Mortality Coding Marks 10 Years of ICD-10

by **Chris Dimick**

Morbidity coders rarely see a mortality code. But for 10 years the National Center for Health Statistics has been busy compiling mortality data coded in ICD-10.

There are a thousand ways to die in this life, and the National Center for Health Statistics tracks every one of them. Using ICD-10 mortality codes, NCHS compiles death statistics to help improve the health of the living.

Morbidity coders, who for 30 years have used a version of ICD-9, are buzzing about the coming transition to ICD-10-CM and ICD-10-PCS in 2013. But for mortality coders, using their version of ICD-10 is old hat. This year marks the tenth anniversary of their switch.

A decade after ICD-10's implementation, NCHS officials say they have seen both the good and the bad. ICD-10 has provided them with more specific data, which has been beneficial to NCHS's work in categorizing mortality statistics. But the transition to ICD-10 was a bumpy one for mortality coders and statisticians, according to Robert Anderson, PhD, chief of the mortality statistics branch of the Division of Vital Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention.

ICD-10 is a very different system than ICD-10-CM/PCS, Anderson notes, and he stresses that morbidity coders should not draw parallels from NCHS's experiences. He expects the transition to ICD-10-CM/PCS to be challenging, but very beneficial.

Mortality Coding 101

For every death that occurs in the US, a physician, coroner, or medical examiner completes a death certificate. The certificate lists details about the cause of death as well as any contributing conditions or injuries.

All death certificates are sent to a state agency, which varies by state but can include the department of health. Each state agency compiles the death certificates and uses a suite of automated coding software to translate the death certificate information into ICD-10 codes.

Since not all certificates can be coded automatically, some states employ mortality coders to handle complicated cases. Typically only one or two mortality coders work in the state offices, Anderson says. However, not all states do their own coding. Some states send their nonautomated coding to NCHS, where government mortality coders finish the job. Other states do not handle any of the process and pass along compiled death certificates for NCHS to do both data entry and coding.

In part the coding is meant to capture an underlying cause of death—the main disease, accident, or injury that caused the death. A death certificate usually lists more medical information than is directly reflected in the underlying cause of death. These conditions are coded as multiple causes of death, which provide specifics of what contributed to a person's death.

While a physician may indicate an underlying cause of death on a death certificate, that categorization is not always used by the coder, Anderson says. ICD-10 provides mortality coders with a complicated set of rules that must be followed to select an underlying cause of death.

"We don't necessarily take what the certifier or physician writes as the underlying cause of death, because what they may write down may not necessarily be the best underlying cause," Anderson says. "Even if they do it exactly correctly, since we are looking for something that is most useful from a public health standpoint, we may reselect another cause on the certificate."

NCHS analyzes the coded data and produces national death, disease, and injury statistics. Each coded data set includes information about the deceased including demographic and geographic information, the underlying cause of death, and other details of the death reported by the certifier. Statistics are produced from these data and published annually.

NCHS also sends the data file to the World Health Organization, which combines it with other national data to produce regional and worldwide statistics on mortality.

Benefits of ICD-10

ICD-10 has proven to be a better classification system than ICD-9 for mortality coding, Anderson says. The transition to ICD-10 in 1999 has improved mortality data in several ways. The level of detail offered by the codes increased, giving statisticians access to richer data.

Changes to the way ICD-10 codes could be assigned helped with determining certain disease categories. For example, ICD-9 coding rules restricted coders to assigning Alzheimer's disease as a contributing condition of death only when Alzheimer's was specified on the death certificate. ICD-10 allows dementia to be coded as Alzheimer's disease. Since most cases of dementia are caused by Alzheimer's disease, the change resulted in much better data on Alzheimer's disease, Anderson says.

The major benefit of the transition to ICD-10 was that the classification system was much newer than ICD-9.

"ICD-9 was released in 1975—we had been using it since 1979—so there is a significant amount of information in there that doesn't jibe with the current medical knowledge," Anderson says. "ICD-10 is more up to date and incorporates more up-to-date medical knowledge. You had certain conditions that were once thought to be in a particular category moving to another category."

ICD-10 also features a regular schedule for installing updates that did not exist in ICD-9. These updates tweak the system every three years, adding important changes that revise rules and add material that makes the coding more accurate and current, Anderson says.

When the underlying and multiple cause of death data are looked at as a whole, ICD-10 offers some advantages to epidemiologists that didn't exist in ICD-9, according to Lois Fingerhut, an independent consultant on injury epidemiology based in Washington, DC. Fingerhut retired from NCHS in January after 31 years as an injury epidemiologist, and she was employed there during the transition to ICD-10.

When studying narcotic-related deaths, for example, epidemiologists are able to get better data in ICD-10 regarding the specific drugs that lead to a drug overdose, Fingerhut says. This is because coding in ICD-10 allows for more detail on poisonings in the multiple cause of death area.

"In that sense [ICD-10] was a vast improvement," Fingerhut says. "In ICD-9, fewer specific drugs were able to be coded."

Disadvantages, Too

But mortality data users do not give ICD-10 unqualified praise. With the improvements came several disadvantages. "For some causes of death it worked better," Anderson says. "In other cases, not as well."

In some instances NCHS statisticians received less detail about underlying causes of death once mortality coding switched to ICD-10. For a data user such as a researcher, ICD-10 created challenges because it required greater specificity in the documentation, Fingerhut says.

Poisoning is one such area. ICD-10 poisoning, as an underlying cause of death, has less specific, broader categories. This requires researchers to delve into the multiple-cause data to get more specific information.

One example occurs in cases where carbon monoxide poisoning is the underlying cause of death. ICD-9 featured a specific underlying cause of death code for carbon monoxide poisoning. In ICD-10, the underlying cause of death in such cases is "poisoning due to exposure to gases and vapors." A researcher would have to look through the multiple cause poisoning codes to identify the specific poisoning agent as carbon monoxide.

"Data users have less detail in the underlying cause of death for poisoning than they did in ICD-9," Fingerhut says.

As with all coding, specificity in coding requires specificity in the documentation. Even though ICD-10 offers the ability for more detailed data, that doesn't mean specific data are always provided, Anderson says. "An increase in detail is useful only if you get that sort of detail reported," he says.

ICD-10 is designed to allow death certifiers the ability to provide more information about factors that contributed to death, such as infections, which can be used to create more specific injury and death statistics. "Of course, that is only good if you typically get those reported," Anderson says. Since not all certifiers include the information, the benefit of this change is not consistent. Sometimes those filling out the death certificate do not have the level of information required by ICD-10 to justify a certain code.

When a death certificate lacks detail, the information gets coded into more general categories. This makes conducting specific research more difficult.

For example, ICD-10 made it harder for statisticians to identify who the victim was in motor vehicle deaths, which total about 45,000 per year. Motor vehicle deaths are categorized by who the person was with relation to the accident—occupant of the vehicle, a pedestrian struck by the vehicle, et cetera. The ICD-10 coding rules require greater detail than ICD-9 in order to code what type of victim a person was in a vehicle accident.

If the extra information is provided by the certifier, there is no issue, Fingerhut says. "But this is a medical examiner who is dealing with a lot of death certificates, and they may not have all the information or the space to write down on a very small box on the death certificate what the coders need to code that information," she says.

As a result, many cases were being coded as "unspecified," meaning the victim type could not be determined. Injury epidemiologists had to resort to National Highway Traffic Safety Administration data to gain a clearer understanding of the epidemiology of motor vehicle deaths, Fingerhut says. The information is used to prevent motor vehicle deaths. In order to design prevention efforts, researchers have to know who is dying in the accidents, Fingerhut says.

"You need far, far more detail in [ICD-]10 than you needed in [ICD-]9 to get the same code," she says.

But although it can require extra steps to use, all the information coded in ICD-9 is still available to researchers, Anderson says. ICD-10 just requires a little more computing power and time to find the information. "That was kind of annoying, but again we can isolate those [cause of death categories] by using the multiple cause data, so it is not that big of a deal," Anderson says.

A Long Life for Mortality Data

NCHS uses coded mortality data to generate national health statistics, which detail the annual leading causes of death, life expectancy, frequency of injury due to specific incidents, and several other statistics.

Many special interest groups like the American Heart Association use the mortality statistical data for research projects and public health campaigns, as do several universities and state and federal agencies.

"I am fairly confident that it is the most-used data set in the country," Anderson says. "I can't think of another health data set that is used more than the mortality file."

Researchers like mortality data because it offers practically a complete count of people. Most other health information comes from surveys, which count only a portion of a population and estimate the rest. With few exceptions, everyone who dies receives a death certificate.

"If somebody buries grandpa out in the backyard and nobody finds out about it, obviously we are not going to have a record for that person," Anderson says. "Or if somebody is murdered and their body isn't discovered for years and years, we wouldn't have the record, at least until that body is discovered.

"So we probably miss a few, but for all intents and purposes, it is a complete count."

Researchers use mortality data as a baseline to track the progress of health and safety initiatives. Since geographical location is included in the data, researchers can focus in on specific areas and see if health initiatives are causing a decrease in specific deaths or accidents.

For example, a group running a diabetes prevention campaign in Michigan can track diabetes deaths and occurrences during the course of its program in that state. Campaign organizers could see if their program is succeeding or failing by watching whether diabetes rates increase or decrease in mortality data during the course of the campaign.

"Mortality is a pretty good proxy for progress with any particular cause of death," Anderson says.

An Update by Agreement

In its agreement with the World Health Organization, the United States agreed to update its mortality ICD classification system when directed by the international entity. While ICD-10 was finalized for worldwide implementation in 1992, the US did not implement it until 1999.

The worst of the transition came from having to reprogram the automated ICD coding software, Anderson says.

The rules for determining an underlying cause of death changed from ICD-9 to ICD-10, and the automated coding software had to be revamped. Manual coders also had to be retrained on how to handle the new ICD-10 codes and determine the underlying cause of death with the new rules. The number of coding categories also increased, growing from 5,000 in ICD-9 to 8,000 in ICD-10. Years passed before coders and researchers became comfortable with ICD-10.

"It isn't easy when you have been using a classification system for 20 years to all of a sudden change to a new one," Anderson says.

No Comparison to ICD-10-CM/PCS

Morbidity coding's ICD-10-CM/PCS system is vastly different than the mortality ICD-10 system. No parallels should be drawn between the transition of ICD-9 to ICD-10 in mortality coding and the transition to ICD-10-CM/PCS in morbidity coding. In fact, Fingerhut is very excited about the positive impact ICD-10-CM/PCS will have on injury morbidity coding.

"I really want to stress that the [ICD-10 mortality] problems will not necessarily translate into [ICD-]10-CM," Fingerhut says. "I think 10CM is going to be an excellent tool for injury epidemiologists, and I think it is going to be a vast improvement over ICD-9-CM.

"ICD-10-CM is going to have far more detail, and in the hospital setting there is more time to get the detail in the record to get the code right."

Anderson believes the transition from ICD-9-CM to ICD-10-CM/PCS will be simpler than the mortality transition. Mortality coders had to learn an entirely new set of rules for coding cause of death as well as learn the new codes themselves, he says. Morbidity coders only have to learn the new codes.

That is not to say the transition to ICD-10-CM/PCS will be simple, Anderson says. While his department had to manage 57 state and territorial mortality offices during the switch, the morbidity coding change will affect thousands of private entities such as hospitals and physician offices, all with their own concerns and issues. In addition, the number of morbidity coders who need to learn ICD-10-CM/PCS far outnumbers the small group of mortality coders who trained on ICD-10.

Even though it will be a large undertaking, both Anderson and Fingerhut feel ICD-10-CM/PCS is well worth the effort. The ICD-10-CM/PCS coding classification offers a vast improvement over ICD-9-CM/PSC that is long overdue, they say.

In the End, a Trade-Off

Even though there are some issues, mortality's ICD-10 system is still a better classification system than ICD-9, Anderson says. The issues that did arise in ICD-10 never prevented NCHS from producing vital US health and death statistics. Even Fingerhut, who called the transition from ICD-9 to ICD-10 "very difficult," says there are good things about the change.

"The codes are there, in some cases in more detail; in the transportation codes there is far, far more detail," she says. "But in other cases there is much less detail. So it is a trade-off. There were some advantages and some disadvantages."

Once the transition to ICD-10 was complete, NCHS was able to produce useful, quality data, Fingerhut says. "As everybody gets more used to the codes and what the codes are able to do for you, you wind up with better data," she says.

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