CONTAINS
  ENDS WITH
  FOLLOWS
  IS
  PATTERN MATCH
  STARTS WITH

Condition: ALL// CONTAINS <Enter>
What: MAIN ST <Enter>
Computing Search Efficiency Rating.

  Subject of search: PATIENTS
    ALIVE TODAY  [SER = .01]
    MAILING ADDRESS-STREET CONTAINS MAIN ST  [SER = .94]
Attribute of LIVING PATIENTS:

```

Figure 5-3: Entering free text into QMan

This query produces the following results:

| PATIENTS<br>(Alive) | CHART<br>NUMBER | STREET<br>ADDRESS |
|---------------------|-----------------|-------------------|
| BETAA, WILMA        | 100057          | 123 MAIN STREET   |
| KAPPAAA, KELSEY     | 100119          | 456 MAIN STREET   |
| VON RHORHORHO, SY   | 100158          | 789 MAIN STREET   |
| BETAB, JOANNE*      | 100185          | 257 MAIN STREET   |
| BETAC, PEGGY        | 100198          | 369 MAIN STREET   |
| KAPPAAB, GREGORY    | 100261          | 555 MAIN STREET   |
| BETAZ, LRAINE*      | 100266          | 876 MAIN STREET   |

Figure 5-4: Sample report

## 5.4 Binary

A binary data type is actually a small set of codes with only two members of the set. Because there is only one possible condition and two possible values, QMan will take a shortcut and display the values directly. If you want “all” or “null,” enter the special condition instead of one of the suggested choices.

```

What is the subject of your search?  LIVING PATIENTS // <Enter>

  Subject of search: PATIENTS
    ALIVE TODAY      [SER = .01]

Attribute of LIVING PATIENTS:  SEX <Enter>
CHOOSE FROM:
    M          MALE
    F          FEMALE
Value:  M <Enter>  MALE

Computing Search Efficiency Rating.

  Subject of search: PATIENTS
    ALIVE TODAY      [SER = .01]
    SEX IS MALE      [SER = .85]

Attribute of LIVING PATIENTS:

```

Figure 5-5: Entering binary data into QMan

## 5.5 Taxonomies and “Set-of-Values” Attributes

A “set-of-values” attribute has a predetermined group of values which are stored in a file or table, and it can only have one condition: “=.” Examples include the ICD9 Code file, Drug file, Marital Status set of codes. Whenever you select a set-of-values attribute, QMan gives you the opportunity to build a taxonomy.

Remember, a taxonomy involves “or” logic: if any of the values in the taxonomy are matched, the query evaluates a “hit.” Of course, you can choose to select only one value and not build the taxonomy, but the option is there if you want it.

### 5.5.1 Building a Taxonomy

If you select a set-of-values attribute, QMan will assume that the condition is “=” and immediately start asking you for values. You can choose to stop after one value or you can enter many. To see the choices enter 3 Question marks (???). To see the choices you have already made, enter 2 Question marks (??).

Let’s say that you need to find out which patients in your database live in the communities of Tucson, Sells, or Santa Rosa. These towns are all entries predefined in the Location file. You begin by selecting the attribute “current community” as shown here. Note that you may use the synonym “community” for the attribute “current community.”

```

What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENTS: COMMUNITY <Enter> CURRENT COMMUNITY

Enter COMMUNITY: TUCSON <Enter>
Enter ANOTHER COMMUNITY: SELLS <Enter>
Enter ANOTHER COMMUNITY: SANTA ROSA <Enter>
Enter ANOTHER COMMUNITY:

The following have been selected =>

    SANTA ROSA
    SELLS
    TUCSON

Want to save this COMMUNITY group for future use? NO//

```

Figure 5-6: Selecting “current community” attribute

By creating this taxonomy, you are defining a group of patients that have at least one of the indicated attribute values. In this case they live in one of the listed communities. If a patient lives in one of the indicated communities, he or she has one of the values of the attribute and is considered by QMan to be a “hit” and would be listed in the report.

To understand taxonomies, it is helpful to think of the word “or.” That is, an attribute may have a value of X or Y or Z to be a “hit.”

Continuing with the example, after designating the communities for the search, QMan gives you the opportunity to save this community grouping for future use. For now, press Enter to accept the default answer, NO.

QMan then produces a search summary and gives you a chance to enter another attribute. If you press Enter again to indicate you have no further attributes to add for this search, QMan displays the output options and begins the report, listing all patients that live in Tucson, Sells, or Santa Rosa.

| PATIENT                                  | CHART<br>NUMBER | COMMUNITY  |
|------------------------------------------|-----------------|------------|
| SIGMA , SUSAN                            |                 | SANTA ROSA |
| PIPIPI , CHERYL                          |                 | SANTA ROSA |
| METAAA , LISA                            | 97              | SELLS      |
| PPIPIP , LISA                            | 257             | SELLS      |
| GAMMA , BILLY                            | 20999           | SELLS      |
| METABB , MARTIN                          | 333222          | SELLS      |
| . . .                                    |                 |            |
| ALPHA AAA , VANESSA                      | 22222           | TUCSON     |
| KAPPABB , MARIE                          | 3344            | TUCSON     |
| SIGMACC , JOHN                           | 333             | TUCSON     |
| METANN , MARTIN                          | 9900            | TUCSON     |
| THETATHETANN , JON                       | 53350           | TUCSON     |
| Total:                                   | 42              |            |
| Press RETURN to continue or '^' to exit: |                 |            |

Figure 5-7: Sample report

## 5.5.2 Editing a Taxonomy

While you are creating a large taxonomy, you may change your mind about some of the entries you have already selected. Fortunately, there is a way to avoid starting over. You can “deselect” entries. Type in a minus sign followed, without a space, by the name of the entry you want to eliminate.

```
Attribute of LIVING PATIENTS: TRIBE OF MEMBERSHIP <Enter>

Enter TRIBE: GILA RIVER <Enter> PIMA MARICOPA IND C OM RES, AZ          293
Enter ANOTHER TRIBE: TOHONO <Enter> O'ODHAM NATION OF ARIZO NA          096
Enter ANOTHER TRIBE: MESCALERO <Enter> APACHE, MESCALERO TRIBE, NM          008
(none found in database so not selected... if you still want to select this
value enter it with quotes about it

Enter ANOTHER TRIBE: "MESCALERO" <Enter> APACHE, MESCALERO TRIBE, NM          008
Enter ANOTHER TRIBE: HOPI <Enter> TRIBE OF ARIZONA          054
Enter ANOTHER TRIBE: NAVAJO <Enter> TRIBE OF AZ, NM AND UT          084
Enter ANOTHER TRIBE: -TOHONO <Enter> O'ODHAM NATION OF ARIZO NA          096
(DELETED)
Enter ANOTHER TRIBE:

The following have been selected =>

APACHE, MESCALERO TRIBE, NM
HOPI TRIBE OF ARIZONA
NAVAJO TRIBE OF AZ, NM AND UT
```

Figure 5-8: Sample editing a taxonomy

### 5.5.3 Exclusionary Taxonomies and Null Sets

Sometimes it is more important to know who is not in a taxonomy, as opposed to those who are in it. For example, suppose you want to find all patients who do not live in Arizona, New Mexico, or California. To do this you would need to create an exclusionary taxonomy. QMan makes it easy for you to do this. At any time while you are entering new members into the taxonomy, type NULL. From that moment on, all previous entries and all future entries will be members of an exclusionary taxonomy.

```
Attribute of LIVING PATIENTS: TRIBE OF MEMBERSHIP <Enter>

Enter TRIBE: HOPI <Enter>   TRIBE OF ARIZONA           054
Enter ANOTHER TRIBE: NAVAJO <Enter>   TRIBE OF AZ, NM AND UT           084
Enter ANOTHER TRIBE: TOHONO <Enter>   O'ODHAM NATION OF ARIZO NA       096
Enter ANOTHER TRIBE: NULL <Enter>

I take it you want me to find only those LIVING PATIENTS whose
TRIBE is NOT in this taxonomy? YES// <Enter>

Enter ANOTHER TRIBE: <Enter>
Computing Search Efficiency Rating.

Subject of search: PATIENTS
ALIVE TODAY [SER = .01]
TRIBE OF MEMBERSHIP(INVERSE SET) [SER = 11.5]

Attribute of LIVING PATIENTS:
```

Figure 5-9: Creating an exclusionary taxonomy

This query produces results similar to the following:

| PATIENTS<br>(Alive) | CHART<br>NUMBER | TRIBE              |
|---------------------|-----------------|--------------------|
| ADAMS, BRIAN        | 101981          | PASCUA YAQUI TRIBE |
| ADAMS, CELESTE      | 60165           | NON-INDIAN BENEFIC |
| ADAMS, FRANCIS      | 101913          | NON-INDIAN BENEFIC |
| ADAMS, TIMOTHY      | 60170           | GILA RIVER PIMA MA |
| BROEN, EVE          | 101841          | CREEK NATION OF OK |
| BROEN, FRANCES      | 102045          | GROS VENTRE-3 AFF  |
| BROEN, MATTHEW      | 101960          | COMANCHE INDIAN TR |
| BROEN, PENNY        | 101704          | GROS VENTRE-3 AFF  |
| BURR, ANDY*         | 101527          | GROS VENTRE-3 AFF  |
| BURR, ARTHUR        | 101921          | NON-INDIAN BENEFIC |
| <>                  |                 |                    |

Figure 5-100: Sample report

If you type NULL as the first entry in the taxonomy, QMan will have to deal with some ambiguity. There are two choices: (1) Create an exclusionary taxonomy or (2) assume you really want a “null set;” that is, find cases where no value whatsoever has been entered for that attribute. QMan will ask you to resolve the ambiguity before going on.

```
Attribute of LIVING PATIENTS: TRIBE OF MEMBERSHIP <Enter>

Enter TRIBE: NULL <Enter>
Do you want me to find all LIVING PATIENTS with no TRIBE entered? YES// N <Enter>
(NO)
Well then...
I take it you want me to find only those LIVING PATIENTS whose
TRIBE is NOT in this taxonomy? YES// <Enter> (YES)

Enter TRIBE: NAVAJO <Enter>  TRIBE OF AZ, NM AND UT          084
Enter ANOTHER TRIBE: HOPI <Enter>  TRIBE OF ARIZONA          054
Enter ANOTHER TRIBE: TOHONO <Enter>  O'ODHAM NATION OF ARIZO  NA          096
Enter ANOTHER TRIBE: <Enter>

Computing Search Efficiency Rating..

Subject of search: PATIENTS
ALIVE TODAY [SER = .01]
TRIBE OF MEMBERSHIP(INVERSE SET) [SER = 11.5]
```

Figure 5-11: Resolving ambiguity of entering “null” as first entry

## 5.5.4 Saving a Taxonomy for Future Use

You might want to save a large taxonomy so you can use it in future queries. QMan allows you to store any taxonomy you create in the PCC Taxonomy file.

```
The following have been selected =>

HOPI TRIBE OF ARIZONA
NAVAJO TRIBE OF AZ, NM AND UT
GILA RIVER PIMA MARICOPA IND COM RES, AZ

Want to save this TRIBE group for future use? NO// Y <Enter> (YES)
Group name: DEMO TRIBES <Enter>
ARE YOU ADDING 'DEMO TRIBES' AS A NEW TAXONOMY (THE 7TH)? Y <Enter> (YES)
TAXONOMY BRIEF DESCRIPTION: TRIBES USED IN QMAN DEMO

Computing Search Efficiency Rating.

TRIBE OF MEMBERSHIP AS SPECIFIED [SER = 99]
```

Figure 5-12: Storing a taxonomy in the PCC taxonomy file

If you attempt to use a name that has already been chosen, and you were the creator of that taxonomy, QMan will give you the opportunity to overwrite that taxonomy. You cannot overwrite anyone else's taxonomy.

```

Want to save this TRIBE group for future use? NO// Y <Enter> (YES)
Group name: DEMO TRIBES <Enter> TRIBES USED IN QMAN DEMO

DEMO TRIBES already exists. Want to overwrite? NO//

```

Figure 5-13: Prompt to overwrite existing taxonomy with same name

### 5.5.5 Reusing a Saved Taxonomy

Once a taxonomy has been saved, you or any other QMan user can restore it for use in a query.

To recall a saved taxonomy, use the “left bracket” syntax. Experienced FileMan users know this syntax, because it is the same one used to recall FileMan search templates. If you want to recall a taxonomy, type “[” followed by the taxonomy name; for example,

```
[MY TAXONOMY
```

To see what taxonomies are available, enter “[?” at the prompt; for example,

```

Attribute of LIVING PATIENTS: TRIBE OF MEMBERSHIP <Enter>

Enter TRIBE: [? <Enter>

CHOOSE FROM:
  ARIZONA TRIBES          TEST
  DEMO TRIBES            TRIBES USED IN QMAN DEMO

```

Figure 5-14: Viewing available taxonomies

Note that you do not view all saved taxonomies, only those linked to the current attribute. Now it is time to select a saved taxonomy.

```
Enter TRIBE: [ARIZONA TRIBES <Enter>
Members of ARIZONA TRIBES Taxonomy =>
NAVAJO TRIBE OF AZ, NM AND UT
TOHONO O'ODHAM NATION OF ARIZONA
Enter ANOTHER TRIBE: HOPI <Enter> TRIBE OF ARIZONA 054
Enter ANOTHER TRIBE: GILA RIVER <Enter> PIMA MARICOPA IND C OM RES, AZ 293
Enter ANOTHER TRIBE: <Enter>
The following have been selected =>
HOPI TRIBE OF ARIZONA
NAVAJO TRIBE OF AZ, NM AND UT
TOHONO O'ODHAM NATION OF ARIZONA
GILA RIVER PIMA MARICOPA IND COM RES, AZ
Want to save this TRIBE group for future use? NO//
```

Figure 5-15: Selecting a saved taxonomy

Once that taxonomy has been restored, you can edit it and even save it again under a **new name**. The old version will remain unchanged and available for future use.

## 6.0 Clinical Attributes: Subqueries

So far, we have only talked about attributes where there is a one-to-one relationship between the subject and the attribute. For example, a subject (say, a patient) can only have one current community, one tribe of membership, and one sex. We call this class of attributes “demographic” attributes.

What about cases where there can be a “one-to-many” relationship between the subject and an attribute? This typically happens with clinical data. One patient can have multiple diagnoses, multiple prescriptions, multiple blood pressures, multiple weights, and so on. We call this class of attributes “clinical” attributes.

| Demographic Attributes: | Clinical Attributes: |
|-------------------------|----------------------|
| Sex                     | Weight               |
| Age                     | DX                   |
| Tribe                   | RX                   |
| SSN                     | Lab Values           |
| etc.                    | etc.                 |

What is it that determines whether an attribute is demographic or clinical? The answer can be summed up in one word: dimensions.

- Demographic attributes have only one dimension: VALUE.
- Clinical attributes have at least two dimensions: VALUE and TIME.

It is the second dimension which enables us to examine each of the instances of a clinical attribute. Another way to look at it is that clinical attributes are things that happen to a patient during a visit to the clinic or have to do with a patient's medical history, such as the clinical attribute, PROBLEM.

Clinical attributes differ in another important way from their demographic cousins: they require a shift in context. Consider the following example.

| Subject    | Queries        | Subquery            |
|------------|----------------|---------------------|
| Patient => | AGE > 62       |                     |
|            | SEX = Male     |                     |
|            | TRIBE - NAVAJO |                     |
|            | WEIGHT =>      | DATE = AFTER 1/1/90 |
|            |                | VALUE = 250 lbs.    |

In this search, AGE, SEX, WEIGHT, and TRIBE are all attributes of PATIENT. However, DATE and VALUE are attributes of WEIGHT. In order to carry out the analysis, you must temporarily switch contexts from PATIENT to WEIGHT.

The process of changing contexts in order to evaluate a subset of attributes is called SUBQUERY. If all the WEIGHT criteria are met, then the query will evaluate as a “hit.” If all the PATIENT criteria are met, then the entire search will be considered a “hit.” In this example, the date refers to the date of visit on which the weight was taken. Because the date falls within the subquery, it relates to the subject of the subquery, weight.

QMan evaluates all clinical attributes as subqueries, and the approach is straightforward. Whenever it encounters a clinical attribute, QMan switches context; that is, the attribute of the query becomes the subject of the subquery.

For each patient, it locates all the entries of the clinical attribute and stores them in a temporary holding area. When all the entries for a patient have been collected, QMan examines them one-by-one and applies the set of subquery criteria in the order you specified. If, at any point, an entry fails to meet the criteria, it is removed from the holding area. If any entries remain after all criteria have been applied, the subquery evaluates as a “hit,” and QMan goes on to repeat this process for the next patient.

Subquery analysis is a lot like an old fashioned western round-up. Suppose QMan is asked to find every instance where a weight over 200 lbs. was recorded after 1/1/91.

- For each patient, QMan “finds” all the weights and puts them in a holding area.
- Then QMan removes all weights less than 200 lbs.
- Then QMan removes all remaining weights done before 1/1/90. If any weights remain, the query evaluates as a “hit.” Remaining weights may be displayed in the final report.

## 6.1 Your First Clinical attribute: Weight

### 6.1.1 Subquery Dialog

Subqueries invoke a different dialogue than queries. Let’s see what the preceding query would look like in an actual QMan session.

First, we select the subject, patients, by pressing a Enter and then choose the attribute, weight in pounds, by entering the abbreviation “WTLBS.” (We could have also entered any reasonable synonym, e.g., “WEIGHT,LBS.”)

QMan responds with some questions that will help define our search. We limit the search to a range of dates, because a given patient could possibly have over 1,000 weight measurements on file. We then define the limitations by indicating we want dates “after” Jan. 1, 1985.

```
SUBQUERY: Analysis of multiple WEIGHTS

First condition/attribute of "WEIGHT": OVER <Enter>
Value: 250 <Enter>

Next condition/attribute of "WEIGHT": AFTER <Enter>

Exact date: 1/1/85 <Enter> (JAN 01, 1985)

        Subject of subquery: WEIGHT(lbs)
        GREATER THAN 250
        AFTER JAN 1,1985

Next condition/attribute of "WEIGHT": <Enter>

Computing Search Efficiency Rating.

        Subject of search: PATIENTS
        ALIVE TODAY [SER = .01]
        Subject of subquery: WEIGHT(lbs)
        GREATER THAN 250
        AFTER JAN 1,1985

Attribute of LIVING PATIENTS:
```

Figure 6-1: Sample subquery

QMan computes the search efficiency rating (SER) and gives us the opportunity to enter another attribute. For now, we simply press RETURN indicating that we do not wish to enter another attribute and our output options are displayed.

## 6.1.2 Output Options

Pressing Enter again gives you another set of options for this report. QMan asks if you want to display the actual weights of all the patients in the report, or if you want only a list of those names that meet the limiting criteria. For now, choose option 1, to display the weights.

```
Attribute of LIVING PATIENTS:

***** QMAN OUTPUT OPTIONS *****

Select one of the following:

1          DISPLAY results on the screen
2          PRINT results on paper
3          COUNT 'hits'
4          STORE results of a search in a FM search template
5          SAVE search logic for future use
6          R-MAN special report generator
9          HELP
0          EXIT

Your choice: DISPLAY//
```

Figure 6-2: Sample output options menu

If you are used to seeing the results displayed at this point, you are in for a surprise! Before you go on, another question needs to be answered. This applies to clinical attributes only.

```

You have 2 options for listing WEIGHT(lbs)S =>

    1) For ea. patient, list all WEIGHT(lbs)S which match your
       criteria
    2) List all PATIENTS with WEIGHT(lbs)S meeting your criteria,
       but do not list the individual values of ea. WEIGHT(lbs)

Your choice (1 or 2): 1// 1 <Enter>

SORRY, WAIT A MINUTE.

PATIENT          CHART   WT      DATE OF WT
                   NUMBER  lbs
-----
PETERS,JIM       5449   250.3   OCT 30,1987
PETERS,JIM       5449   250.4   JAN  2,1987
. . .
JONES,DENNIS     2588   258.0   OCT 15,1987
PETERS,THERESA   432    296.0   JUN 30,1987
PETERS,THERESA   432    313.4   MAY 21,1986
PETERS,THERESA   432    307.0   JUL 30,1989
BLACK,BILL              420.3   JAN  6,1988
Total: 79

```

Figure 6-3: Selecting weight option 1 to display all weights for each patient

In the report above, most patients have more than one weight recorded. At the end of the report, the total number of weights (not patients) is displayed.

Let's perform the same search again, but this time we will select display option 2. This will show us patients who met the search criteria, but will not show every instance of hits for each patient.

```

You have 2 options for listing WEIGHT(lbs)S =>

    1) For ea. patient, list all WEIGHT(lbs)S which match your
       criteria
    2) List all PATIENTS with WEIGHT(lbs)S meeting your criteria,
       but do not list the individual values of ea. WEIGHT(lbs)

Your choice (1 or 2): 1// 2 <Enter>

HOLD ON FOR A MOMENT...

PATIENT          CHART      WT
                  NUMBER    lbs
-----
PETERS, JIM      5449      +
JONES, DON       18734     +
BROWN, DENNIS*   4795      +
MARTIN, IRMA     7537      +
PETERS, SAM      15137     +
JOHNSON, BILL    15137     +

. . .

JONES, LARRY     14700     +
JONES, DENNIS    1540      +
HOGAN, HULK      11112     +
BLACK, BILL      15137     +
Total: 25

Press RETURN to continue or '^' to exit:

```

Figure 6-4: Selecting weight option 2 to display all patients with weight meeting search criteria

A plus symbol (+) is displayed for each patient after the patient's name in the weight column to indicate at least one weight met the criteria of the subquery. That is, the patient had a weight of over 250 pounds sometime since Jan. 1, 1985.

QMan will not, in this type of a report, list weights and dates. This report only indicates that there was at least one weight over 250 lbs. recorded during the designated time period. At the end of the report, the total number of patients on the list is shown.

There is a trade-off here. Option 1 offers more detail, but option 2 is sometimes much faster. Why, faster? In some cases, as soon as QMan encounters a hit, it can go on to the next patient. QMan does not need to examine the remaining weights.

## 6.2 Clinically Related Taxonomies

Some clinical attributes can have values that are derived from a predefined table or file. As with demographic attributes, you will have the opportunity to select only one value or build a taxonomy. After the taxonomy is built, you will have the opportunity to specify dates.

### 6.2.1 Building a Taxonomy

Prescriptions provide a good example of a clinically related taxonomy. To enter a prescription, you cannot begin by entering a drug name. You must first tell QMan that you want to build a prescription taxonomy by entering RX or DRUG as the attribute. Then QMan will prompt you to enter drug names to build the taxonomy. Keep in mind that each patient can have multiple prescriptions and that each prescription must be checked against a set of values (a taxonomy).

**Remember the Rule:** In learning how to use taxonomies, it is helpful to think of the word “or.” That is, an attribute must have a value of X or Y or Z to be a “hit.”

#### Prescriptions (Rx's)

```
What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENTS: RX <Enter> RX
```

Figure 6-5: Sample of building a taxonomy

Note that we did not ask for a specific drug (e.g., MOTRIN), when QMan prompted you for an attribute. Instead we entered the term “RX” to let QMan know that we intend to build a drug taxonomy.

In general, whenever a set-of-values attribute comes from a large file (the large files are ICD9 codes, Dental Procedure codes, Medical Procedure codes, and Patient Education topics), you should take this indirect approach rather than asking for the attribute itself. When QMan sees the term “RX,” it assumes you want to build a drug taxonomy, and it sets up an appropriate dialog.

```

Attribute of LIVING PATIENTS: RX <Enter>

Enter RX: MOTRIN <Enter>
  1  MOTRIN  IBUPROFEN 400MG
  2  MOTRIN 40S  IBUPROFEN 400MG TAB 40S
  3  MOTRIN800  IBUPROFEN 800MG TAB
  4  MOTRINUD  IBUPROFEN 400MG TAB U/D
CHOOSE 1-4: 1 <Enter>  IBUPROFEN 400MG TAB
Enter ANOTHER RX: MOTRIN <Enter>
  1  MOTRIN  IBUPROFEN 400MG TAB
  2  MOTRIN 40S  IBUPROFEN 400MG TAB 40S
  3  MOTRIN800  IBUPROFEN 800MG TAB
  4  MOTRINUD  IBUPROFEN 400MG TAB U/D
CHOOSE 1-4: 2 <Enter>  IBUPROFEN 400MG TAB 40S
Enter ANOTHER RX: MOTRIN <Enter>
  1  MOTRIN  IBUPROFEN 400MG TAB
  2  MOTRIN 40S  IBUPROFEN 400MG TAB 40S
  3  MOTRIN800  IBUPROFEN 800MG TAB
  4  MOTRINUD  IBUPROFEN 400MG TAB U/D
CHOOSE 1-4: 3 <Enter>  IBUPROFEN 800MG TAB
Enter ANOTHER RX: <Enter>

The following have been selected =>
  IBUPROFEN 400MG TAB
  IBUPROFEN 400MG TAB 40S
  IBUPROFEN 800MG TAB

Want to save this RX group for future use? NO// <Enter>  (NO)

SUBQUERY: Analysis of multiple RXS

First condition/attribute of "RX": AFTER <Enter>
Exact date: 1/1/85 <Enter> (JAN 01, 1985)

Next condition/attribute of "RX": <Enter>

Computing Search Efficiency Rating.

  Subject of search: PATIENTS
    ALIVE TODAY  [SER = .01]
    RX (IBUPROFEN 40/IBUPROFEN 4...) [SER = 23.64]
  Subject of subquery: RX
    AFTER JAN 1,1985

```

Figure 6-6: Sample of building a drug taxonomy

QMan offers the option to limit our search to a date range. Select the default “No” again by pressing Enter. When prompted for another attribute, press Enter again without entering anything, and QMan knows you want no further selections for this search.

```
Want to limit the search to a certain range of dates? NO// <Enter> (NO)
Computing Search Efficiency Rating.
PATIENT INFORMATION
RX AS SPECIFIED [SER = 23.64]
```

Figure 6-7: Option to limit search to a date range

**Note:** Selection by drug class may be available on your system. After entry of a medication, if the medication is a member of a drug class such as insulin, you will be asked if you want to include all members of that drug class in your taxonomy. This eliminates having to enter each type of insulin one-by-one, as was done with the ibuprofen the example.

## 6.2.2 Output Options

Now you are ready to display the results. Note that we have a new set of choices for output formatting.

```

Attribute of LIVING PATIENTS: <Enter>

  Select one of the following:

      1      DISPLAY results on the screen
      2      PRINT results on paper
      3      COUNT 'hits'
      4      STORE results of a search in a FM search template
      5      SAVE search logic for future use
      6      R-MAN special report generator
      9      HELP
      0      EXIT

  Your choice: DISPLAY// <Enter> results on the screen

  You have three options for listing RxS =>
  1) For ea. patient, list all Rxs
  2) For ea. patient, list all Rxs and Sigs
  3) List all PATIENTS with diagnoses you specified, but DO NOT list
     Rxs or Sigs (FASTEST OPTION!!)

  Your choice (1-3): 1// 2 <Enter> list all Rxs

PATIENTS          RX          DATE OF RX      QUANTITY
(Alive)          NUMBER                               AND SIG.
-----
ROBERTS,DIANE*   100018 IBUPROFEN 400MG TAB      MAR 19,1991   #40  T1T QID
Total: 1
Press RETURN to continue or '^' to exit:

```

Figure 6-8: Sample output options with three options for RXs

Did you notice that there were three output options for RXs? For selected attributes, QMan will give you a special output option like the second one shown in the example. This option is intended to display certain aspects of each patient's care in greater detail.

### 6.2.3 “And’ed” Taxonomies

Suppose you want to “and” taxonomy values rather than “or” them. For example, you want to find all patients who had a prescription for codeine and a prescription for ampicillin during a specified time period. First, enter RX as an attribute and make a taxonomy for codeine. Then come back out to the topmost level where PATIENTS is the subject and enter RX again as a second attribute of PATIENTS. This time make a taxonomy for ampicillin. Each query involves a different taxonomy, and the two queries are and’ed together.

```

Enter RX: CODE <Enter>
  1  CODEINE SULFATE 30MG TAB          N/F
  2  CODEINE SULFATE 30MG TAB U/D
  3  CODEINE 30MG & ACETAMIN APAP WITH CODEINE 30 MG      N/F
CHOOSE 1-3: 1 <Enter>
Enter ANOTHER RX:

The following have been selected =>
  CODEINE SULFATE 30MG TAB

SUBQUERY: Analysis of multiple RXS

First condition/attribute of "RX": <Enter>

Computing Search Efficiency Rating.....

  Subject of search: PATIENTS
    ALIVE TODAY [SER = .01]
    RX (CODEINE SULF) [SER = 24.37]

Attribute of LIVING PATIENTS: RX <Enter>

Enter RX: AMPICILLIN <Enter>
  1  AMPICILLIN 250MG 28S
  2  AMPICILLIN 250MG CAP 40S
  3  AMPICILLIN 250MG CAP U/D
  4  AMPICILLIN 250MG CAPS
  5  AMPICILLIN 500MG CAP
TYPE '^' TO STOP, OR
CHOOSE 1-5: 1 <Enter>
Enter ANOTHER RX: <Enter>

The following have been selected =>
  AMPICILLIN 250MG 28S

```

```
SUBQUERY: Analysis of multiple RXS
First condition/attribute of "RX":
Computing Search Efficiency Rating.....

  Subject of search: PATIENTS
    ALIVE TODAY    [SER = .01]
    RX (CODEINE SULF) [SER = 24.37]
    RX (AMPICILLIN 2) [SER = 24.37]
```

Figure 6-9: Sample “and’ed” taxonomy

## 6.3 Special Lookups

In the preceding example, you built a taxonomy by selecting drug names from the Drug File. Some set-of-values attributes are stored by name and by code. Examples include diagnoses (ICD9 Code File), medical procedures (Procedure Code File), and dental procedures (ADA Code File). With codes, similar entries are grouped together. The advantage is that you can build a taxonomy by entering an individual code or take a short cut and enter a range of codes. Please note that entering a range of ADA Codes is not available in the current version of QMAN.

Set-of-values attributes that are encoded can also be looked up by name. A powerful lookup program that employs synonym expansion and an extensive text matching protocol is brought into play, if you choose to enter names instead of codes.

We will use DIAGNOSIS to demonstrate this type of taxonomy. If the patient has any of the diagnoses, it will generate a “hit.” Again, we are using “or” logic.

At the attribute prompt, type DX for diagnosis. Do not enter the name or code of the diagnosis yet. This is another example of the indirect approach required for some set-of-values attributes.

When QMan asks you to enter your Dx, you could, for example, type DM as a synonym for Diabetes Mellitus. QMan responds with the ICD code number and brief description of uncomplicated diabetes, and asks if this is the type of diabetes mellitus you intended to enter. Respond with the default, yes, by pressing Enter.

```

What is the subject of your search? LIVING PATIENTS // <Enter>
Attribute of LIVING PATIENT: DX <Enter> DIAGNOSIS

Enter DX: DM <Enter>
250.00 (DIABETES UNCOMPL ADULT/NIDDM)
ADULT-ONSET TYPE DIABETES MELLITUS WITHOUT MENTION OF
COMPLICATION/NONINSULIN DEPENDENT

OK? Y//

```

Figure 6-10: Sample lookup using set-of-value attributes

Alternatively, instead of typing DM, you could enter a standard ICD narrative (e.g., diabetes mellitus) or an ICD code.

When performing any search involving a diagnosis, it will pay to look up your codes in the latest ICD book before you begin. Use only that specific code. **Do not** try to use a partial abbreviation (synonym) for an ambiguous diagnosis.

For example, do not try a search for hypertensive patients by typing HYPER. If you did, QMan would try to find every match in the database with the term “hyper” in it. Can you imagine sitting around while QMan finds all the citations in ICD9 with the prefix “hyper”?

```

Attribute of LIVING PATIENTS: DX <Enter>

Enter DX: DIABETES MELL <Enter> ( DIABETES|DIABETIC MELL/MELLITUS )
.....

The following matches were found:

1: 250.01 (DIABETES UNCOMPL TYPE I/IDDM)
   DIABETES MELLITUS WITHOUT MENTION OF COMPLICATION/TYPE I/INSULIN
   DEPENDENT/JUVENILE

2: 250.11 (DIAB KETOACIDOSIS TYPE I/IDDM)
   DIABETES MELLITUS WITH KETOACIDOSIS/TYPE I/INSULIN DEPENDENT/JUVENILE

3: 250.21 (DIAB HYPEROSM COMA TYPE I/IDDM)
   DIABETES MELLITUS WITH HYPEROSMOLAR COMA/TYPE I/INSULIN
   DEPENDENT/JUVENILE

4: 250.31 (DIABETES COMA NEC TYPE I/IDDM)
   DIABETES MELLITUS WITH OTHER COMA/TYPE I/INSULIN DEPENDENT/JUVENILE

5: 250.41 (DIAB RENAL MANIF TYPE I/IDDM)
   DIABETES MELLITUS WITH RENAL MANIFESTATIONS/TYPE I/INSULIN
   DEPENDENT/JUVENILE

etc. . . .

Select 1-30:1 <Enter>

Next let's enter an abbreviation for a diagnosis. QMan has access to a dictionary
with thousands of terms commonly used as diagnoses. If a match is possible, he will
try to make it,

Attribute of LIVING PATIENTS: DX <Enter>

Enter DX: DM <Enter>
250.00 (DIABETES UNCOMPL TYPE II/NIDDM)
DIABETES MELLITUS WITHOUT MENTION OF COMPLICATION/TYPE II/NONINSULIN
DEPENDENT/ADULT-ONSET

OK? Y// <Enter>

You are now asked for another Dx. Just for the sake of demonstration, let's enter an
ICD code, the identical code for the above diagnosis and see what happens.

Attribute of LIVING PATIENTS: DX <Enter>

Enter DX: 250.00 <Enter> 250.00          DIABETES UNCOMPL TYPE II/NIDDM
...OK? YES// <Enter>

ICD Code Range(s) Selected So Far =>

1) 250.00

Enter ANOTHER DX:

```

Figure 6-11: Sample lookup using standard ICD narrative

Notice that QMan accepts and verifies your entry of the code 250.00. However, because you have already entered that code in the first Dx, QMan displays the codes that you have selected so far, as a reminder.

Let's assume that you are setting up this search, and you decide you want to list all the DXs in a certain range of codes. For this example, let's stay within the codes of diabetes complications and use 250.00 through 250.51.

It is important to note here that in choosing a range of ICD codes, the codes you use must be bona fide codes or the search will not work.

So, you type 250.00, dash (-), 250.51. QMan asks you to confirm your selections, you respond with "yes," and another reminder of the DXs chosen so far is displayed. Then QMan prompts you for another DX.

```

Attribute of LIVING PATIENTS: DX <Enter>

Enter DX: 250.00-250.51 <Enter>
  250.00      DIABETES UNCOMPL TYPE II/NIDDM
            ...OK? YES// <Enter> (YES)
  250.51      DIAB OPHTHAL MANIF TYPE I/IDDM
            ...OK? YES// <Enter> (YES)

ICD codes in this range =>

250.00      DIABETES UNCOMPL TYPE II/NIDDM
250.01      DIABETES UNCOMPL TYPE I/IDDM
250.10      DIAB KETOACID TYPE II/NIDDM
250.11      DIAB KETOACIDOSIS TYPE I/IDDM
250.20      DIAB HYPEROS COM TYPE II/NIDDM
250.21      DIAB HYPEROSM COMA TYPE I/IDDM
250.30      DIAB COMA NEC TYPE II/NIDDM
250.31      DIABETES COMA NEC TYPE I/IDDM
250.40      DIAB RENAL MANIF TYPE II/NIDDM
250.41      DIAB RENAL MANIF TYPE I/IDDM
250.50      DIAB OPHTH MANIF TYPE II/NIDDM
250.51      DIAB OPHTHAL MANIF TYPE I/IDDM

Press return to continue

ICD Code Range(s) Selected So Far =>

1)  250.00 - 250.51

```

Figure 6-12: Sample display of code ranges selected

Now we will make this search really interesting. Let's say you want to exclude the ICD code 250.31 in your report. But, obviously, that code falls between the range you have already set. No problem. By placing a minus sign (-) in front of the code, you tell QMan not to include that code in your search. Pressing Enter, QMan lists the DXs you have selected so far, including the *deleted* 250.31.

```
Enter ANOTHER DX: -250.31 <Enter> 250.31          DIABETES COMA NEC
TYPE I/IDDM
      ...OK? YES// <Enter>  YES

ICD Code Range(s) Selected So Far =>

1) 250.00 - 250.30
2) 250.40 - 250.51

Enter ANOTHER DX:
```

Figure 6-13: Sample display of code ranges selected including deleted selections

OK, you are ready to display your report. Press Enter at the next four prompts to close out the entering of DXs; decline to save this DX group for future use; decline to limit the search to a range of dates; and close out entering any further attributes.

```

Enter another DX: <Enter>

Want to save this DX group for future use? NO// <Enter> (NO)

SUBQUERY: Analysis of multiple DIAGNOSES

First condition/attribute of "DIAGNOSIS":
Computing Search Efficiency Rating.

    Subject of search: PATIENTS
        ALIVE TODAY [SER = .01]
        DIAGNOSIS (250.01/250.11...) [SER = 21.12]

Attribute of LIVING PATIENTS: <Enter>

Below, you press a RETURN to display the report to the screen. You are
offered a set of three options. Something new has been added!

    Select one of the following:

        1          DISPLAY results on the screen
        2          PRINT results on paper
        3          COUNT 'hits'
        4          STORE results of a search in a FM search template
        5          SAVE search logic for future use
        6          R-MAN special report generator
        9          HELP
        0          EXIT

    Your choice: DISPLAY// <Enter> results on the screen

You have 3 options for listing DIAGNOSES =>

    1) For ea. patient, list all ICD9 CODES
    2) For ea. patient, list all ICD9 CODES and PROVIDER NARRATIVES
    3) List all PATIENTS with ICD9 CODES you specified, but DO NOT list
       individual ICD9 CODES or PROVIDER NARRATIVES (FASTEST OPTION!!)

Your choice (1-3): 1// 2

```

Figure 6-14: Closing out the entry of DXs

Look closely at Option 2. Here you can tell QMan to display Provider Narratives. (And this means displaying exactly what the doctor wrote on the chart, including spelling and punctuation errors.) That is, QMan will display what the provider actually wrote on the patient's charts regarding the DX. Select Option 2 and study the report.

| PATIENT                                  | CHART<br>NUMBER | DIAGNOSIS<br>ICD9 CODE | DATE OF POV  | PROVIDER NARRATIVE         |
|------------------------------------------|-----------------|------------------------|--------------|----------------------------|
| BLACK, CHERYL                            | 4911            | 250.00                 | SEP 9, 1988  | DM INSULIN USING           |
| DINGO, WILLIAM                           | 49              | 250.01                 | FEB 17, 1988 | DM.INSULIN DEPENDENT       |
| MILLER, JOHN                             | 4921            | 250.00                 | DEC 2, 1987  | DIABETES MELLITUS TYPE II  |
| FALCON, DARIN                            | 492             | 250.50                 | SEP 16, 1987 | BACKGRD DIABETIC           |
| RETINOPATHY                              |                 |                        |              |                            |
| MILLER, JOHN                             | 4921            | 250.00                 | JUN 7, 1987  | TYPE II DIABETES MELLITUS  |
| MILLER, JOHN                             | 4921            | 250.00                 | MAY 27, 1987 | DIABETES MELLITUS, TYPE II |
| MILLER, JOHN                             | 4921            | 250.00                 | FEB 11, 1986 | DIABETIC HOME VISIT        |
| MILLER, JOHN                             | 4921            | 250.00                 | JAN 15, 1986 | DIABETES MELLITUS, TYPE II |
| MARTIN, LISA                             | 97              | 250.00                 | OCT 21, 1988 | PAT DOING WELL             |
| MARTIN, LISA                             | 97              | 250.01                 | JUN 7, 1988  | ORAL HYPOGLYCEMICS         |
| PRESCRIBED                               |                 |                        |              |                            |
| ANZARA, MELVIN I                         | 123             | 250.01                 | NOV 7, 1988  | DIABETES TYPE I            |
| MILLER, BILL                             | 4641            | 250.00                 | NOV 9, 1988  | OKAY                       |
| TOTAL 12                                 |                 |                        |              |                            |
| Press RETURN to continue or '^' to exit: |                 |                        |              |                            |

Figure 6-15: Sample report

## 6.4 Rule of Last

In previous examples, it is possible to print every instance of a clinical attribute. For example, you can display all weights over 250 lbs. or all prescriptions for ampicillin. But what happens if you ask for two or more multiples in the same search? QMan's report generator is not capable of listing the values for more than one clinical attribute in the same search.

As a compromise, QMan has adopted the "rule of last." This rule states that if there is more than one clinical attribute in a search, QMan will only print multiple instances for the last clinical attribute selected. All other multiples will be displayed only as hits.

```
Attribute of LIVING PATIENTS: WEIGHT(lbs) <Enter>
SUBQUERY: Analysis of multiple WEIGHTS
First condition/attribute of "WEIGHT": OVER <Enter> GREATER THAN
Value: 250 <Enter>
Next condition/attribute of "WEIGHT": <Enter>
Computing Search Efficiency Rating.
  Subject of search: PATIENTS
    ALIVE TODAY [SER = .01]
      Subject of subquery: WEIGHT(lbs)
        GREATER THAN 250
Attribute of LIVING PATIENTS: SBP GREATER THAN
SUBQUERY: Analysis of multiple SYSTOLIC BPS
First condition/attribute of "SYSTOLIC BP": OVER <Enter> GREATER
THAN
Value: 140 <Enter>
Next condition/attribute of "SYSTOLIC BP": <Enter>
Computing Search Efficiency Rating.
  Subject of search: PATIENTS
    ALIVE TODAY [SER = .01]
      Subject of subquery: WEIGHT(lbs)
        GREATER THAN 250
      Subject of subquery: SYSTOLIC BP
        GREATER THAN 140
Attribute of LIVING PATIENTS: <Enter>
      Note that the last attribute entered is "SYSTOLIC BP."
```

```

Attribute of LIVING PATIENTS: <Enter>

  Select one of the following:
    1      DISPLAY results on the screen
    2      PRINT results on paper
    3      COUNT 'hits'
    4      STORE results of a search in a FM search
template
    5      SAVE search logic for future use
    6      R-MAN special report generator
    9      HELP
    0      EXIT

  Your choice: DISPLAY// <Enter> results on the screen

You have 2 options for listing SYSTOLIC BPS =>
  1) For ea. patient, list all SYSTOLIC BPS which match your
     criteria
  2) List all PATIENTS with SYSTOLIC BPS meeting your criteria,
     but do not list the individual values of ea. SYSTOLIC BP

Your choice (1 or 2): 1//

```

Figure 6-16: Example of the “rule of last” being applied

As you can see, QMan remembers which clinical attribute you entered last, and gives you the option to display the values for it. Below, the systolic blood pressures are listed with the date of the measurement.

```

Your choice (1 or 2): 1// <Enter> (1)

...HMMM, THIS MAY TAKE A MOMENT...

PATIENTS          CHART  WT      SBP  DATE OF SBP
(Alive)          NUMBER lbs
-----
LINCOLN, LENORE*  100359 +      150  JAN 3,1990
LINCOLN, LENORE*  100359 +      164  JUL 1,1987
WATERMAN, FRANK   102738 +      150  OCT 12,1987
WATERMAN, FRANK   102738 +      150  JUN 18,1987
WATERMAN, FRANK   102738 +      160  MAY 14,1987
REAGAN, IAN       100368 +      160  JAN 23,1986
REAGAN, IAN       100368 +      166  JUN 24,1985
REAGAN, IAN       100368 +      170  JAN 2,1985
CARPENTER, EVE*   100575 +      162  MAR 31,1989
<>

```

Figure 6-17: Listing of systolic blood pressures with date of measurement

Studying the report, you have probably already noticed that all visits for patients with a systolic blood pressure over 140 are displayed, but only a plus (+) appears for the weights over 250 pounds. Why does QMan only list the systolic blood pressure readings? The answer is a consequence of the “rule of last.”

When performing a search using multiple attributes with multiple values, QMan will only display the individual values of the last clinical attribute entered.

In the example above, systolic blood pressure was the last clinical attribute entered in the sequence of attributes, so only systolic blood pressures over 140 and the dates they were taken are listed. Weights over 250 pounds are simply listed as “hits” (indicated by the “+” signs).

Let’s do the same search again except this time we ask for SYSTOLIC BLOOD PRESSURE first and WEIGHT last.

| PATIENTS<br>(Alive) | CHART<br>NUMBER | WT<br>lbs | DATE OF WT   | SBP |
|---------------------|-----------------|-----------|--------------|-----|
| LINCOLN, LENORE*    | 100359          | 250.1     | JAN 10, 1990 | +   |
| LINCOLN, LENORE*    | 100359          | 323.3     | AUG 26, 1988 | +   |
| LINCOLN, LENORE*    | 100359          | 253.3     | SEP 2, 1987  | +   |
| LINCOLN, LENORE*    | 100359          | 253.5     | JUL 1, 1987  | +   |
| LINCOLN, LENORE*    | 100359          | 259.5     | JUN 17, 1987 | +   |
| LINCOLN, LENORE*    | 100359          | 266.0     | APR 8, 1987  | +   |
| <>                  |                 |           |              |     |

Figure 6-18: Listing of patient's weight and date taken

Again, the rule of last determines the output. Remember, QMan is basically a tool for obtaining information from your patient database in a fairly efficient, straightforward manner. QMan is not meant to be a report generator; other applications are being created for that purpose.

## 7.0 Subjects Other than “Living Patients”

Until now, we have skipped by the opening question, “What is the subject of your search?,” always taking the default, LIVING PATIENTS. In fact, this question can lead to a whole new world of possibilities. It is time to explore some of them.

### 7.1 Living Patients vs. Patients

Experience has taught us that the subject of most searches is living patients. That is why it was chosen as the default value. But there are many times when you want to examine the entire patient population, not just living patients. One typical example: “Find all patients who died during 1988.” Obviously, if you started with LIVING PATIENTS as a subject, this would be a very small group indeed!

**Note:** The subject LIVING PATIENTS is the only subject that excludes those who have died. All other subjects include deceased patients. Be very careful when requesting a report that you make and understand the distinction. You would not want to choose INFANTS as the subject in order to determine to whom to send a notice that a screening for all infants will be held in well child clinic. You would include deceased infants as well with rather upsetting consequences.

### 7.2 Individual Patients

There are times when you want a few results for a specific patient. If this information would not appear on a standard PCC health summary, then QMan can help. When QMan asks you for the subject, simply enter the patient’s name in the following format: FIRSTNAME space LASTNAME (e.g., POLLY MUSTARD).

```
What is the subject of your search? LIVING PATIENTS // POLLY MUSTARD <Enter>
MUSTARD,POLLY                      F 12-20-73 038520385   SE 101256

Subject of search: POLLY MUSTARD
NAME = POLLY MUSTARD      [SER = 100]

Attribute of PATIENT:
```

Figure 7-1: Searching for an individual patient

## 7.3 Shortcuts

QMan can provide shortcuts for you when defining the subject of a search. These shortcut subjects automatically include certain attributes and values. For example, entering infants is the equivalent of entering: Subject = PATIENT and Attribute/Value = AGE < 1.

```

What is the subject of your search? LIVING PATIENTS // INFANTS <Enter> INFANTS
Computing Search Efficiency Rating.

PATIENT INFORMATION
AGE LESS THAN 1 [SER = 99]

```

Figure 7-2: Using a shortcut in the subject search

As you can see in the search summary, which is printed after each query, QMan defines the subject “infant” as a patient less than 1 year of age. You could have entered this parameter by defining the condition of patients by age and specifying a value of less than 1 year. However, QMan provides this subject to make searches involving infants easier.

Another group of patients that are predefined by QMan as a subject are “women.” Study the following example:

```

What is the subject of your search? LIVING PATIENTS // WOMEN <Enter>
1 WOMEN FEMALE
2 WOMEN OF CHILDBEARING AGE
CHOOSE 1-2: 2 <Enter> WOMEN OF CHILDBEARING AGE
Computing Search Efficiency Rating.

PATIENT INFORMATION
SEX IS FEMALE [SER = .78]
AGE BETWEEN (inclusive) 14 and 45 [SER = .71]

```

Figure 7-3: Search summary for women

Again, reading the search summary, you can see that QMan has two attributes for the subject patients. The first is simply patients where the sex is female. The second is age between 14 and 45 years.

By now you might be wondering what your choices are for predefined (shortcut) subjects. The following example shows what you will see, if you invoke the second level of help at the first prompt.

```
What is the subject of your search?  LIVING PATIENTS // ?? <Enter>
(Remember, all subjects include deceased patients except for the subject
"living patients")

Possible choices:
  DEAD PATIENTS
  FEMALE
  INFANTS

  ITEM

LIVING PATIENTS

  MALES

PATIENT
WOMEN OF CHILDBEARING AGE
  VISITS
  PROVIDERS
```

Figure 7-4: Result of invoking second level of help at first prompt

## 7.4 Visits

In many searches, it is useful to take the perspective of the visit rather than the patient. This is particularly true if you are generating workload statistics or other management reports. The attributes of visits are:

- Date
- Clinic (pediatrics, dental, ER, etc)
- Location (Gallup, Tucson, etc.)
- Patient
- Provider (name or discipline, primary or secondary)
- Service category (ambulatory, hospitalization, etc.)
- Third party billed
- Type (IHS, VA, 638, etc.)

Let's look at an example:

```

***** SEARCH CRITERIA *****

What is the subject of your search?  LIVING PATIENTS // VISIT <Enter>  VISIT
Attribute of VISIT:  DATE <Enter>
    1  DATE LAST MODIFIED
    2  DATE OF VISIT
CHOOSE 1-2:  2 <Enter>
Condition:  BETWEEN,DATES <Enter>  (inclusive)
Exact starting date:  1/1/88 <Enter>  (JAN 01, 1988)
Exact ending date:  12/1/88 <Enter>  (DEC 01, 1988)
Computing Search Efficiency Rating.

Subject of search:  VISIT
DATE OF VISIT BETWEEN,DATES (inclusive) JAN 1,1988 and DEC 1,1988
[SER = 99]

Attribute of VISIT:  CLINIC <Enter>

Enter CLINIC:  EMERGENCY MEDICINE <Enter>          30
Enter ANOTHER CLINIC:

The following have been selected =>

    EMERGENCY MEDICINE

Computing Search Efficiency Rating.

Subject of search:  VISIT
DATE OF VISIT BETWEEN,DATES (inclusive) JAN 1,1988 and DEC 1,1988
[SER = 99]
CLINIC (EMERGENCY ME)  [SER = .94]

Attribute of VISIT:  <Enter>

***** QMAN OUTPUT OPTIONS *****

Select one of the following:

    1  DISPLAY results on the screen
    2  PRINT results on paper
    3  COUNT 'hits'
    4  STORE results of a search in a FM search template
    5  SAVE search logic for future use
    6  R-MAN special report generator
    9  HELP
    0  EXIT

Your choice:  DISPLAY// <Enter>

```

| VISIT NO. | VISIT DATE<br>AND TIME | CLINIC       |
|-----------|------------------------|--------------|
| 18278     | JAN 1,1988@01:05       | EMERGENCY ME |
| 30898     | JAN 1,1988@10:00       | EMERGENCY ME |
| 30851     | JAN 1,1988@11:15       | EMERGENCY ME |
| 37660     | JAN 1,1988@14:20       | EMERGENCY ME |
| 30122     | JAN 1,1988@14:44       | EMERGENCY ME |
| 49679     | JAN 4,1988@18:07       | EMERGENCY ME |
| 9960      | JAN 4,1988@20:21       | EMERGENCY ME |
| 49727     | JAN 5,1988@17:00       | EMERGENCY ME |
| 46166     | JAN 5,1988@19:18       | EMERGENCY ME |
| 24521     | JAN 6,1988@07:38       | EMERGENCY ME |
| <>        |                        |              |

Figure 7-5: Sample search by visit

A visit can also be an attribute of a patient (e.g., find all patients who attended prenatal clinic in July, 1991). It is just a matter of context and perspective. A detailed discussion of visit as a patient attribute appears in later in this series of documents.

## 7.5 Providers

The final subject we will discuss is provider. The following attributes are available:

- Affiliation (IHS, contract, tribal, etc.)
- DEA Number
- Discipline (internal medicine, registered nurse, etc.)
- Full/Part Time
- Home Phone Number
- Initials
- License number
- Mailing Address
- Office Phone Number
- Social Security Number

```

***** SEARCH CRITERIA *****

What is the subject of your search? LIVING PATIENTS // PROVIDER <Enter>
Attribute of PROVIDER: DISCIPLINE <Enter>

Enter CLASS: REGISTERED NURSE <Enter>
Enter ANOTHER CLASS: <Enter>

The following have been selected =>

Computing Search Efficiency Rating

  Subject of search: PROVIDER
    DISCIPLINE (REGISTERED N)  [SER = .88]

Attribute of PROVIDER: <Enter>

***** QMAN OUTPUT OPTIONS *****

  Select one of the following:

      1      DISPLAY results on the screen
      2      PRINT results on paper
      3      COUNT 'hits'
      4      STORE results of a search in a FM search template
      5      SAVE search logic for future use
      6      R-MAN special report generator
      9      HELP
      0      EXIT

  Your choice: DISPLAY// <Enter>

PROVIDERS          IHS  CLASS
                   CODE
-----
--
REGISTERED NURSE,I 999  REGISTERED N
BROWN, BARBARA    111  REGISTERED N
HOUSTON, MARJEE K. 114  REGISTERED N
PUELLA, JOSEPHINE 115  REGISTERED N
LOPEZ, FRANCES    FML  REGISTERED N
JOAQUIN, ANGELA   132  REGISTERED N
ENOS, SUSIE       SJE  REGISTERED N
PABLO, CLIFFORD   CAP  REGISTERED N
<>

```

Figure 7-6: Sample search by provider

Note that “provider” is not really useful as the subject of a search. In this context, it is intended for administrative purposes only. But provider is also an attribute of visit, and as an attribute, it plays a central role in clinical queries (e.g., “Find all visits for AIDS where Dr. Smith was the primary provider”). The use of “provider” as an attribute will be discussed in detail later in this series of documents.

## 8.0 Natural Language Interface

Another feature of QMan allows you to retrieve information from the PCC database using the natural language interface (NLI) instead of responding to prompts as we have in dialogues up to this point. The purpose of the NLI is to enable you to conduct quick searches of database. The NLI only accepts single queries (not searches) and the only output is to your display screen. The advantages of the NLI are speed and convenience. The disadvantages are limitations on what you can ask for and what you can do with the output.

Selecting the “FAST Facts (natural language interface)” option from the main QMan menu displays the Utility Status screen and the simple statement, “Tell me what you want”.

```
IHS Query Manager: QMan
                    Version 2
                    Site set to (your facility)

***** QMAN OPTIONS *****

Select one of the following:

1          SEARCH PCC Database (dialogue interface)
2          FAST Facts (natural language interface)
3          RUN Search Logic
4          VIEW/DELETE Taxonomies and Search Templates
9          HELP
0          EXIT

Your choice: SEARCH// 2 <Enter>
```

```

***** WELCOME TO QMAN: THE PCC QUERY UTILITY *****

Query utility: IHS QMAN Ver. 2
Current user: JOHN PROVIDER
Chart numbers will be displayed for: (your facility)
Access to demographic data: PERMITTED
Access to clinical data: PERMITTED

Tell me what you want: SHOW ME ALL PATIENTS WHO LIVE IN TUCSON <Enter>

PATIENTS          CHART  COMMUNITY
                   NUMBER
-----
WATERMAN,RAE*    100003 TUCSON
WHEELWRIGHT,MAND 100006 TUCSON
WATERMAN,RENE    100417 TUCSON
CARTER,VICTOR    100602 TUCSON
BROEN,SYLVIA    100668 TUCSON
LINCOLN,BONNIE   100803 TUCSON
. . .

```

Figure 8-1: Selecting fast facts (natural language interface) option

## 8.1 Telling QMan What You Want

You may now tell QMan to display information (actually, you are in a sense asking a question) which contains a subject, an attribute, a condition, and a value. There are some rules that you must follow in telling QMan what you want:

- The subject must be PATIENTS or an individual patient's name.
- If the subject is a specific patient, you must use an apostrophe and an "s"
- (e.g., "SHOW ME LISA MARTIN'S LAST WEIGHT")
- You may specify only one attribute.
- You may specify only one condition.
- You may specify only one value.

(You cannot use a range of values, e.g., between x and y.)

In our first example we will tell QMan to show you:

Subject: Patients  
Attribute: Hematocrits  
Condition: Over  
Value: 20

You will tell QMan to show you the patients in the database that have had hematocrits with a value over 20 by typing in a plain language command as follows (boldface type):

Tell me what you want: **Show Me Patients with Hematocrits Over 20**

QMan will pause briefly to interpret your instructions, then offer you options to display your report that are identical to those you have already used in previous chapters. We will select option 2, choosing not to display the individual hematocrit values.

```

You have 2 options for listing HEMATOCRITS =>

    1) For ea. patient, list all HEMATOCRITS which match your
       criteria
    2) List all PATIENTS with HEMATOCRITS meeting your criteria,
       but do not list the individual values of ea. HEMATOCRIT

Your choice (1 or 2): 1// 2 <Enter>

```

Figure 8-2: Resulting options given by QMan

Almost instantaneously your report is displayed on your screen.

| PATIENT                                  | CHART<br>NUMBER | HCT |
|------------------------------------------|-----------------|-----|
| MARTIN, LISA                             | 97              | +   |
| GREEN, DARLENE                           | 199             | +   |
| JOHNSON, DIANE                           | 875             | +   |
| BROWN, LARRY                             | 1527            | +   |
| . . .                                    |                 |     |
| MARTIN, JIM                              | 2403            | +   |
| JOHNSON, MARY                            | 2545            | +   |
| PETERS, LISA                             | 2906            | +   |
| SMITH, IRMA                              | 14272           | +   |
| Total:                                   | 73              |     |
| Press RETURN to continue or '^' to exit: |                 |     |

Figure 8-3: Sample report

**Important Note:** Natural language query reports can only be displayed on your screen.

The QMan natural language query system is intended to be a quick reference tool allowing access to pieces of information on a terminal only. For hard copies and more detailed information, utilizing the standard QMan search functions is required.

## 8.2 Individual Patient Query

Let's try a natural language query for an individual patient. Enter the following instructions for QMan to display the last weight measurement for the patient Beta Martin. Don't forget to use an apostrophe in her last name.

```
Tell me what you want: SHOW ME BETA MARTIN'S LAST WEIGHT IN LBS
<Enter>
-----
PATIENT          CHART   WT      DATE OF WT
                  NUMBER  lbs
-----
BETA, LISA       97      244.0   JUN 20, 1989
Total: 1
```

Figure 8-4: Sample natural language query for an individual patient

As you can see, the patient's weight and date of that measurement are displayed.

You could have stated the instructions to obtain Lisa Martin's last weight in several other ways. For example:

```
SHOW ME BETA MARTIN'S LAST WTL
GET BETA MARTIN'S LAST WEIGHT
FIND BETA MARTIN'S LAST WEIGHT
```

Figure 8-5: Other examples

In the first example, we used the synonym for weight in pounds. In the second and third example, QMan would have offered you a choice of displaying the weight in pounds or kilograms since we did not specify which.

SHOW, FIND, and GET are three simple instructions meaning essentially the same thing to QMan; that is, "go and get the information that I am specifying in the rest of this statement."

Of course, we use our patient's proper name with the apostrophe as the subject identifier.

QMan always remembers the subject of your last NLI query. If you do not enter a specific subject, QMan assumes you are talking about the subject of the previous query.

Let's assume that you want some more information on Beta Martin while you are at your terminal. If you go right on to the next "Tell me what you want" prompt from QMan without entering another subject, you can use the pronoun HER instead of writing out Lisa Martin's name again.

Let's find HER highest weight and display it pounds (use the synonym WTL).

```
Tell me what you want: SHOW ME HER HIGHEST WTL <Enter>

PATIENT          CHART    HIGHEST WT   DATE OF WT
                   NUMBER  lbs
-----
MARTIN,BETA      97       244.0        JUN 20,1989
Total: 1

    Now let's go right on and find Beta Martin's Social Security number
    (use the synonym SSN)

Tell me what you want: NOW FIND HER SSN <Enter>

PATIENT          CHART    SSN
                   NUMBER
-----
MARTIN,BETA      97       111-99-1111
Total: 1
```

Figure 8-6: Using "her" to request same patient's highest weight

Now let's list all of Beta Martin's weights (in pounds).

```
Tell me what you want: SHOW ME HER WTLS <Enter>

PATIENT          CHART    WT    DATE OF WT
                   NUMBER  lbs
-----
MARTIN,BETA      97       244.0  JUN 20,1989
MARTIN,BETA      97       100.0  MAY 25,1989
MARTIN,BETA      97       120.0  JUN 5,1988
MARTIN,BETA      97       161.3  JAN 30,1987
MARTIN,BETA      97       166.3  JAN 22,1987
MARTIN,BETA      97       157.3  JUL 22,1986
MARTIN,BETA      97       200.0  JUN 6,1977
Total: 7
```

Figure 8-7: Using "her" to request all of same patient's weights

A feature added to QMan in the natural language interface is the ability to average a group of measurements. Continuing with the patient Beta Martin, let's instruct QMan to show us the average of her weights on file.

```
Tell me what you want: SHOW ME HER AVERAGE WTLS <Enter>

PATIENT          CHART    AVE. WT
                  NUMBER  lbs
-----
MARTIN,BETA      97       164.1
Total: 1
```

Figure 7-7: Using "her" to request same patient's average weights

### 8.3 Queries for Groups of Patients

In the next two examples, we will ask QMan to display two specific groups of patients. The first is a list of those patients who are deceased. The second is a list of all patients with a diagnosis of fetal alcohol syndrome. Note the use of the synonyms "PTS" for PATIENTS and "FAS" for fetal alcohol syndrome.

```
Tell me what you want: FIND PTS WHO ARE DEAD <Enter>
  1  DIED  DOD
  2  DIED FROM  CAUSE OF DEATH
CHOOSE 1-2: 1 <Enter>

PATIENT          CHART    DEATH DATE
                  NUMBER
-----
PHIII,SUSAN      7455     JAN 1,1890
THETAB,JIM              AUG 5,1964
. . .
BETAB,LARRY              DEC 7,1986
SIGMA,LARRY              APR 29,1987
<>
Tell me what you want: FIND ALL PTS WITH DX OF FAS <Enter>

760.71 (MATERNAL ALCOHOL AFF NB)
ALCOHOL AFFECTING FETUS OR NEWBORN VIA PLACENTA OR BREAST MILK

OK? Y// <Enter>
```

```

You have three options for listing DIAGNOSES =>

1) For ea. patient, list all ICD9 CODES
2) For ea. patient, list all ICD9 CODES and PROVIDER NARRATIVES
3) List all PATIENTS with diagnoses you specified, but DO NOT list
   ICD9 CODES or PROVIDER NARRATIVES (FASTEST OPTION!!)

Your choice (1-3): 1// 3 <Enter>

PATIENT          CHART    DIAGNOSIS
                  NUMBER  ICD9 CODE
-----
JONES, BETA          +
Total: 1

```

Figure 8-8: Sample queries for groups of patients

Try queries like these on your own system:

FIND ALL PATIENTS WHO LIVE IN PHOENIX

FIND ALL PATIENTS WHOSE TRIBE IS NAVAJO

SHOW ME ALL PTS WHOSE HCT IS < 20

LIST ALL PTS WITH DX OF HTN

FIND EVERYONE WITH RX = DEMEROL

LIST ALL PTS OVER AGE 65

SHOW ME LISA MARTIN'S LAST WEIGHT

FIND BILL PETERS' SSN

NOW GET HIS BLOOD TYPE

NOW SHOW ME HIS HEIGHT

WHAT IS HIS CURRENT COMMUNITY

SHOW ME HIS MAILING ADDRESS

FIND HIS AVERAGE HCT

SHOW ALL PATIENTS WHO HAVE DIABETES

FIND ALL PATIENTS BORN IN 1988.

## 9.0 Output Options

Now that we have covered the basic methods of building a query, let's focus on some of the output options.

### 9.1 Displaying Results on the Screen

By now, you should be an expert at displaying the results on the screen. The display option has two primary uses:

- First, it is the method of choice for brief ad hoc queries where only a few hits are expected and the results do not need to be saved.
- Second, it is useful for previewing a large report which will ultimately need to be printed. Frequently, the preview will suggest minor modifications to the query which will improve the final printed report.

This option is relatively low risk with respect to patient confidentiality. No permanent records are produced to fall into the wrong hands. However, you must be careful never to walk away from a screen with "live" data on it. Unauthorized individuals could view the results or worse, they could press the PRINT SCREEN key.

### 9.2 Printing the Results

This section covers the printing conventions, having print jobs run in the background, and information about AuxPort printers.

#### 9.2.1 Printing Conventions

PCC and FileMan users should have no trouble learning QMan's report generating methods because all three share the same printing conventions. If you select Option 2 on QMan's Output Menu, the dialogue will be directed at defining the printing process.

- First you will be asked if you want to suppress names on the printed report and only display chart numbers. (Yet another security measure!)
- Next you will be asked for an output device. This is usually a name like "MEDICAL RECORDS LASER PRINTER," but it could be something more esoteric like "TTY18." As always, the "?" will give you help, in this case a list of device names. Check with your Site Manager to find out what your printers are called and which printers are on the "restricted" list.
- Finally, depending on your site configuration, you might be asked to specify a margin width. The default is usually 80. If you have a query with many attributes and your printer can handle it, the margin can be increased to 132 or even 256.

```
***** QMAN OUTPUT OPTIONS *****

Select one of the following:

1      DISPLAY results on the screen
2      PRINT results on paper
3      COUNT 'hits'
4      STORE results of a search in a FM search template
5      SAVE search logic for future use
6      R-MAN special report generator
9      HELP
0      EXIT

Your choice: DISPLAY// 2 <Enter> PRINT results on paper

Want to suppress patient names and only print the chart no.? NO// <Enter>
Enter name of person requesting report: DEMO USER// DOCTOR,DOCTOR <Enter>      DD
DEVICE: <Enter>      RIGHT MARGIN: 80//
```

Figure 9-1: Printing a QMan report

The reports that come out of a printer look considerably different than the output displayed on a screen.

- First, there is always a cover sheet which includes a confidentiality warning, the name of the user, and the person requesting the report if you hold the security key AMQQZRPT, the date of the report, and the search criteria.
- Second, each subsequent printed page will have the name of the user printed at the top.

## Cover Page

```

*****
**   WARNING...The following report may contain CONFIDENTIAL PATIENT DATA.   **
**   You are accountable for keeping the report in a SECURE AREA at all times.**
**           SHRED the report as soon as it is no longer needed.           **
**           PRIVACY ACT violators are subject to a $5000 fine!             **
*****

This report printed by DEMO USER and requested by DOCTOR DOCTOR
Date of report: JUN 18,1991

Subject of search: PATIENTS
ALIVE TODAY      [SER = .01]
AGE GREATER THAN 70      [SER = 99]
SEX IS FEMALE      [SER = 1.17]
CURRENT COMMUNITY (SAN XAVIER/SELLS...)      [SER = 2.33]

PRINTED REPORT

*****   IHS Query Manager      Confidential Patient Data   *****
Report requested by DEMO USER   July 19, 1991

PATIENTS          CHART AGE  COMMUNITY      SEX
(Alive)          NUMBER

-----
BURR,ASHLEY*      102147 79   SELLS          FEMALE
ADAMS,JOAN*      102375 76   SELLS          FEMALE
FLINTSTONE,CONST 101247 76   SELLS          FEMALE
CARPENTER,SALLY* 102320 75   SELLS          FEMALE
SMITH,GINA       102369 74   SELLS          FEMALE
BUSH,FLORENCE    102311 74   SELLS          FEMALE
KETCHUP,EVE*     103179 72   SELLS          FEMALE
JACKSON,CORA*    102568 71   SELLS          FEMALE
Total: 8

```

Figure 9-2: Sample report cover page

### 9.2.2 Queuing a Print Job: Running in Background

QMan gives you the option of running all searches with printed output “in background.” This has two significant advantages:

- First, you will not tie up your terminal while a long print job is taking place.
- Second, you can schedule the search for some future time, say the middle of the night, when there is less competition for computing resources. This is particularly important at sites with overloaded systems which “slow down” as each new request is entered into the system.

To run a search in background, you must first “queue the job.” This is easy. When QMan asks you for a device, type in the letter “Q” and press Enter. Then he will ask for a device again. This time enter the name of the printer. Finally QMan will ask for a requested start time. Enter something like “7/4/91@1am” or “T@4am” or “NOW”.

If your request was successful, QMan will report back: “Request queued!” On some systems, even if you do not enter a “Q” in response to the “DEVICE:” prompt, QMan will ask you if you want to queue the job.

```
Your choice: DISPLAY// 2 <Enter> PRINT results on paper
Want to suppress patient names and only print the chart no.? NO// <Enter>
DEVICE: QUEUE TO PRINT ON
DEVICE: 9 <Enter> COMPUTER ROOM PRINTRONIX PRINTER    RIGHT MARGIN: 80// <Enter>
Requested Start Time: NOW// <Enter>
Request queued!
```

Figure 9-3: Queuing a print job

### 9.2.3 A Word About AuxPort Printers

At a few IHS sites, some printers are attached to the auxiliary ports of remote terminals instead of being connected directly to the computer. You can not queue a job to an AuxPort printer. Any reports printed on the AuxPort must be run in foreground. This ties up your terminal and discourages off-hours searches. Historically, AuxPort printers pose a greater security risk than standard printers. Finally, if your site manager has not named these printers in a standard way, QMan might not be able to recognize their existence. If you can avoid using AuxPort printers with QMan, please do so.

## 10.0 Appendix A: Understanding the IHS Data System

Electronic medical records have been used continuously in the Indian Health Service (IHS) since 1969. Essential health information for an entire generation of Tohono O'odham Indians is updated daily and stored in Sells Service Unit computers. These data include approximately 500 kinds of demographic information and over 1000 kinds of clinical information; e.g., laboratory results, diagnoses, problem lists, prescriptions, etc. Printed summaries of each patient's record are provided to health professionals along with the medical record at the start of each visit.

Now this technology is being made available throughout the IHS. A computer-based clinical records system called the Patient Care Component (PCC) of the Resource and Patient Management System (RPMS) will be installed in virtually every IHS facility by 1993. All PCC functions (patient care, management, research) are based on one single data bank and are driven by one common user interface.

### 10.1 Functional Components

Every computer system has three functional components: input, processing, and output. The PCC is no exception.

#### 10.1.1 Input

Approximately half of the input to PCC is captured at the point of service; e.g., pharmacy, lab, patient registration, and appointment desk. The other half, which includes diagnoses, problem list, allergies, family history, and measurements, is copied from the patient record by data entry personnel. Special data recording instruments called "encounter forms" are used in all healthcare settings including inpatient, outpatient, field, and dental. One copy of the encounter form remains in the chart while another is used for data entry. Data clerks assign an ICD9 code to each diagnosis so that users can retrieve information about specific clinical conditions (e.g., find all patients with "acute appendicitis").

#### 10.1.2 Processing

Data processing usually takes place at the facility where care is delivered. On-site processing promotes end user access and local control of the data system. Information is available to users on a round-the-clock basis. Minicomputers run the public domain database software VA FileMan. This program is written in the computer language MUMPS. FileMan enables users who have no special knowledge of the computer language MUMPS to store data, search for specific information and generate reports, and save results in the computer for future use.

### 10.1.3 Output

The PCC has three major outputs: patient-specific information (e.g., health summaries and case management reports), preformatted reports for managers, and ad hoc reports about groups of patients. The patient-specific reports are generated before each visit. They support direct patient care. Ultimately, computers will be linked to form a network so that patients who receive care at multiple facilities will have “merged” health summaries available at all points of service. Management reports are produced at predetermined intervals or can be requested through the menu system. They include information about the workload and resource requirements of our health system. The ad hoc reports are produced by a special utility on a non-recurring basis. They are intended to provide highly-specific information about certain patient groups to support clinical care, research, epidemiology, program planning, and quality assurance.

## 10.2 Database Fundamentals

The following provides information the fundamentals about databases.

### 10.2.1 Files and Fields

All the information in the PCC is stored in an electronic data bank called a database. The database consists of a series of interrelated files. Each file contains categorically related information. For example, there is a PATIENT file, which contains each patient’s name and related demographic data. There is a LAB file that contains laboratory results. Altogether there are over 30 files in the PCC.

Each file is subdivided into fields. In the PATIENT file, for example, there are lots of fields related to patient demographics: SEX, DATE OF BIRTH, PHONE NUMBER, CURRENT COMMUNITY, etc. When you put data into the fields of a file, you are making an entry.

| FILE: PATIENT |          |     |               |             |
|---------------|----------|-----|---------------|-------------|
| FIELDS=>      | NAME     | SEX | DATE OF BIRTH | SSN         |
| ENTRY #1 =>   | Joe Blow | M   | Jan 5, 1945   | 123-45-6789 |
| ENTRY #2 =>   | Jane Doe | F   | Apr 9, 1955   | 987-65-4321 |
| ENTRY #3 =>   | Jane Doe | F   | Jun 3, 1921   | 675-04-3112 |

Figure 10-1: Sample fields within a file

## 10.2.2 Key Fields and Identifiers

The first field in the file is particularly important. It is called the “key” field because the value of this field is used to locate individual entries in the file. The process of accessing a unique file entry is known as the “look up.” Suppose you want to find Joe Beta’s date of birth. You use the name “Joe Beta” to look up the values of all the fields stored under ENTRY #1. In other words, the name “Joe Beta” is the key to accessing all the other information in entry #1.

Each entry in the file is tagged with a unique entry number. This number does not need to be known by the user. It enables you to make multiple entries with the same key field value. For example, you can enter two different patients who happen to be named Jane Delta. Later, if you try to look up Jane Delta, you will be told there are two people in the file with that name. Identifiers, information that reduces ambiguity (e.g., dates of birth), are listed next to the possible choices so that you can select the appropriate one.

## 10.2.3 Indices

Indices (also known as cross references) are special pieces of information in the database. They do not represent the values of a field entry but instead show where to find these values. Consider what happens when you try to find a specific topic in a book. One approach is to start reading on the first page and continue until you came across the desired topic. A more efficient approach is to look up the topic in the index. The index tells you nothing about the topic except where to find it. By using the index, you bypass the process of reading the entire book and go directly to topic. The PCC database uses this same strategy. The key field of any file has an alphabetical index to streamline the lookup process. Other heavily used fields are also indexed. For example, the DATE OF BIRTH field has an index that enables you to instantly find all entries of patients who were born on a specific day.

## 10.2.4 Pointers

Under normal circumstances, reports can only be based on the information from a single file. Fortunately, there is an entity called a pointer which enables you to join the information from several files in a single report. Pointers are a vital part of the PCC. They act as a unifying force to integrate information from dozens of heterogeneous files.

To understand how pointers work, consider the following example. Suppose you already have a demographic file of patient names and related information (sex, DOB etc.), and you also have a measurement file that contains patients' names, weights, and blood pressures. Now you want to generate a report that contains name, sex, DOB, and blood pressures (i.e., information from both files). One approach would be to make a new file, the clinical file, which contains all of these fields. Once this was accomplished, you could reenter demographic and clinical information from the old files and generate the report.

A more elegant approach is to tell the computer that the name field of the measurement file can be used as a lookup value in the demographic file; i.e., establish a link between the two files using the patient name in one file to point to information in the other. This instruction enables the computer to join data from both files into a unique report without having to create a new file.

It is not unusual for pointers to span a series of files where A points to B, B points to C, etc. This configuration is called a pointer chain. Knowledge and proper use of pointer chains is critical to database navigation.

## 10.3 RPMS and PCC Files

### 10.3.1 Patient Files

The RPMS consists of a series of "packages." Each package is a computer program that captures a specific kind of information and saves it in one or more categorically related files. All packages are written in MUMPS and all are based on VA FileMan.

The primary package is Patient Registration. This package is used to collect all the demographic information of newly registered patients. This data is stored in two patient files. The first file is called the VA PATIENT file. Obviously, not all IHS patients are veterans, but this file was developed by the VA and contains generic demographic information. The second file is called simply the PATIENT file. It contains IHS specific information (Tribe, blood quantum, etc.) not contained in the VA PATIENT file.

Every IHS patient has information stored in both files. The VA PATIENT file is primary and the PATIENT file points to it. These files contain over 700 fields and together they store all the non-clinical information about a patient. Given what we have learned about pointers, it is not surprising that virtually every other file in the system that contains patient information points to these files.

### 10.3.2 VA Packages

Most of the other RPMS packages were developed by the VA for use in their own hospitals. The IHS has adopted these packages for its own use. The “VA packages” include pharmacy, lab, admission/discharge/transfer, dietary, mental health, radiology, order entry, etc. Notice that all of these are discipline specific. They are used to collect information for a single purpose and for the most part are independent of each other. The one common thread is that they all point back to the patient files.

### 10.3.3 PCC as the Integrator of Packages

Although the packages are quite valuable as “standalone” entities, their value increases exponentially when the information from all packages is integrated into a unified electronic records system. To achieve integration, the IHS wrote its own package called the Patient Care Component. The PCC takes clinical information from the VA packages and redundantly stores this information in its own files. For example, when a pharmacist uses the pharmacy package to fill a prescription, a complete record of the transaction is stored in the pharmacy files. Some of this information is clinically relevant; e.g., drug type, strength, quantity, prescribing physician, date. This information is shipped to the PCC. Other information is clinically irrelevant and is not copied into the PCC; e.g., lot number or safety cap type.

### 10.3.4 PCC Clinical Files

The PCC is also a repository for certain kinds of clinical information not found in any VA package. Included in this category are the problem list, diagnoses, allergies, immunizations, family history, history of surgery, dental procedures, and health maintenance reminders. This information is taken from a copy of the encounter form (progress notes and discharge summaries) and recorded in the PCC by data entry personnel. To reiterate, the PCC is a package with two functions: it integrates VA packages and it stores clinical data.

### 10.3.5 Visit File and “V” Files

The visit file is another important part of the PCC database. It points to the patient files. Each patient may have multiple visits. Visit file fields include date, clinic, service type, etc. Almost all other clinical files in the PCC point to the Visit file. For example, there is a “V Medication” file which contains prescription information. Each prescription is linked to a specific visit by a pointer and a single visit may be linked to multiple prescriptions. The “V” in “V Medication” stands for visit and indicates that this file points to the Visit file as its “hub” file. Other “V” files include V Lab, V Purpose of Visit, V Dental, V Immunization, V Provider, etc.

### 10.3.6 Data Dictionary

How does the system keep track of what can be entered and how does it know where to put it? How does it make use of pointers, indices, and other database internals? It does these things through self-knowledge. There is a special file which holds no clinical data but instead contains information about the database itself. This file is called the data dictionary. Every entry in the data dictionary file is a complete description of one file in the database: file name, field names, indices, pointers, input controls, security etc. Everything you will ever need to know about the internal workings of the PCC and RPMS is in the data dictionary. A copy of this document is available from your site manager.

## 10.4 QMAN

### 10.4.1 Information about Individual Patients

The most visible output of the PCC is the patient health summary. This document summarizes, in a few pages, the entire health history of a single individual. A fresh printout is requested each time the patient comes in for care. The health summary promotes the rapid recognition of each patient's major health needs and thereby provides a solid foundation for delivering comprehensive care.

### 10.4.2 Information about Groups of Patients

While the health summary is vital for the direct patient care, it tells nothing about groups of patients. This "wide angle" perspective is required to manage, evaluate, and plan the health system. To access information about groups of patients, you must use a special database "mining" utility called IHS Query Manager (also known as QMan). This utility enables users with no special computer expertise to define explicit search criteria, retrieve information, and generate reports.

The health summary describes individual patients. QMan does the same for groups of patients. Both utilities are concerned with reporting clinical and demographic data, but their mode of operation is entirely different. Health summaries are generated when a user selects a patient and a summary type from the menu system. Only a few keystrokes are necessary to produce output because all reports are preformatted. On the other hand, QMan reports are formatted "on the fly" according to user specifications. You control QMan by using a dialog. Users of VA FileManager will be familiar with this approach. When the dialog is completed, search criteria are defined and the report is printed.

### 10.4.3 FileMan vs. QMan

If FileMan is the most powerful general purpose tool for managing the PCC database, why do we need QMan? True, FileMan is very powerful, but exploiting this power is a formidable challenge for the casual user. First, you have to learn all of FileMan's syntactical conventions and rules of navigation. In addition, you have to know where data is located in PCC's 30 files and 700 fields. Even if you are an expert user and enter all instructions properly, FileMan frequently ignores helpful cross references and has no special mechanism for optimizing search efficiency. Suboptimal search efficiency may retard computer performance to unacceptable levels. If efficiency is not an issue, you might still have difficulties because FileMan's analytic functions are quite restricted. Finally, FileMan has limitations precisely because it is a general purpose tool that is not fine-tuned for managing clinical records. For example, FileMan does not know about ICD9 coding conventions and it does not understand how to deal with a two-valued field like blood pressure.

QMan was invented to overcome these difficulties. You control QMan the same way you control FileMan: by carrying on a dialog with the computer. But the similarity ends here. QMan incorporates a special FileMan file, called the Metadictionary that contains navigating instructions and search optimizing strategies. It also contains a lexicon of synonyms that makes it much simpler to learn the operating commands. Together the Metadictionary and lexicon contain a vast amount of information which, under FileMan, would have to be memorized by the user. By allowing the Metadictionary and lexicon to "carry the load," operations are streamlined and learning time is markedly reduced. QMan has a man-machine interface that is fine-tuned for clinical data. This simplifies the process of describing what you want to find and how you want it presented.

## 10.5 Why do you need to know all this stuff?

At this point you should have a familiarity with the following terms:

| Term            | Term        | Term           | Term            |
|-----------------|-------------|----------------|-----------------|
| attribute       | files       | metadictionary | processing      |
| cross reference | identifiers | operator       | subject         |
| database        | indices     | output         | V files         |
| data dictionary | input       | packages       | VA package      |
| entry           | key field   | patient file   | VA Patient file |
| entry number    | lexicon     | pointer        | Visit file      |
| fields          | look up     | pointer chain  |                 |

If QMan is so smart, why do you need to learn about all of this? Some of you might want to know what is going on underneath QMan's friendly dialog. Others might want to communicate with the folks who develop and operate the PCC. In order to communicate, you must have a basic knowledge of database jargon. Without communication, you will be at the mercy of nerds.

## 11.0 Appendix B

The following is a lexicon of attributes.

| <b>Attributes</b>                     |
|---------------------------------------|
| 1 HOUR GLUCOSE TOLERANCE TEST         |
| 1 HOUR GLUCOSE TOLERANCE TEST (URINE) |
| 1 HOUR GTT                            |
| 1 HOUR URINE GLUCOSE TOLERANCE TEST   |
| 1 HR GTT                              |
| 1 HR. GTT                             |
| 1 HR. GTT (URINE)                     |
| IHR GTT                               |
| IHR GTT (URINE)                       |
| IHr.GTT                               |
| IHr.GTT (URINE)                       |
| IST VISIT OR REVISIT                  |
| 2 HOUR GLUCOSE TOLERANCE TEST         |
| 2 HOUR GLUCOSE TOLERANCE TEST (URINE) |
| 2 HOUR GTT                            |
| 2 HOUR GTT (URINE)                    |
| 2 HOUR URINE GLUCOSE TOLERANCE TEST   |
| 2 HR GTT (URINE)                      |
| 2 HR. GTT                             |
| 2 HR. GTT (URINE)                     |
| 2HR.GTT                               |
| 2Hr.GTT                               |
| 2Hr.GTT (URINE)                       |
| 3 HOUR GLUCOSE TOLERANCE TEST         |
| 3 HOUR GLUCOSE TOLERANCE TEST (URINE) |
| 3 HOUR GTT                            |
| 3 HOUR URINE GLUCOSE TOLERANCE TEST   |
| 3 HR GTT                              |
| 3 HR GTT (URINE)                      |
| 3 HR. GTT                             |
| 3 HR. GTT (URINE)                     |

| <b>Attributes</b>           |
|-----------------------------|
| 3HR GTT (URINE)             |
| 3Hr.GTT                     |
| 3Hr.GTT (URINE)             |
| 3RD PARTY BILLED            |
| AI ANTITRYPSIN              |
| ACCIDENT DATE               |
| ACID PHOSPHATASE            |
| ADA CODE                    |
| ADDRESS (MAILING)           |
| AGE                         |
| ALBUMIN                     |
| ALIVE                       |
| ALK PHOS                    |
| ALK. PHOSPHATASE            |
| ALKALINE PHOSPHATASE        |
| ALPHA-I-ANTITRYPSIN         |
| ALPHA-FETOPROTEIN           |
| ALPHABETIC RANGE            |
| AMYLASE                     |
| ANA                         |
| ANION GAP                   |
| AREA                        |
| ASSESSMENTS                 |
| B 12                        |
| B/P(systolic and diastolic) |
| BENEFICIARY CLASSIFICATION  |
| BILIRUBIN, DIR.             |
| BIRTH CERTIFICATE NUMBER    |
| BIRTHDAY                    |
| BLOOD GLUCOSE               |
| BLOOD PRESSURE(S and D)     |
| BLOOD PRESSURE(diastolic)   |
| BLOOD PRESSURE(systolic)    |
| BLOOD QUANTUM (TRIBAL)      |
| BLOOD QUANTUM, INDIAN       |

| <b>Attributes</b>          |
|----------------------------|
| BLOOD SUGAR                |
| BLOOD TYPE                 |
| BODY WEIGHT IN KGs         |
| BODY WEIGHT IN KILOGRAMS   |
| BODY WEIGHT(kgs)           |
| BORN                       |
| BP DIASTOLIC               |
| BP SYSTOLIC                |
| BP(DIASTOLIC)              |
| BP(SYSTOLIC)               |
| BP(systolic and diastolic) |
| BPD                        |
| BPS                        |
| BPSD                       |
| BUN                        |
| C PEPTIDE                  |
| C-PEPTIDE                  |
| C2                         |
| C3                         |
| C4                         |
| CA++                       |
| CALC OSMOLALITY            |
| CALC.                      |
| CALCIUM                    |
| CALCULATED OSMOLALITY      |
| CARBON DIOXIDE             |
| CAUSE OF DEATH             |
| CAUSE OF DIAGNOSIS         |
| CAUSE OF DX                |
| CAUSE OF INJURY            |
| CHART LOCATION             |
| CHART SERVICE UNIT         |
| CHLORIDE                   |
| CHOLEST.                   |
| CHOLESTEROL                |

| <b>Attributes</b>          |
|----------------------------|
| CITY                       |
| CITY (MAILING ADDRESS)     |
| CLASSIFICATION/BENEFICIARY |
| CLINIC                     |
| CLINIC STOP                |
| CLINICAL DATA              |
| CLINICAL IMPRESSIONS       |
| CLINICAL INFORMATION       |
| CO(2)                      |
| CO2                        |
| COCCCI ANTIBODIES          |
| COCCI AB                   |
| COCCIDIOIDES AB            |
| COHORT                     |
| COHORT                     |
| COLOR OF URINE             |
| COMARISON DATE             |
| COMMUNITY                  |
| COMPLEMENT C2              |
| COMPLEMENT C3              |
| COMPLEMENT C4              |
| CONTRACEPTION METHOD       |
| CONTRACT CARE ELIGIBILITY  |
| CORRECTED VISION           |
| CORTISOL                   |
| CPK                        |
| CREATINE PHOSPHOKINASE     |
| CREATININE                 |
| CRIT                       |
| CURRENT COMMUNITY          |
| DATE                       |
| DATE ESTABLISHED           |
| DATE LAST MODIFIED         |
| DATE LAST UPDATE           |
| DATE OF ACCIDENT           |

| <b>Attributes</b>           |
|-----------------------------|
| DATE OF BIRTH               |
| DATE OF DEATH               |
| DATE OF DIAGNOSOS           |
| DATE OF DX                  |
| DATE OF INJURY              |
| DATE OF LAST REGULAR UPDATE |
| DATE OF LAST UPDATE         |
| DATE OF POV                 |
| DATE OF VISIT               |
| DATE OF VISIT               |
| DATE RECORD ESTABLISHED     |
| DBP                         |
| DEAD                        |
| DEAD PATIENTS               |
| DEATH AGE                   |
| DEATH CAUSE                 |
| DEATH CERTIFICATE NUMBER    |
| DECEASED                    |
| DENTAL OPERATIVE SITE       |
| DENTAL SERVICE CODE         |
| DIAGNOSES                   |
| DIAGNOSIS                   |
| DIASTOLIC BLOOD PRESSURE    |
| DIED                        |
| DIED FROM                   |
| DIG LEVEL                   |
| DIGOXIN                     |
| DILANTIN                    |
| DIPHENYLHYDANTOIN           |
| DIR. BILIRUBIN              |
| DISTRICT                    |
| DOB                         |
| DOD                         |
| DRUG                        |
| DURING THE PERIOD           |

| <b>Attributes</b>                      |
|----------------------------------------|
| DX                                     |
| ELIGIBILITY                            |
| EMPLOYMENT STATUS                      |
| ENCOUNTER LOCATION                     |
| ENROLLMENT NUMBER (TRIBAL)             |
| FASTING GLUCOSE TOLERANCE TEST         |
| FASTING GLUCOSE TOLERANCE TEST (URINE) |
| FASTING GTT                            |
| FASTING GTT (URINE)                    |
| FE                                     |
| FERRITIN                               |
| FIRST VISIT OR REVISIT                 |
| FOLATE                                 |
| FOLLICLE STIMULATING HORMONE           |
| FOLLICLE-STIMULATING HORMONE           |
| FSH                                    |
| Fe                                     |
| GENDER                                 |
| GLUCOSE                                |
| GLUCOSE URINE                          |
| GLUCTAMIC-PYRUVIC TRANSAMINASE         |
| GRAVIDA                                |
| H/S T CELL RATIO                       |
| HBAIC                                  |
| HC                                     |
| HC CMS                                 |
| HC(CMS)                                |
| HC(cms)                                |
| HCC                                    |
| HCG                                    |
| HCG BETA QUANT.                        |
| HCG BETA, QUANT.                       |
| HCI                                    |
| HCT                                    |
| HDL                                    |

| <b>Attributes</b>              |
|--------------------------------|
| HEAD CIRCUMFERENCE(cms)        |
| HEAD CIRCUMFERENCE(ins)        |
| HEALTH FACTORS                 |
| HEIGHT(cms)                    |
| HEIGHT(ins)                    |
| HELPER/SUPPRESSOR T CELL RATIO |
| HEMATOCRIT                     |
| HEMOGLOBIN                     |
| HEMOGLOBIN A1C                 |
| HGB                            |
| HIB PROHIBIT                   |
| HIB HIBTITER                   |
| HIB PEDVAXHIB                  |
| HIB [ALL TYPES]                |
| HIGH DENSITY LIPOPROTEINS      |
| HLA B27                        |
| HOME PHONE NUMBER              |
| HT INS                         |
| HT(CMS)                        |
| HT(INS)                        |
| HT(cms)                        |
| HT(ins)                        |
| HTC                            |
| HTI                            |
| Hb                             |
| HbA1C                          |
| ICD CODE                       |
| ICD NARRATIVE                  |
| IHS AREA                       |
| IMPRESSIONS                    |
| INDIAN BLOOD QUANTUM           |
| INJURY DATE                    |
| IRON                           |
| K                              |
| KETONES                        |

| <b>Attributes</b>           |
|-----------------------------|
| LACTIC DEHYDROGENASE        |
| LDH                         |
| LH                          |
| LITHIUM                     |
| LIVE CHILDREN               |
| LOCATION OF ACCIDENT        |
| LOCATION OF ENCOUNTER       |
| LOCATION OF INJURY          |
| LUTEINIZING HORMONE         |
| MAGNESIUM                   |
| MAILING ADDRESS             |
| MAILING ADDRESS-CITY        |
| MAILING ADDRESS-STATE       |
| MAILING ADDRESS-STREET      |
| MAILING ADDRESS-ZIP         |
| MCH                         |
| MCHC                        |
| MCV                         |
| MEAN CORPUSCULAR HEMOGLOBIN |
| MEAN CORPUSCULAR VOLUME     |
| MEDICATION                  |
| MEMBER OF A COHORT          |
| MEMBER OF A COHORT          |
| MEMBERSHIP VERIFIED         |
| MG                          |
| MODIFIER                    |
| NA                          |
| NAME                        |
| NOT ALIVE                   |
| NOT DEAD                    |
| OFFICE PHONE NUMBER         |
| OPS                         |
| OTHER TRIBE                 |
| P0(4)                       |
| P04                         |

| <b>Attributes</b>     |
|-----------------------|
| PAP SMEAR             |
| PARITY                |
| PATIENT NAME          |
| PB                    |
| PHENOBARB.            |
| PHENOBARBITAL         |
| PHENYTOIN             |
| PHONE NUMBER (HOME)   |
| PHONE NUMBER (OFFICE) |
| PHOSPHOROUS           |
| PLACE OF ACCIDENT     |
| PLACE OF INJURY       |
| PLATELET COUNT        |
| PLATELET COUNT (ESTM) |
| PLT                   |
| PLT (ESTM)            |
| P0(4)                 |
| P04                   |
| POSTING DATE OF VISIT |
| POTASSIUM             |
| POV                   |
| POV MODIFIER          |
| POVS                  |
| PREGNANCY TEST        |
| PRESCRIPTION          |
| PRIMARY PROVIDER      |
| PRIMARY OR SECONDARY  |
| PRO TIME              |
| PROCEDURE (DENTAL)    |
| PROGRAM OFFICE        |
| PROL.                 |
| PROLACTIN             |
| PROTEIN,TOTAL         |
| PROTHROMBIN TIME      |
| PROTIME               |

| <b>Attributes</b>                   |
|-------------------------------------|
| PROVIDER NARRATIVE                  |
| PURPOSE OF VISIT                    |
| QUANT. HCG BETA                     |
| QUANTIUM, INDIAN                    |
| QUANTUM, TRIBAL                     |
| RBC                                 |
| RECORD ESTABLISHED DATE             |
| RED BLOOD CELL COUNT                |
| RELATIVE DATE                       |
| RESERVATION DISTRICT                |
| RETIC COUNT                         |
| RETICULOCYTES                       |
| RF                                  |
| RHEUMATOID FACTOR                   |
| RPR                                 |
| RUBELLA TITER                       |
| RX                                  |
| SAB                                 |
| S.G.                                |
| SAL.                                |
| SALICYLATE                          |
| SBP                                 |
| SDBP                                |
| SEARCH TEMPLATE COHORT              |
| SEARCH TEMPLATE COHORT              |
| SERUM AMYLASE                       |
| SERUM CHOLESTEROL                   |
| SERUM GLUCOSE                       |
| SERUM GLUTAMIC-PYRUVIC TRANSAMINASE |
| SERUM IRON                          |
| SERUM POTASSIUM                     |
| SERUM SODIUM                        |
| SERUM TESTOSTERONE                  |
| SERUM TRIGLYCERIDE                  |
| SERVICE CATAGORY                    |

| <b>Attributes</b>           |
|-----------------------------|
| SERVICE CODE (DENTAL)       |
| SERVICE UNIT                |
| SEX                         |
| SG                          |
| SGOT                        |
| SGPT                        |
| SNELLEN RESULT(uncorr.)     |
| SNELLEN RESULTS(corr.)      |
| SOCIAL SECURITY NUMBER      |
| SODIUM                      |
| SPECIFIC GRAVITY            |
| SSN                         |
| STAGE                       |
| STATE (MAILING ADDRESS)     |
| STREET ADDRESS (MAILING)    |
| SU                          |
| SYSTOLIC BLOOD PRESSURE     |
| TAB                         |
| T 4                         |
| T CELLS                     |
| T LYMPHOCYTES               |
| T-4                         |
| T4                          |
| TESTOSTERONE                |
| TESTOSTERONE, SERUM         |
| THEOPHY.                    |
| THEOPHYLLINE                |
| THIRD PARTY BILLED          |
| THYROID STIMULATING HORMONE |
| THYROID T4                  |
| TIBC                        |
| TOTAL IRON BINDING CAPACITY |
| TOTAL PROTEIN               |
| TOWN                        |
| TRANSAMINASE                |

| <b>Attributes</b>                    |
|--------------------------------------|
| TREATMENT                            |
| TRIBAL ENROLLMENT NUMBER             |
| TRIBAL MEMBERSHIP                    |
| TRIBAL MEMBERSHIP VERIFIED           |
| TRIBAL QUANTUM                       |
| TRIBE OF MEMBERSHIP                  |
| TRIBE QUANTUM                        |
| TRICHOMONAS                          |
| TRIGLY.                              |
| TRIGLYCERIDE                         |
| TRIGLYCERIDE, SERUM                  |
| TSH                                  |
| TYPE AND Rh                          |
| TYPE OF VISIT                        |
| UNCORRECTED VISION                   |
| UNDERLYING CAUSE OF DEATH            |
| UREA NITROGEN                        |
| URIC ACID                            |
| URINE 1 HR GTT                       |
| URINE BILIRUBIN                      |
| URINE BLOOD                          |
| URINE COLOR                          |
| URINE FASTING GLUCOSE TOLERANCE TEST |
| URINE FASTING GTT                    |
| URINE GLUCOSE                        |
| URINE HCG                            |
| URINE KETONES                        |
| URINE PH                             |
| URINE PROTEIN                        |
| URINE SPECIFIC GRAVITY               |
| URINE UROBILINOGEN                   |
| URINE WBC/HPF                        |
| UROBILINOGEN                         |
| VC                                   |
| VILLAGE                              |

| <b>Attributes</b>          |
|----------------------------|
| VISION(corr.)              |
| VISION(uncorr.)            |
| VISIT DATE                 |
| VISIT DATE                 |
| VISIT DATE LAST MODIFIED   |
| VISIT POSTING DATE         |
| VISIT TYPE                 |
| VISUAL ACUITY(corr.)       |
| VISUAL ACUITY(uncorr.)     |
| VU                         |
| WBC                        |
| WEIGHT IN KGS.             |
| WEIGHT IN LBS.             |
| WEIGHT IN POUNDS           |
| WEIGHT(kgs)                |
| WEIGHT(lbs)                |
| WHERE ACCIDENT HAPPENED    |
| WHITE BLOOD COUNT          |
| WT(kgs)                    |
| WT(lbs)                    |
| WTKGS                      |
| WTLBS                      |
| ZIP CODE (MAILING ADDRESS) |

The following is a lexicon of conditions.

| <b>Conditions</b>       |
|-------------------------|
| ABOVE                   |
| <                       |
| <>                      |
| =                       |
| >                       |
| AFTER                   |
| ANY EXIST               |
| ARE                     |
| AT LEAST                |
| AT LEAST 1              |
| AVERAGE                 |
| AVG                     |
| BEFORE                  |
| BEGINS WITH             |
| BELOW                   |
| BETTER THAN             |
| BETWEEN                 |
| BETWEEN (inclusive)     |
| BLANK                   |
| CONTAINS                |
| EARLIEST                |
| EARLIEST ONE            |
| END WITH AND START WITH |
| ENDS WITH               |
| EQUAL TO                |
| EQUALS                  |
| EXISTS                  |
| FIRST                   |
| FIRST ONE               |
| FOLLOWS                 |
| GREATER THAN            |
| GREATEST                |
| HIGHER THAN             |
| HIGHEST                 |
| IN THE RANGE            |
| IS                      |
| IS A MEMBER OF          |

|                                       |
|---------------------------------------|
| <b>Conditions</b>                     |
| LARGEST                               |
| LAST                                  |
| LAST CHARACTERS                       |
| LAST ONE                              |
| LAST REGULAR UPDATE                   |
| LAST UPDATE                           |
| LATEST                                |
| LESS THAN                             |
| LIVING                                |
| LOWER THAN                            |
| LOWEST                                |
| MAXIMUM                               |
| MEAN                                  |
| MINIMUM                               |
| MINIMUM NUMBER OF OCCURENCES REOUIRED |
| MORE THAN                             |
| MOST RECENT                           |
| NEWEST                                |
| MINIMUM NUMBER OF OCCURENCES REOUIRED |
| NULL                                  |
| OLDER THAN                            |
| OLDEST                                |
| ON                                    |
| OVER                                  |
| PATTERN MATCH                         |
| PRIOR TO                              |
| SINCE                                 |
| SMALLER THAN                          |
| SMALLEST                              |
| STARTS WITH                           |
| TOTAL                                 |
| TOTAL #                               |
| TOTAL NUMBER                          |
| UNDER                                 |
| WAS                                   |
| WORSE THAN                            |
| YOUNGER THAN                          |

## 12.0 Appendix C: RPMS Rules of Behavior

The information in this required section was written by the IHS Office of Information Technology. It does not contain any information about the functionality of the software.

### 12.1 All RPMS Users

In addition to these rules, each application can include additional RoBs, which can be defined within the individual application's documentation (e.g., PCC, Dental, Pharmacy).

#### 12.1.1 Access

RPMS Users shall:

- Only use data for which you have been granted authorization.
- Only give information to personnel who have access authority and have a need to know.
- Always verify a caller's identification and job purpose with your supervisor or the entity provided as employer *before* providing any type of information system access, sensitive information, or non-public agency information.
- Be aware that personal use of information resources is authorized on a limited basis within the provisions Indian Health Manual Chapter 6 OMS Limited Personal Use of Information Technology Resources TN 03-05," August 6, 2003.
- Users Shall Not:
  - Retrieve information for someone who does not have authority to access the information.
  - Access, research, or change any user account, file, directory, table, or record not required to perform your OFFICIAL duties.
  - Store sensitive files on a PC hard drive, or portable devices or media, if access to the PC or files cannot be physically or technically limited.
  - Exceed their authorized access limits in RPMS by changing information or searching databases beyond the responsibilities of their job or by divulging information to anyone not authorized to know that information.

### 12.1.2 Logging On To The System

RPMS Users shall:

- Have a unique User Identification/Account name and password.
- Be granted access based on authenticating the account name and password entered.
- Be locked out of an account after 5 successive failed login attempts within a specified time period (e.g., one hour).

### 12.1.3 Information Accessibility

RPMS shall restrict access to information based on the type and identity of the user. However, regardless of the type of user, access shall be restricted to the minimum level necessary to perform the job.

Users Shall:

- Access only those documents they created and those other documents to which they have a valid need-to-know and to which they have specifically granted access through an RPMS application based on their menus (job roles), keys, and FileMan access codes. Some users might be afforded additional privileges based on the function they perform such as system administrator or application administrator.
- Acquire a written preauthorization in accordance with IHS policies and procedures prior to interconnection to or transferring data from RPMS.
- Behave in an ethical, technically proficient, informed, and trustworthy manner.
- Logout of the system whenever they leave the vicinity of their PC.
- Be alert to threats and vulnerabilities in the security of the system.
- Report all security incidents to their local Information System Security Officer (ISSO)
- Differentiate tasks and functions to ensure that no one person has sole access to or control over important resources.
- Protect all sensitive data entrusted to them as part of their government employment.
- Shall abide by all Department and Agency policies and procedures and guidelines related to ethics, conduct, behavior and IT information processes.

#### 12.1.4 Accountability

Users Shall:

- Behave in an ethical, technically proficient, informed, and trustworthy manner.
- Logout of the system whenever they leave the vicinity of their PC.
- Be alert to threats and vulnerabilities in the security of the system.
- Report all security incidents to their local Information System Security Officer (ISSO)
- Differentiate tasks and functions to ensure that no one person has sole access to or control over important resources.
- Protect all sensitive data entrusted to them as part of their government employment.
- Shall abide by all Department and Agency policies and procedures and guidelines related to ethics, conduct, behavior and IT information processes.

#### 12.1.5 Confidentiality

Users Shall:

- Be aware of the sensitivity of electronic and hardcopy information, and protect it accordingly.
- Store hardcopy reports/storage media containing confidential information in a locked room or cabinet.
- Erase sensitive data on storage media, prior to reusing or disposing of the media.
- Protect all RPMS terminals from public viewing at all times.
- Abide by all HIPAA regulations to ensure patient confidentiality.

Users Shall Not:

- Allow confidential information to remain on the PC screen when someone who is not authorized to that data is in the vicinity.
- Store sensitive files on a portable device or media without encrypting.

### 12.1.6 Integrity

Users Shall:

- Protect your system against viruses and similar malicious programs.
- Observe all software license agreements.
- Follow industry standard procedures for maintaining and managing RPMS hardware, operating system software, application software, and/or database software and database tables.
- Comply with all copyright regulations and license agreements associated with RPMS software.

Users Shall Not:

- Violate Federal copyright laws.
- Install or use unauthorized software within the system libraries or folders.
- Use freeware, shareware or public domain software on/with the system without your manager's written permission and without scanning it for viruses first

### 12.1.7 Passwords

Users Shall:

- Change passwords a minimum of every 90 days.
- Create passwords with a minimum of eight characters.
- If the system allows, use a combination of alpha, numeric characters for passwords, with at least one uppercase letter, one lower case letter, and one number. It is recommended, if possible, that a special character also be used in the password.
- Change vendor-supplied passwords immediately.
- Protect passwords by committing them to memory or store them in a safe place (do not store passwords in login scripts, or batch files).
- Change password immediately if password has been seen, guessed or otherwise compromised; and report the compromise or suspected compromise to your ISSO.
- Keep user identifications (ID) and passwords confidential

Users Shall Not:

- Use common words found in any dictionary as a password.
- Use obvious readable passwords or passwords that incorporate personal data elements (e.g., user's name, date of birth, address, telephone number, or social security number; names of children or spouses; favorite band, sports team, or automobile; or other personal attributes).

- Share passwords/IDs with anyone or accept the use of another's password/ID, even if offered.
- Reuse passwords. A new password must contain no more than five characters per 8 characters from the previous password.
- Post passwords.
- Keep a password list in an obvious place, such as under keyboards, in desk drawers, or in any other location where it might be disclosed.
- Give a password out over the phone.

### 12.1.8 Backups

Users Shall:

- Plan for contingencies such as physical disasters, loss of processing, and disclosure of information by preparing alternate work strategies and system recovery mechanisms.
- Make backups of systems and files on a regular, defined basis.
- If possible, store backups away from the system in a secure environment.

Users Shall Not:

- Violate Federal copyright laws.
- Install or use unauthorized software within the system libraries or folders.
- Use freeware, shareware or public domain software on/with the system without your manager's written permission and without scanning it for viruses first.

### 12.1.9 Reporting

Users Shall:

- Contact and inform your ISSO that you have identified an IT security incident and you will begin the reporting process by providing an IT Incident Reporting Form regarding this incident.
- Report security incidents as detailed in IHS SOP 05-03, Incident Handling Guide.

Users Shall Not:

- Assume that someone else has already reported an incident. The risk of an incident going unreported far outweighs the possibility that an incident gets reported more than once.

### 12.1.10 Session Time Outs

RPMS system implements system-based timeouts that back users out of a prompt after no more than 5 minutes of inactivity.

Users Shall:

- Utilize a screen saver with password protection set to suspend operations at no greater than 10-minutes of inactivity. This will prevent inappropriate access and viewing of any material displayed on your screen after some period of inactivity.

### 12.1.11 Hardware

Users Shall:

- Avoid placing system equipment near obvious environmental hazards (e.g., water pipes).
- Keep an inventory of all system equipment.
- Keep records of maintenance/repairs performed on system equipment.

Users Shall Not:

- Do not eat or drink near system equipment.

### 12.1.12 Awareness

Users Shall:

- Participate in organization-wide security training as required.
- Read and adhere to security information pertaining to system hardware and software.
- Take the annual information security awareness.
- Read all applicable RPMS Manuals for the applications used in their jobs.

### 12.1.13 Remote Access

Each subscriber organization establishes its own policies for determining which employees can work at home or in other remote workplace locations. Any remote work arrangement should include policies that

- Are in writing.
- Provide authentication of the remote user through the use of ID and password or other acceptable technical means.
- Outline the work requirements and the security safeguards and procedures the employee is expected to follow.

- Ensure adequate storage of files, removal and non-recovery of temporary files created in processing sensitive data, virus protection, intrusion detection, and provides physical security for government equipment and sensitive data.
- Establish mechanisms to back up data created and/or stored at alternate work locations.

Remote Users Shall:

- Remotely access RPMS through a virtual private network (VPN) when ever possible. Use of direct dial in access must be justified and approved in writing and its use secured in accordance with industry best practices or government procedures

Remote Users Shall Not:

- Disable any encryption established for network, internet and web browser communications

## 12.2 RPMS Developers

Developers Shall:

- Always be mindful of protecting the confidentiality, availability, and integrity of RPMS when writing or revising code.
- Always follow the IHS RPMS Programming Standards and Conventions (SAC) when developing for RPMS.
- Only access information or code within the namespaces for which they have been assigned as part of their duties.
- Remember that all RPMS code is the property of the U.S. Government, not the developer.
- Shall not access live production systems without obtaining appropriate written access, shall only retain that access for the shortest period possible to accomplish the task that requires the access.
- Shall observe separation of duties policies and procedures to the fullest extent possible.
- Shall document or comment all changes to any RPMS software at the time the change or update is made. Documentation shall include the programmer's initials, date of change and reason for the change.
- Shall use checksums or other integrity mechanism when releasing their certified applications to assure the integrity of the routines within their RPMS applications.
- Shall follow industry best standards for systems they are assigned to develop or maintain; abide by all Department and Agency policies and procedures.
- Shall document and implement security processes whenever available

Developers Shall Not:

- Write any code that adversely impacts RPMS, such as backdoor access, “Easter eggs,” time bombs, or any other malicious code or make inappropriate comments within the code, manuals, or help frames.
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

## 12.3 Privileged Users

Personnel who have significant access to processes and data in RPMS, such as, system security administrators, systems administrators, and database administrators have added responsibilities to ensure the secure operation of RPMS.

Privileged Users Shall:

- Verify that any user requesting access to any RPMS system has completed the appropriate access request forms.
- Ensure that government personnel and contractor personnel understand and comply with license requirements. End users, supervisors, and functional managers are ultimately responsible for this compliance.
- Advise the system owner on matters concerning information technology security.
- Assist the system owner in developing security plans, risk assessments, and supporting documentation for the certification and accreditation process.
- Ensure that any changes to RPMS that affect contingency and disaster recovery plans are conveyed to the person responsible for maintaining continuity of operations plans.
- Ensure that adequate physical and administrative safeguards are operational within their areas of responsibility and that access to information and data is restricted to authorized personnel on a need to know basis.
- Verify that users have received appropriate security training before allowing access to RPMS.
- Implement applicable security access procedures and mechanisms, incorporate appropriate levels of system auditing, and review audit logs.
- Document and investigate known or suspected security incidents or violations and report them to the ISSO, CISO, and systems owner.
- Protect the supervisor, superuser or system administrator passwords.
- Avoid instances where the same individual has responsibility for several functions (i.e., transaction entry and transaction approval).

- Watch for unscheduled, unusual, and unauthorized programs.
- Help train system users on the appropriate use and security of the system.
- Establish protective controls to ensure the accountability, integrity, confidentiality, and availability of the system.
- Replace passwords when a compromise is suspected. Delete user accounts as quickly as possible from the time that the user is no longer authorized system. Passwords forgotten by their owner should be replaced, not reissued.
- Terminate user accounts when a user transfers or has been terminated. If the user has authority to grant authorizations to others, review these other authorizations. Retrieve any devices used to gain access to the system or equipment. Cancel logon IDs and passwords, and delete or reassign related active and back up files.
- Use a suspend program to prevent an unauthorized user from logging on with the current user's ID if the system is left on and unattended.
- Verify the identity of the user when resetting passwords. This can be done either in person or having the user answer a question that can be compared to one in the administrator's database.
- Shall follow industry best standards for systems they are assigned to; abide by all Department and Agency policies and procedures

Privileged Users Shall Not:

- Access any files, records, systems, etc., that are not explicitly needed to perform their duties.
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

## 13.0 Glossary

### @ symbol

This symbol (key combination of Shift+2) has two functions: (1) to delete an entry and (2) to separate a date and time.

### Acute

Used to describe a condition that lasts for a short time. Used in contrast to *chronic*.

### Append

To add additional data items to an existing visit, usually at the end of entering the data.

### Billable Visit

A visit from a patient that has third party insurance coverage that a hospital/clinic can bill services.

### Best Practice Prompts

Best Practice Prompts are a set of clinical messages related to procedures such as lab tests, immunizations, procedures etc. that are generally recommended for a subset of the population who share a common diagnosis (e.g. Asthma, CVD). They are displayed in a variety of places including the Health Summary, Supplements, and the Patient Record in both EHR and iCare.

Users can turn on (activate) and display BP Prompts on Health Summaries, similar to the Health Maintenance Reminder function.

### Billable Visit

A visit from a patient that has third party insurance coverage that a hospital/clinic can then bill for services.

### Caret (“Up Hat”)

The symbol ^ obtained by using the key combination Shift+6. Commonly used in RPMS character-based interfaces to exit out of a routine or to back up from the previous field.

### Chart Number

A unique numerical identifier assigned to each patient. This is also referred to as Health Record Number.

**Chronic**

Used to describe a condition that has an indefinite duration or with a frequent occurrence. Used in contrast to *acute*.

**Clinical**

To do with treatment in or as a clinic: involving or concerned with direct observation and treatment of patients.

**Command**

The instructions you give the computer to record a certain transaction. For example, selecting “Payment” or “P” at the command prompt tells the computer you are applying a payment to a chosen bill.

**Community of Service**

The community where the encounter took place.

**Community of Residence**

The community where the patient resides.

**CPT Code**

Current Procedural Terminology code. Used to identify procedures provided during an encounter and for billing outpatient services provided.

**Database**

A database is a collection of files containing information that may be used for many purposes. Storing information in the computer helps in reducing the user’s paperwork load and enables quick access to a wealth of information. Databases are comprised of fields, records, and files.

**Default Response**

Many of the prompts in the RPMS applications contain responses that can be activated simply by pressing the Return key. For example: “Do you really want to quit? No//.” Pressing the Return key tells the system you do not want to quit. “No//” is considered the default response. The default is generally set to the most frequently used response for the prompt.

**Designated Primary Care Provider (DPCP)**

The primary care provider designated for the patient. This is distinguished from a primary or secondary visit provider for a specific visit.

**Device**

The name of the printer you want the system to use when printing information. *Home* means the computer screen.

**DOB**

Date of Birth

**DOD**

Date of Death

**DOS**

Date Of Service

**DX**

Common abbreviation for Diagnosis

**EDC**

Expected/estimated date of confinement, that is the expected/estimated due or delivery date for a pregnancy.

**EDD**

Expected/estimated date of delivery.

**Export**

To format data so it can be used by another application.

**Fields**

Fields are a collection of related information that comprises a record. Fields on a display screen function like blanks on a form. For each field, you will find a prompt requesting specific types of data. There are nine basic field types in RPMS programs, and each collects a specific type of information.

**Free Text Field**

This field type will accept numbers, letter, and most of the symbols on the keyboard. There may be restrictions on the number of characters you are allowed to enter.

**Health Factors**

Health Factors are data elements utilized by RPMS to record health status information about the patient. Current Smoker use is an example of a health factor in the Tobacco category. Health Factor data are recorded in the PCC V Health Factor file. For a current list of Health Factors, see the Health Summary User Manual.

**Health Management Reminders (HMRs)**

Health Maintenance Reminders are a set of clinical reminders related to procedures such as lab tests, immunizations, procedures, etc. that are generally recommended for a subset of the population. They are displayed in a variety of places including the Health Summary, Supplements, and the Patient Record in both EHR and iCare.

**Health Record Number (HRN)**

A unique numerical identifier assigned to each patient. This is also referred to as a Chart Number.

**Health Summary**

The Health Summary is a patient report displaying related data built from the PCC V files such as laboratory and pharmacy. There are many different types of Health Summaries available to users at each site. Users are also able to design a health summary on-the-fly from the available components.

**HRN#**

Health Record Number, also referred to as a Chart Number

**HS**

Health Summary, a summary of a patient's medical care. The RPMS PCC is distributed with several standard health summaries, but can be customized. Examples of standard health summaries are: Adult Regular, Behavioral Health, CHR, Dental.

**HX**

Abbreviation for History. History is an event taking place in the past, such as surgery, immunizations, etc.

**ICD**

International Classifications of Diseases. This is a national coding system primarily used for: (1) classifying morbidity and mortality information for statistical purposes, (2) indexing of hospital records by disease and operations, and (2) data storage and retrieval. In addition, this is the coding system physicians must use for billing purposes of Medicare, Medicaid, and private insurance for services rendered.

**Interfaces**

A boundary where two systems can communicate. RPMS applications contain both character-based ("roll-and-scroll") and graphical user (GUI) interfaces. PCC Data Entry is an example of a character-based interface; RPMS EHR is an example of a GUI.

**Menu**

The menu is a list of different options you may select at a given time. To choose a specific task, select one of the items from the list by entering the established abbreviation or synonym at the appropriate prompt. A menu option followed by the ellipsis (...) indicates there are submenus.

**Mnemonic**

An abbreviation used to name a menu option or report used in the RPMS character-based packages. RPMS PCC data entry mnemonics to enter a data type can be two, three, or four characters; for example, BP (blood pressure).

**Narrative Description**

A detailed description given using words rather than codes.

**Patient Care Component (PCC)**

PCC is the core of the RPMS applications and functions as a clinical data repository. Most RPMS applications “pass” key data elements to PCC, stored in V (visit) files, e.g., V Lab. Other data is entered directly into V files; for example, V Patient Education, BP (blood pressure), WT (weight), HT (height), HC (head circumference) etc.

**Patient Wellness Handout**

The Patient Wellness Handout is a type of Health Summary that is directed to the patient. It displays personal medical information in easy to interpret language.

**Narrative Description**

A detailed description given using words rather than codes.

**PGEN**

Abbreviation for Patient General Retrieval Report. PGEN is the Patient General Retrieval report located in PCC Management Reports. The General Retrieval reports allow users to create on-the-fly reports by choosing specific data elements to select, sort by, and print.

**Problem List**

A list of important/chronic medical, social, or psychiatric problems, related notes, and treatment plans for a patient that are recorded and updated as part of the patient’s health record. The Health Summary has two categories: Active and Inactive.

**POV**

Purpose of Visit - one or more diagnoses (ICD codes) that are identified as the reason for the patient’s visit, recorded in the PCC V POV file.

**Prompt**

Text displayed onscreen indicating that the system is waiting for input to a field. Once the computer displays a prompt, it waits for you to enter some specific information.

**Provider**

One who provides direct medical care to a patient i.e., physician, nurse, mid-level provider).

**Provider Narrative**

A detailed description of the patient's conditions, using words rather than codes.

**QMan**

Short for Query Manager, QMan is a VA-based search utility that allows users to construct detailed searches of the RPMS database. QMan is part of the integrated PCC suite.

**Retrieval**

To obtain data from another location.

**Roll-and-Scroll**

The roll-and-scroll (character-based) data entry format captures the same information as the screen format but uses a series of prompts for recording data. This is typically the most efficient method for data entry.

**RPMS**

Resource and Patient Management System; a suite of integrated software packages used by IHS

**Secondary Providers**

A provider for a patient's visit other than the patient's primary visit provider. A patient visit might have multiple secondary providers, depending on the services provided.

**Security Key**

A means of securing menus to limit accessibility. To use certain functions, such as those on a Manager's menu, you must be assigned the appropriate key by the Site Manager.

**Select**

To choose one option from a list of options.

**Site Manager**

The person in charge of setting up and maintaining the technical aspects of the RPMS System at the facility or area level.

**Specialty Providers**

Defined through the Designated Specialty Provider Management (BDP) application.

**Submenu**

A menu that is accessed through another menu. A menu option followed by the ellipsis (...) indicates there are submenus.

**Supplement**

A Supplement is a type of modified Health Summary that is related to a specific condition such as Diabetes or HIV/AIDS. It displays personal medical information related to that condition.

**Tally**

To make a count, total, or subtotal a number of items.

**VGEN**

Short for Visit General Retrieval Report. VGEN is one of the search utilities that enable users to construct searches of the RPMS database. The General Retrieval reports allow users to create on-the-fly reports by choosing specific data elements to select, print and sort by.

## 14.0 Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

**Phone:** (505) 248-4371 or (888) 830-7280 (toll free)

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