# 7125 SAMPLING METHODS 03-92

7125. SAMPLE SELECTION

Systematic sampling or simple random sampling procedures are recommended for selecting the MEQC sample. (See §7132.) Sample selection may be done at any time after the beginning of the review month. Insure that all cases with eligibility during the month, which are either added to or deleted from the eligibility list, are subject to sampling. Include all cases for which a Medicaid card is issued for any part of the review month. Do not include cases made eligible in a later month retroactive to the review month (except when retrospective sampling is used). If you sample after the first eligibility file update following the sample month, do not supplement your sample with cases for which eligibility was established after that date.

For the Federal MEQC unit to more effectively track cases through the system, submit to the RO a sample selection list which identifies all cases selected in your MEQC sample (MAO stratum). Submit these lists each month immediately subsequent to your sample selection and prior to the assignment of these cases to review staff. Assure that the number of cases contained on the lists conform to those required as stipulated in your individual sampling plans.

The sample of cases for the 25 percent targeted review (see §7122) may be selected at any time during the review period; i.e., the focused sample can come from one month’s sample universe or selected evenly throughout the entire 6-month period. You can adjust your normal sampling interval to yield 75 percent of the usual sample. You, however, must maintain that chosen interval for the entire period for the 75 percent portion of the sample.

7126. CLAIMS COLLECTION

For each sampled case in the population, collect claims for both completed review cases and dropped cases if Federal rereview subsequently completes the case. Collect paid claims for the services received during the review month and prior to the review month, where necessary, as dictated by your spenddown period. For claims where the service dates overlap months, either (1) divide claim amounts by associated month of service, or (2) determine the review month by the date the service was terminated and assign the total amount of the paid claims to the month in which the service was terminated, i.e., the month the beneficiary was discharged from the hospital or long term care facility as specified in your State’s sampling plan.

HMO premiums and Medicare buy-ins are considered claims for the month of medical care which they cover.

Collect claims which are paid before, during, and for 4 months following the review month. However, do not start the claims collection procedure until the beginning of the sixth month following the review month. The reason for this requirement is that sampled cases if identified to a payment unit prior to the expiration of this time period could be treated differently from nonsampled cases, either intentionally or unintentionally. This generates results unrepresentative of the universe from which the sample is selected, producing distorted estimates of payment error rates.

Because this procedure may be too expensive for some States, you may collect claims for sampled cases on a monthly basis. However, comply with the following rules if this alternate methodology is used.

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o The administrative unit which collects the claims must be a separate governmental unit from the unit charged with administration of the Medicaid program;

o The official in charge of this administrative unit must not report to and must be at least equivalent in rank to the official charged with administration of the Medicaid program;

o The unit responsible for collecting the claims must not identify or release paid claim information on sampled cases to any personnel responsible for eligibility determination before the sixth month following each service month; and

o The official in charge of the unit collecting the claims must certify in writing to the requirements in the above item to both the head of the unit charged with administering the Medicaid program and the HCFA Regional Administrator.

7130. REQUIREMENTS FOR SAMPLING PLAN DOCUMENTATION

Each State operates its MEQC system under a sampling plan approved by the RO. Before implementation, submit documentation of the proposed plan which describes:

o The population to be sampled;

o The list(s) from which the sample is selected;

o The sample size;

o The sample selection procedure;

o The claims collection procedure;

o The option to drop/not drop cases selected more than once in the sample period;

o The option to use paid claims, billed amounts, and denied claims to offset beneficiary liability in the eligibility review. (No indication in the plan is interpreted to mean the contrary);

o The option to divide multiple service-month claim amounts by associated months of service, or use the date the service was terminated to determine the service month for the entire claim amount; and

o The option to use 25 percent targeting as described in §7122. Specify exact number and types of cases to be selected for this targeted area and the expected results you hope to obtain. If you perform a limited review of the targeted sample cases, the sampling plan must demonstrate a workload equivalent to the full review of the random sample.

In the sampling plan, document the definition of the case sample unit used on the eligibility file.

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7130.1 SAMPLING METHODS 03-92

Before making revisions in the sample design, document them in a revised sampling plan, and submit them to the RO for review and approval. Submit basic sampling plans to the RO 60 days prior to the corresponding review period. Submit detailed universe estimates and sampling intervals at least 2 weeks prior to the first sample selection of the period. Submit a basic sampling plan only when a revision to the most recent approved plan is proposed. Resubmit detailed universe estimates and interval calculations for each sample period if the estimates differ from the previous period.

The same sampling plan must be in effect during each 6-month period.

7130.1 Population To Be Sampled.--Describe in the sampling plan the specific classifications of Medicaid cases included in each Medicaid category for which minimum numbers of reviews are established. These classifications must conform to the guidelines in §7272.

If for any reason deviations from these guidelines are made, explain them in detail in the sampling plan submitted to the RO. Identify groups of cases by their numbers in §7272, e.g., " §7272 - 4, 5, 7, 8, 10."

7130.2 Sample Selection Lists.--Describe in detail in the sampling plan the lists from which the sample of Medicaid cases is selected. It is expected that these lists are the actual eligibility files. In any case, the sampling plan must explicitly describe the following characteristics of the sample selection lists for each population:

o Source(s);

o All types of cases included in the selection list;

o Accuracy and completeness of sample lists in reference to the population(s) of interest;

o Whether the selection list was constructed by combining more than one list;

o The form of the selection list (e.g., computer file, microfilm, hard copy). If different parts of the selection list are in different forms, specify the form of each part;

o Frequency of and length of delays in updating the selection lists or their sources;

o Number of items on the lists and proportion of LIE items;

o Methods of deleting unwanted items from the selection lists, including the findings and date of the most recent 400 sample test of eligibility codes; and

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o Structure of the selection lists (e.g., the MEQC sample unit or beneficiary). If the selection list is not organized according to case, specify the method employed in identifying a case so an unbiased random selection of cases can be made.

Specify these characteristics for each category of a Medicaid case for which a minimum number of reviews has been established (excluding AFDC).

7130.3 Sample Size.--The basic sample sizes (i.e., the minimum number of reviews that must be completed) for the 6-month review period are in Exhibit 1. (Note that any changes in sample sizes by AFDC-QC change the requirement for MEQC.) You may increase sample sizes and receive Federal matching funds for increased administrative costs. If deviations from the sample sizes in Exhibit 1 are proposed, document the reasons for making such deviations and the effects of doing so in the sampling plan submitted to HCFA. Specify in the plan the expected number of cases to be selected, dropped LIE cases, cases dropped for other reasons, and cases completed, by stratum, as well as the minimum number of completed reviews.

7130.4 Sample Selection Procedures.--Describe in detail the procedures used in selecting the sample review cases in the sampling plan. The general procedures must be in compliance with the guidelines provided. (See also §7132.) If more than one selection list is used, describe the method of selection from each. Also include any stratified sampling techniques proposed. See §7154 for guidelines on stratification.) Include a time schedule for each step in the sampling procedure (by stratum, if it differs by stratum).

Retrospective sampling procedures are outlined in Appendix C. This optional methodology may be mandated in the future. HCFA also considers alternative State sampling plans which provide a valid statistical sample. Plans using methods other than systematic or simple random sampling as outlined in §7132 require approval of the general methodology by HCFA central office (CO). The HCFA RO statistician retains responsibility for the final approval recommendation of the detailed plan. The main criteria a plan must meet are those stratification rules in §7154 (if applicable) and the alternative sampling methodology must provide an ineligible plus liability understated payment error rate estimate. The variance formula for the estimate must be included in the sampling plan submittal.

Note that for the AFDC-QC integration, the only statement needed to describe the sample selection procedure is "The AFDC-QC sample will be used."

7130.5 Claims Collection Procedures.--Document in the sampling plan the procedures used to collect paid claims for services incurred for a review month sampled case. The documentation must include the identifier (name, number, etc.) used for matching all claims to the case, the timing of this procedure, the method used (computer or manual), and tracking procedures. For identifying claims prior to the sixth month following the review month, include in the sampling plan the required certification. (See §7126.) Note that the procedures used must properly identify services for each individual in the case unit subject to sampling.

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7132 SAMPLING METHODS 03-92

7132. RANDOM SAMPLE SELECTION PROCEDURES

Use either systematic random or simple random sampling procedures for selecting cases to be reviewed except for the 25 percent targeted review. (See §7122.) Systematic sampling is preferred. It provides a system or pattern of selection of individual cases from the sample selection list, e.g., a file, computer tape, or listing, at equally spaced intervals, with the starting point determined by random selection. It is important that cases with a similar probability of error are not also placed on equally spaced intervals. Otherwise, a systematic sample does not yield a truly random sample. The pattern of the sample frame must be such that the probability of case errors is unrelated to the sample selection list structure.

Simple random sampling or other more complex sampling methodologies are, in most cases, more difficult to administer. In simple random sampling, assign each case a unique identifying number. Select numbers at random (usually from a table of random numbers or computerized random number generator), and include cases having the identifying numbers corresponding to the random numbers.

Below are the steps necessary in selecting a sample from an established sample selection list. You may divide these steps into two parts. The first (see §7133) presents the steps that must be taken in calculating the sampling interval used in the selection of cases from the sample selection list (generally calculated once every reporting period).

The second (see §7134) outlines the procedures used in the actual selection of cases from the list (performed monthly).

7133. CALCULATION OF SAMPLING INTERVAL

Undertake these six steps only at the beginning of each 6-month review period.

Step 1: Estimate the Average Monthly Sample Frame Size.--The average monthly sample frame size is an estimate of the average number of cases contained on the list subject to sampling during each month of the 6-month review period. The monthly sample frame size may vary. In estimating the average monthly sample frame size consider any known circumstances, such as policy changes, that would appreciably affect the size.

Step 2: Determine the Number of Required Completed Case Reviews.--Exhibit 1 contains a list of the minimum number of completed reviews required for each 6-month review period. You may increase the number of complete reviews.

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10-89 SAMPLING METHODS 7133 (Cont.)

Step 3: Estimate the Average Number of Reviews To Be Completed Monthly.--The average number of reviews to be completed monthly is calculated by dividing the number of case reviews to be completed for the 6-month review period (Step 2) by six.

Step 4: Estimate the Proportion of Cases Listed in Error.--Listed-in-error cases are those cases included in the sample selection list which are not in the population of interest, e.g., AFDC cases included on a list from which medical assistance only cases are to be selected. The estimate should reflect the true proportion for the entire 6-month period.

Step 5: Estimate the Proportion of Cases Dropped for Other Reasons.--Some case reviews may not be completed for the following reasons:

o Moved out of State,

o Unwilling to give information,

o Unable to locate, and/or

o Other.

Step 6: Calculate the Sampling Interval.--Calculate the sampling interval using the following formula:

W - Average monthly sample frame size (Step 1)

X - Average number of reviews to be completed monthly (Step 3)

Y - Proportion of cases dropped for reasons other than listed in error (Step 5)

Z - Proportion of cases listed in error (Step 4)

Sampling Interval (I) = W x (1-Y) x (1-Z)/X

Unless a correction for undersampling or excessive oversampling is necessary (see §7150), apply the same sampling interval in each month of the 6-month review period. Always round down this sampling interval to the next lowest integer; i.e., 25.67 becomes 25.

As an example assume that:

. The average monthly sample frame size (W) is 10,000,

. The average number of reviews to be completed monthly (X) is 100,

. The proportion of cases dropped for reasons other than listed in error (Y) is 1/100 or (.01), and

. The proportion of cases dropped because they are listed in error is 5/100 or (.05).

Then the sampling interval (I) is:

I = 10,000 x .99 x .95 / 100

I = 94.05

Round this down to 94.

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7134 SAMPLING METHODS 10-89

The number of cases selected for a review period must exceed the number of sample cases required for two reasons:

o Cases selected not in the population of interest (listed in error), and

o Dropped reviews for reasons other than listed in error.

The actual cases to be reviewed include only those selected from the population of interest.

7134. SELECTION OF CASES FOR THE REVIEW MONTH

The procedures for selection of cases for the review month consist of three steps. Repeat them for each month of the review period using the same sampling interval. (See §7133.)

Step 1: Make Any Necessary Adjustments in the Sampling Interval for Undersampling or Excessive Oversampling.--Undersampling or excessive oversampling exists when the actual number of completed case reviews is below (or significantly above) the required number. Correct undersampling to achieve minimum sample size. Excessive oversampling may be reduced at your option so that actual sample sizes will be closer to the minimum planned sample sizes. See §7140 for detailed procedures for correction. The new sampling interval calculated as part of these procedures is used in selecting sample cases for the review month.

Step 2: Select a Random Start.--The random start, j, is an integer between one and the sampling interval, I, inclusive. The starting point for any list other than the first list sampled for the 6-month period may be positionally generated by using the remainder from the previous list sample. The corresponding start number is the interval size minus the previous remainder.

Step 3: Select Sample Cases.--The first case selected is the j’th case (random start number) on the sample selection list. Every I’th (sampling interval) entry following the j’th case on the sample selection list is also chosen as part of the monthly sample. Thus, if the random start is 28 and the sampling interval is 94 select the 28’th, 122’d, 216’th, 310’th, etc., entries on the sample selection list for the sample. (Only the cases selected are to be reviewed in the sample. If case 122 is selected, reviewing case 121 or 123 is not acceptable.) Continue the process of selection until the end of the list is reached.

7140. PROCEDURES FOR CORRECTING THE MONTHLY SAMPLE FOR EXCESSIVE

OVERSAMPLING AND UNDERSAMPLING

Sections 7140-7146 deal with correction of the sample for either undersampling or excessive oversampling. Correct undersampling (completion of fewer cases than required) using the procedures outlined here. However, correcting for oversampling is a State option; the preferred method for such correction, outlined in §7142, does not bias the sample results. An alternate method presented in §7146, while acceptable, is not generally recommended because it requires complex weighting procedures to analyze and report the data.

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7142. CORRECTING FOR EXCESSIVE OVERSAMPLING

Oversampling is a normal part of the sampling operation which compensates for anticipated "not reviewed" cases. Under certain circumstances, however, you may find that you have oversampled more than necessary. This oversampling could be due to such factors as a larger allowance made for anticipated "not reviewed" cases than actually found, or to an underestimated caseload size for the reporting period resulting in the use of a smaller sampling interval than necessary.

If you wish to reduce this sample, follow the recommended method:

A. Using the methods described in §7133, recompute the correct sampling interval for the reporting period using revised estimates of the sample frame size and/or the fraction of reviews to be dropped for all reasons.

For each month in which sample cases have already been selected:

B. Compute a revised estimate of the number of sample cases which should have been selected in the month, as follows:

Revised estimate of the Monthly Sample Selection List

number of sample cases        =   Revised Sampling Interval

for the month

C. Subtract the number of cases obtained in Step B from the number already selected. This is the number of cases to be eliminated.

D. Divide the number of sample cases that have been selected to be eliminated by the number obtained in Step C to obtain the secondary sampling interval to be used in identifying the cases to be eliminated.

E. Use a random start, and apply the secondary sampling interval obtained in Step D to select cases from the list of sample cases already selected. Eliminate the cases identified regardless of whether or not reviews had already been conducted.

For months for which sample cases have not yet been selected:

F. Use the corrected sampling interval for the reporting period obtained in Step A to select sample cases from the monthly frames.

7144. CORRECTING FOR UNDERSAMPLING

Undersampling generally occurs if the number of dropped cases is greater than expected or the estimate of the caseload for the reporting period is too high. When such misestimation occurs, a larger sampling interval than appropriate is used, resulting in a sample which does not meet minimum requirements.

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7144 (Cont.) SAMPLING METHODS 10-89

The recommended method for correcting undersampling is:

A. Using the methods in § 7133, recompute the correct sampling interval for the entire reporting period using revised estimates of the sample frame size and/or the fraction of reviews to be dropped for all reasons.

For each month in which sample cases have already been selected:

B. Compute a revised estimate of the number of sample cases which should have been selected in the month, as follows:

Revised estimate of the Monthly Sample Selection List

number of sample cases           =   Revised Sampling Interval

for the month

C. Subtract the number of cases already selected from the number obtained in Step B. This is the number of additional cases to be selected from the monthly frame.

D. Divide the total monthly sample frame size by the number identified in Step C to obtain the secondary sampling interval to be used in identifying the additional cases to be selected from the monthly sample frame.

E. Use a random start, and apply the secondary sampling interval calculated in Step D to the monthly sample frame from which cases have been selected. Add the specific cases identified to the cases already selected and reviewed for the same month as the month of the sample frame from which they were selected. (If a case previously selected in the sample is identified select an alternate case by use of a table of random numbers.) This procedure oversamples for cases selected which are listed in error.

For months for which sample cases have not yet been selected:

F. Use the corrected sampling interval for the reporting period obtained in Step A to select sample cases from the monthly frames.

7146. ALTERNATE METHOD OF CORRECTING FOR UNDERSAMPLING OR OVERSAMPLING

This procedure involves no adjustment of the months for which cases were already selected. It involves, however, the computation of a new sampling interval which either:

o Undersamples the remaining months of the reporting period to meet minimum sample size requirements if the earlier months had been oversampled, or

o Oversamples the remaining months of the reporting period to meet minimum sample size requirements if the earlier months had been undersampled.

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Compute the new sampling interval using revised assumptions according to §7133 applied to the remaining months of the review period with the objective of completing the minimum required sample size. However, since different sampling intervals are used, a substratified sample is created (since the MEQC sample is already stratified, e.g., AFDC and MAO) with cases selected using each sampling interval forming the substrata. Procedures for reporting data are different since the results from each stratum cannot be added directly to obtain statewide counts, but must be weighted according to directions in §7520.

7150. GUIDELINES FOR EXPANDED AND SUBSTRATIFIED SAMPLES

You may choose to modify the basic sample requirements by expanding the size of the sample, i.e., increasing the number of cases to be reviewed or dividing the sample into strata representing homogeneous subgroups of the population of interest. (See §7113.)

Sections 7152 and 7154 provide additional guidelines.

7152. GUIDELINES FOR EXPANDING SAMPLE SIZE

You may choose to increase the number of completed reviews beyond the minimum numbers specified in Exhibit 1. However, adhere to the following:

o If additional cases are selected across the entire spectrum of one of your MEQC populations (AFDC and MAO) in accordance with your sampling plan, consider the additional cases as part of the MEQC sample. Include these cases and associated review information in all reports submitted.

o If, however, the additional cases are to come only from a particular segment of one of the populations, e.g., a geographic area or a particular case type, you may exclude them from the MEQC sample and from reports to HCFA. However, the sampling plan submitted to the RO must identify this segment, and, when the sample from the segment is selected, apply appropriate controls to separate them from the rest of the cases included in the MEQC process. If these cases are included in reports to HCFA, they must be weighted in accordance with the requirements of Chapter 4. If these additional cases are selected with a different sampling methodology, they are excluded from reports to HCFA.

Explain in detail any planned expansions in sample size in the sampling plan documentation submitted to HCFA for approval.

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7154. GUIDELINES FOR FURTHER STRATIFICATION

The basic MEQC sample design requires that the Medicaid population in a State be stratified by AFDC cash and MAO cases.

You may choose to further stratify into substrata any MEQC sample stratum which you independently select and review (other than the AFDC sample). For example, a 209(b) State may divide its MAO caseload into three substrata, each of which represents a different region of the State, and select sample cases independently from regional sample selection lists.

In substratifying, the sample must comply with the following guidelines:

o There can be no more than three substrata in each stratum, and

o There can be no fewer than 75 completed case reviews per substratum.

If you substratify the sample, specify how you will substratify in the sampling plan documentation. If you substratify your sample, designate one character of your review number as a predefined substratum indicator and provide the RO with this designation.

Substratification plans which do not adhere to the above may be submitted to the RO for consideration if a compelling case can be made for the proposal.

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