THE STATISTICAL PROVIDER UTILIZATION REVIEW SYSTEM (SPURS): A SAS® BASED SYSTEM FOR HEALTH CARE PROVIDER ANALYSIS

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Abstract

Three responsibilities of the managed care division of Blue Cross Blue Shield of New Jersey (BCBSNJ), the state's largest health insurer, are to ensure that BCBSNJ's subscribers are receiving quality care, not being subjected to any medically unnecessary procedures, and not being victimized by any unfair billing practices. Identifying aberrant health care providers is thus extremely important. Although outside referrals are an important component in this effort, the utilization review staff would be much less effective if this was its only source of information. Using its claims database, statistics, and SAS software, BCBSNJ was able to develop SPURS, the Statistical Provider Utilization Review System, an effective tool for identifying potentially aberrant health care providers.

This paper illustrates the SPURS system developed by BCBSNJ. This SAS based system is used to identify health care providers whose practice patterns appear to be inconsistent with that of other providers sharing similar characteristics. Those identified as being potentially aberrant are turned over to utilization review analysts for further examination and possible audit. This system helps ensure that BCBSNJ's subscribers are being well served by their health care providers.

Introduction

In order to ensure that its members are being well served by their health care providers, BCBSNJ must review the health care received by its policy holders. Although referrals from outside sources play an important role in identifying potential instances of provider aberrance, they do not result in a review of all claims and an identification of all potentially problematic providers. With over two million people covered by its policies, BCBSNJ processes millions of claims each year making a manual claims review virtually impossible. It became very clear that an automated system would be necessary to perform the type of claims review needed by BCBSNJ.

It was decided that any automated system intended to assist the utilization review efforts at BCBSNJ should reflect the needs and input of the staff members responsible for provider utilization review. The technical support staff met with these staff members in order to obtain their input as to what would be good indicators for potential instances of provider aberrance. The SPURS system is the culmination of the combined efforts of the technical and clinical staff members comprising the utilization review area at BCBSNJ.

It was decided that the SPURS system should be CPT-4 procedure code driven, involve the comparison of health care providers with their peers, utilize the indicators of potential provider aberrancy developed through consultations with the clinical staff, and employ a statistical model in order to ensure
the system's objectivity. The rest of this paper will be a more detailed discussion of the various components of the SPURS system.

Peer Group Comparisons

Any time one wishes to make an objective comparison between two groups, one must be certain that the problem of "mixing apples with oranges" is avoided. When attempting to analyze the practice patterns of a healthcare provider, one must first identify the other providers with whom he/she can be objectively compared. A major strength of the SPURS system is that it involves only the comparison of healthcare providers with others who share similar characteristics.

The SPURS system determines a provider's peer group based upon three criteria. The first criterion is the provider's specialty. Under SPURS, providers will only be compared with providers who share their same specialty type. The second criterion is the location of the provider's practice. Providers will only be compared with other providers from the same geographical area. The third criterion involves the type of procedure being performed by the provider. Under the SPURS system, providers will only be compared with other providers who have performed similar or related procedures. Using these three criteria, SPURS will avoid the problem of comparing dissimilar providers.

Grouping Similar CPT-4 Codes

As mentioned above, SPURS is a CPT-4 driven system. A major problem with many of these types of systems is the narrow focus of their analysis. The utilization review staff felt that the analysis of providers should involve the examination of providers performing similar and/or related procedures rather than merely looking at a specific CPT-4 code. The development of the SPURS system thus involved the development of a methodology for grouping these types of procedures. Using a clinically reviewed CPT-4 procedure code grouping methodology allows SPURS to identify such instances of provider aberrancy as, among other problems, the unbundling of medical procedures. Utilizing a CPT-4 grouping methodology also reduces the impact of providers employing different coding strategies. The SPURS system's use of this grouping methodology is a major enhancement over any system previously employed by the utilization review staff at BCBSNJ.

Indicators of Potential Health Care Provider Aberrancy

One of the first steps in the process of developing a provider analysis system is to develop a method for identifying provider aberrancy. This necessitates the development of operational definitions for the concept of provider aberrancy. The technical staff conducted a series of meetings with the rest of the utilization review analysts and developed a list of indicators for potential provider aberrancy. The SPURS system analyzes eight independent indicators in order to identify instances of potential provider aberrancy. The indicators used by SPURS are: services per patient, payments per patient, charges per patient, payments per service, charges per service, services relative to practice size, payments relative to practice size, and charges relative to practice size.

With the use of these indicators, different types of provider aberrancy
can be identified. As mentioned above, three goals of BCBSNU are to ensure that its subscribers receive quality care, are not being subjected to any medically unnecessary procedures, and not being victimized by any unfair billing procedures. The SFURS indicators, mentioned above, are designed to address these concerns.

The services per patient, payments per patient, and charges per patient indicators are useful for uncovering potential cases of unfair billing practices. These indicators are the ratios of services, amount paid, and charges to the number of patients who have received similar types of procedures. Providers who are high end outliers on these indicators could be fragmenting their bills. (Fragmentation of bills refers to the practice of breaking procedures down into a number of smaller procedures in order to increase the dollar amount of a claim.) Uncovering this type of activity is important to our subscribers since it not only drives up their individual claims, but future premiums as well.

The payments per service and charges per service are used to uncover potential cases where providers are performing procedures based upon a patient's coverage. These indicators are the ratios of amount paid and charges to the number of services performed for a group of similar procedures. High end outliers could be basing their medical decisions on the type of coverage a patient has and whether or not they can expect to be reimbursed. Uncovering this type of activity is important, as it helps us determine whether or not our subscribers are being subjected to unnecessary procedures, as well as being billed for them. These indicators help us determine whether our subscribers are receiving quality care.

The services relative to practice size, payments relative to practice size, and charges relative to practice size are useful for uncovering potential cases of providers performing medically unnecessary procedures. These indicators are the ratios of services, payments, and charges for a group of similar procedures to the number of patients treated by a provider, regardless of procedure. High end outliers could be performing medically unnecessary procedures or ordering a number of tests for all their patients without medically appropriate reasons. Uncovering this type of activity is important in helping us determine whether or not our subscribers are being subjected to unnecessary procedures or lab tests, as well as being billed for them. These indicators help us determine whether our subscribers are receiving quality care.

**SFURS' Statistical Methodology**

The methodology for determining potential instances of provider aberrancy employed in SFURS is a stepwise z-test. (This test is used when one wants to compare a random sample of one or more measurements with a large parent group with known mean and standard deviation.) Using this test, each health care provider is compared with their peer group. (As mentioned above, a provider's peer group is determined by their specialty type, geographical location, and the types of procedures which they have performed.) The use of a stepwise z-test results in the identification of two distinct sets of outliers. The first group is comprised of those providers who are identified the first time that the z-test is performed; the second group consists of those providers who are identified as outliers after the first group of outliers has been removed from the population. The
stepwise approach reduces the potential for "extreme" cases masking other instances of provider aberrancy.

SPURS Reporting Capabilities

SPURS has the capability of generating a number of summary and detail level reports. Based upon the expected rate of return associated with an audit of a particular provider, cases are selected from the list of outliers and assigned to the utilization review analysts. If the analysts are unable to find a justifiable reason for a provider being an outlier, a full scale audit of a provider's practice could commence.

The technical staff shaped the contents of SPURS reports based upon the needs of the system's users. Allowing the utilization review staff input into the developmental process has allowed SPURS to better meet the actual needs of the end users.

SPURS: A SAS Based System

The technical staff developed all of the programs comprising the SPURS provider analysis system, using SAS Software. The system has been run using the BCBSNJ claims database, but has been set up to be flexible in terms of the data that can be fed into it. This should lengthen the life of the system as it should be able to accommodate changes in BCBSNJ's data. This flexibility should also allow for SPURS to be used by non-BCBSNJ customers. Using SAS has enabled the HCDS staff to develop an effective system for identifying potentially aberrant health care providers. SAS has, once again, proven to be a flexible and reliable business tool.

Future Steps

Although the SPURS system has been put into production, the utilization review staff is still looking into ways in which the system can be enhanced. One enhancement that is being looked into is the addition of risk adjustment to the system based upon a provider's patient case load and a patient's age and sex. The addition of risk adjustment should increase the efficiency of utilization review efforts, by reducing the number of instances where SPURS identifies a provider as being aberrant, only to have the utilization review staff determine the provider's aberrancy to be justified. This next stage of the project will result in the streamlining of our utilization review efforts and increase the system's efficiency.

In addition to enhancing the actual system to better meet the needs of the utilization review staff, the technical staff is presently exploring the possibilities of linking SPURS with other company efforts involving such health care issues as the quality of care, provider tiering, and the staffing of provider networks.

Summary

The decision to develop an objective tool for identifying potentially aberrant health care providers based upon a review of BCBSNJ's claims data resulted in the development of the SPURS system. SPURS employs a clinically reviewed CPT-4 procedure code grouping methodology and uses eight independent indicators for potential provider aberrancy in its statistical comparisons of providers with their peer groups. The SAS based system has proven to be an effective tool for identifying potentially aberrant health care providers. The identification of these providers helps the managed care division of BCBSNJ meet three of its primary responsibilities, namely: to ensure that its subscribers are receiving
quality care, are not being subjected to any medically unnecessary procedures, and are not being victimized by any unfair billing practices. As this system is SAS based, SAS has proven once again to be a vital business tool.

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