Editorial Comment

Flying Pigs and Other Possibilities

David A. Clark
Clinical Professor of Medicine,
Stanford, California

It is widely accepted that the amount of radiation that the patient, physician, and laboratory personnel receive either on a case or monthly basis is important in assessing the safety of everyone who participates in the procedure. The article by Bernardi utilizes fluoroscopy time and related parameters to develop a model to compare the difficulty of interventional procedures. This article demonstrates that such a comparative quantification is possible and can be done with reproducibility.

It is not surprising that the clinical characteristics of patients played no part in predicting the difficulty of the procedure or the fluoroscopy time. Total procedural time itself was not used and therefore the length of procedure in a markedly obese patient with a difficult-to-cannulate femoral artery would not be apparent in this series of patients. It is likewise not surprising that the more difficult or complex the lesion, as defined by the modified American Heart Association/American College of Cardiology grading system classifications, the longer the fluoroscopy time. Experienced interventional cardiologists know that all right coronary arteries are not created equal in terms of interventional ease and that a stent placement in the mid left anterior descending coronary artery can be influenced by a number of anatomic factors.

The findings of this study, while interesting, are hardly startling, but they are intriguing in terms of their potential usefulness in a number of aspects of interventional cardiology. It is possible that the authors have developed a valid method to compare interventional cases that could have far reaching positive implications for the field of interventional procedures. Such as the following.

One, third-party payers. Might it be possible that insurance companies would recognize that there are differences in procedures in spite of what they are called and actually reimburse for the procedure based on the time and difficulty involved rather than blanketing all single-vessel angioplasties as the same? It would be amazing if a third-party payer could include the CI (complexity index) to recognize that a single lesion in a tortuous coronary artery that takes an hour to wire and place a stent should be reimbursed at a higher level than a single lesion in a smooth C-shaped right coronary artery that requires a small fraction of that time for the entire procedure. It is also possible that someday pigs may fly but perhaps a scoring system such as the CI will strike a chord with a progressive insurance carrier at some time in the future.

Two, hospital credentialling. In reviewing an individual practitioner's ability in the interventional laboratory, hospital credentials committees have a difficult time assessing technical capabilities. Concepts in this article could give the catheterization laboratory committee and credentials committee numerical parameters to ascertain that the skills of practitioners in the laboratory are appropriate. By a reversal of the process developed by Bernardi, the predicted CI of cases could be established and acceptable fluoroscopy times predicted. The actual results could then be compared to the predicted acceptable times. If these goals are not consistently achieved by a practitioner, proctorship could be instituted to be certain that patients are being treated with appropriate skill.

Three, low-volume operators. The Society for Cardiac Angiography and Interventions and the American College of Cardiology continue to wrestle with the concept of the low-volume operator in interventional procedures and whether patients treated by low-volume operators receive safe and appropriate care. One way to handle this situation might be to restrict low-volume operators (less than 75 cases/year) to the performance of procedures with a CI with two or less. This type of restriction has been discussed as having merit but difficult to quantify. The precepts in this article may give the basis of a potential quantification scheme that could prove valuable in solving this conundrum.

Four, interventional programs in hospital without operating room backup. Another thorny issue that is before the various societies and colleges as well as state licensing boards is whether or not it is safe to perform angioplasties in hospitals without operating room backup. With proper alliances with medical centers that have full cardiovascular programs in place, perhaps procedures with a low CI could be safely performed in such an institution, targeting the high CI procedures to the hospital with surgical backup.

The possibilities are numerous, and the advantages many, to be able to quantify the difficulty of a proposed interventional procedure. This article demonstrates an example of how this can be done with reproducibility. It provides another parameter that, combined with accepted definitions of complexity, could be a very valuable tool in many aspects of interventional practice.