Determining Prognosis of the Individual Patient

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Determining prognosis has always been of great interest to me. I, like most clinicians, have been asked by patients and particularly by relatives about the prognosis of individual patients under our care.

The dictionary defines prognosis as “1. forecast of the probable course of a disease 2. An estimate of what will probably happen.” The word is derived from the Greek *progignoskein*, which translates as “to know beforehand”—literally, *pro*: before, *gignoskein*: to recognize.

The purpose of this editorial is to make the point that prognostication in the individual patient is an educated guess, nothing more.

Prognostic information on medical conditions is based on population studies. For example, in 1,000 patients with any given condition, a certain percentage will have a major adverse cardiac event (MACE) and others will be MACE-free. When it comes to the individual patient, there are no percentages other than zero or 100. The individual patient will or will not have the outcome predicted.

As I have said many times to medical students, housestaff, and fellows, if I could prognosticate, that is, see into the future, I would live in Las Vegas.

The issue of prognostication has been driven home many times to me and is illustrated by the following example.

I recently took care of a patient with a rather large acute anterior myocardial infarction who was in cardiogenic shock with high left ventricular end-diastolic pressure, low blood pressure, tachycardia, mental confusion, and low cardiac output as determined by thermodilution and urine output. Late reperfusion was attempted with angioplasty and stent placement in order to preserve epicardial myocardium. Anybody who has cared for such a patient knows that prognosis is poor. Given 100 patients of this sort, probably 60 will die and 40 will live. But it is difficult to determine which group one’s patient falls into.

Numerous examples of prognostic indices exist, and despite their limitations, they are quite useful to help with decision-making. For example, in patients presenting with an unstable acute coronary syndrome, the presence of elevated cardiac markers such as troponin T or C-reactive protein increase the risk of MACE in the future. The observation of simple indicators such as greater age, electrocardiographic changes, and the presence of three or more risk factors likewise increase the risk of future cardiac events.

Similarly, in patients with ST-segment elevation myocardial infarction, an ejection fraction of < 40% increases the risk of dying in 30 days considerably. However, despite the presence of these risk factors and markers, the majority of patients defined above will not have a MACE in the near term or in the long term.

While taking care of the patient described above, I came across an article titled “The Fine Art of Prognostication” by M.R. Cowie.

The major thrust of Cowie’s editorial relates to physician failure to communicate with patients and family about prognosis. However, he makes several other points that I think are worthy of comment. For example,

1. “Prognostication is generally thought to be more of an art and less of a science than diagnosis…” I agree with this statement, but it is all we have.

2. “Physicians dislike and avoid making the sort of precise prognoses that patients often seem to want; physicians may deem that prognostication is not helpful, is misleading, or is even harmful to their patients.” I agree that it may be misleading and may be harmful if the physician does not have people skills to soften the prediction.

3. “The goal of prognostication is to predict the future and it may be impossible to do this perfectly because the course of the illness may depend on random events that have yet to occur.” This certainly is the case in patients with cardiovascular disease who may be prone to a future myocardial infarction, a stroke, cardiac arrhythmia, hypertension, diabetes, and so forth. This must also be communicated to the patient and family.

The wife of the patient I described asked me whether her husband would live or die. I considered telling her that I didn’t know the answer to her question, but instead reasoned that when one doesn’t know whether a seriously ill patient will live or die, one should maintain some optimism with the patient and the relatives; and that is what I did, even though I personally was pessimistic.
I emphasized that it’s impossible to know the exact prognosis in the individual patient, but I told the patient’s wife what I know about populations who might have the same problem as the patient. I believe this gave the family more hope than if I were to simply say, “I don’t have any idea what the prognosis is” (even though this may be the case). Most families and patients understand that no one can accurately and reliably predict the future, and they also appreciate honesty on the part of the physician.

Finally, my advice to students and trainees who must eventually deal with the subject as they mature in medicine is that when there are no data or the data are conflicting, try using common sense but always be optimistic.

By the way, the patient described above survived, left hospital, has returned to work, and remains symptom free after six months.

C. Richard Conti, M.D., M.A.C.C.
Editor-in-Chief

References