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Coding & Billing

Appropriate Sampling for Coding Audits: How Often and How Many Are Enough?

Designing an Audit Strategy in the Context of the OIG Guidelines

The revenues of health care organizations increasingly depend on medical information encoded with standard systems such as ICD-9-CM and CPT-4/HCPCS. This development places coders and other health information management specialists at the forefront of management efforts to improve operating revenues.

Certainly, accurate and complete coding of diagnoses and procedures can significantly improve the financial position of a health care organization. On the other hand, aggressive coding that is either inaccurate or unsupported by clinical documentation can expose that same organization to substantial legal and financial liabilities.

The increasingly prominent role of coding has prompted many health care organizations to retain outside firms to conduct regularly scheduled, periodic coding audits. The Office of the Inspector General (OIG) encourages hospitals to conduct such audits and, in fact, has identified coding audits as a key component of an effective compliance program:

The OIG believes an effective program should incorporate thorough monitoring...and reporting to senior hospital or corporate officers. Although many . . . techniques are available, one effective tool . . . is . . . regular, periodic compliance audits by . . . auditors who have expertise in Federal and State health care program requirements.¹

Unfortunately, while the OIG's guidance helps to determine *what* to do, it is virtually silent on *how* health care organizations should go about conducting these audits. Questions that hospitals often ask in developing an appropriate program of compliance-related audits include such basic issues as the following:

1. How often should an audit be done?
2. How should records be selected?
3. How large should the sample be?

There is no simple answer to these questions, and, in fact, these questions often miss the underlying purpose of a compliance audit.

Methodological Considerations

The purpose of compliance coding audits is to provide hospital management with information that it needs to ensure that a hospital complies with coding guidelines and with government regulations that relate to billing and reimbursement for health care services based on encoded data. Compliance coding audits should be viewed as part of an ongoing process for identifying problems, developing remedial activities designed to fix those problems, and then evaluating the effectiveness of those remedial strategies.

This means that the answers to questions such as those outlined previously fundamentally depend on the unique circumstances of

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a hospital. Auditors and hospitals need to be flexible in their approach to ensure that their audit process truly addresses the needs of the hospital and issues that it faces.

This is precisely the approach that the OIG envisions in its guidelines for corporate compliance agreements. This approach begins with an initial “discovery sample” designed to identify a systematic pattern of inappropriate coding on the part of a hospital.

The OIG guidelines call for

a Discovery Sample of 50 sampling units to be randomly selected for review. If the net financial error rate of those 50 sampling units equals or exceeds 5%, then a Full Sample must be reviewed The Full Sample must include a sufficient number of sampling units to yield results that estimate the overpayment . . . within a 90% confidence and 25% precision level.²

Interestingly, it is generally not possible to know what sample size will achieve these levels of confidence and precision without information of the type that would be obtained from an initial discovery sample. That is, the discovery sample is used to identify the need for a more complete audit and to design that audit to meet specific statistical standards. Now, consider the three questions outlined previously in the context of the OIG guidelines.

How Often Should an Audit Be Done?

The frequency with which audits are conducted depends on findings from the discovery review and the nature of any remedial action taken by management. If the initial review does not suggest significant problems that need to be addressed, then the organization might be justified in waiting a year before undertaking another review designed generally to identify problems with coding or billing practices. Any decision to wait this long, however, ought to take into account the fact that it may be impossible to rebill claims that are identified as erroneous when the review is conducted.

It is more likely that an initial review will identify one or more areas of weakness that need to be corrected. Appropriate remedial actions should be formulated, along with a strategy for evaluating the success of those efforts. Timing of the subsequent evaluative review will depend on how long management expects it will take to achieve substantial measurable improvement in performance.

How Should Records Be Sampled?

“Randomly” is the simple answer to this question, but “random” does not mean “haphazard.” As a general rule, it is important to first identify categories of records that should be included in the review as well as categories that will be excluded. Decide how many records

should be studied in each category and then select records from each category at random. Statisticians refer to this approach as a “stratified random sample,” by which they mean that the sample is selected to ensure adequate representation in each category or “strata.”

How many categories or strata should be included in the sample? It depends on what management wants to accomplish with a discovery sample or what actions it is trying to evaluate. If, for example, management wants to evaluate the performance of each coder in the HIM department, then each coder becomes a strata for sampling purposes. If an initial discovery sample indicates systematic problems with coding and documentation in the emergency department and ambulatory surgery unit, then these departments might become the strata to be used in a subsequent evaluative review.

It also is possible to combine discovery and evaluative reviews. If a hospital compliance plan calls for quarterly coding audits, for example, then the hospital might want to select 50 records entirely at random from a universe of claims processed in the previous quarter. It can then supplement this initial set with records sampled randomly from specific categories associated with management initiatives spawned by previous audit findings.

How Large a Sample to Use?

Again, there is no simple answer to this question. The size of the sample will depend in part on the objectives of the audit. If the objective is to estimate the extent to which a hospital’s coding errors lead to a systematic bias in its billing practices, then the sample should be large enough to quantify the magnitude of that bias, if any, to an acceptable level of precision. If the objective is to quantify improvements in coding accuracy as it relates to outpatient GI lab services, interventional radiology, and inpatient orthopedic surgery, then the sample will need to be large enough to measure at least three different numbers with acceptable levels of precision.

Sample size also depends on the amount of variation in the underlying performance of coders and the frequency with which undesirable coding behaviors occur. The more variation, the larger a sample has to be to achieve a given level of precision.

Sample size does not depend on the number of records available for review. That is, it is not necessarily true that high-volume hospitals and services ought to have larger samples. Instead, sample size should depend on a predetermined, acceptable level of power and precision that a hospital wants to achieve from its audit results.

Sample size increases if the results need to be disaggregated by coder, department, or time period. Generally, it is wise to consult with a sampling statistician or to use an audit firm with statistical expertise. The good news is that a true random sample does not need

to be large to be effective. In many instances, a relatively small sample (*i.e.*, 50 records) is sufficient for general auditing purposes.

Conclusion

Coding audits are an important component of any effective compliance program for health care providers. In designing an audit strategy, it is important to treat audits as part of a more systematic, ongoing process of discovery, action, and evaluation.

This means that each review should be designed to achieve a set of predetermined objectives that are likely

to change over time based on previous audit results. While the principles of sample selection are relatively simple, a professional statistician can often be quite helpful in ensuring that an audit is designed to achieve its stated objectives.

References

1. "OIG Compliance Program Guidance for Hospitals," *Federal Register*, Feb. 23, 1998.
2. This information is taken directly from the Compliance Guidance portion of the OIG Web site at <http://oig.hhs.gov/fraud/cia/docs/ciafaq1.html>.

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