2) The number of σ that define the control limits determines the frequency of type I and type II errors.[2] "Erroneous" refers to these errors.

3) "Events" refers to the parts of the process being measured (such as surgical site infections) and tallied in the numerator. The caveat involved applies both to small numerators and denominators, since the *normal approximation* is less accurate with small numbers. This limits applicability of the described SPC charts in such circumstances.

4) I agree that potentially useful information may be hidden within SPC charts that are "in control." (I have greatest concern for small clusters of events that do not push points beyond control limits.) The example given by Dr. Lee highlights an important aspect of SPC chart theory, the determination of what is "acceptable" versus what is "in control." The "departure(s) from excellent practice" may be either common cause or special cause variations, and SPC charts can help assess the correction of either.

As I noted in the article, SPC charts should not be means or ends unto themselves. With proper interpretation and insight, they clearly provide a better means of monitoring processes than "bean counting."

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**REFERENCES**

1. Shainin D, Shainin PD. Statistical process control. In: Juran JM, Gryna FM, eds. *Juran's Quality Control Handbook. New* York, NY: McGraw-Hill Book Co; 1988: Section 24.
2. Plsek PE. Tutorial: introduction to control charts. *Quality Management in Healthcare* 1992;1:65-74.

## Iatrogenic Hepatitis B Infection of Three Patients in One Family

**To the Editor:**

In early winter 1992, a family (father, age 42 years; mother, 33 years; son, 9 years) visited a general practitioner in abu-Garib, a suburb of Baghdad, for management of respiratory tract infections. The physician prescribed some medications and gave each an injection, using a single syringe that, according to the patients, already had been used previously (a not uncommon practice in the rural areas). The family presented to me on June 18, 1993, with icterus and gastrointestinal complaints. Symptoms were mild for the father and mother, but the child had anorexia, a fever of 38°C, an enlarged, tender liver, and icterus.[1] Urine bilirubin was positive for all three, strongly so for the child. They provided serum for hepatitis B virus (HBV) testing, but refused further laboratory evaluation or inpatient treatment and were lost to follow-up. Assay for hepatitis B surface antigen (ELISA test, Abbot Laboratories, Chicago, IL) was positive for all three, as was the confirmatory test.

This small outbreak of hepatitis B most probably was caused by their physician's reuse of an unsterilized syringe and needle for intramuscular injection.[2] Every physician, especially in the developing countries, must keep in mind that some 350 million people are chronically infected with HBV; these carriers are the reservoir for HBV, and their blood is infectious.* With the improvement of screening and detection methods and their widespread use, iatrogenic infection with blood products has become rare in the developed countries.[3] In less developed countries, good infection control practices remain the principal line of defense.

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**REFERENCES**

1. Elias E. Jaundice. In: Weatherall DJ, Ledingham JGG, Warrell DA, eds. *Oxford Textbook of Medicine.* 2nd ed. Oxford, England: Oxford University Press; 1987:12.199.
2. Hu DJ, Kane MA, Heymann DL. Transmission of HIV, hepatitis B virus, and other bloodborne pathogens in health care settings: a review of risk factors and guidelines for prevention. *Bull World Health Organ* 1991;69:623-630.
3. De Groote JJ. Therapeutic measures after hepatitis B virus infection: postexposure prophylaxis. *Postgrad Med J* 1987;63(suppl)2:33-39.

## Blunt-Tipped Suture Needles

**To the Editor:**

We now have the opportunity to eliminate approximately two thirds of the sharps injuries that occur in our operating rooms and delivery rooms, through the use of blunt-tipped suture needles. I now use these for essentially all obstetrical and gynecological surgery. Most of the remaining one third of injuries can be prevented by passing sharps through a "neutral zone." Surgeons, nurses, and technicians can be protected from bloodborne pathogens, while hospitals can be saved the high cost of processing and dealing with these potentially devastating accidents and their sequelae.

The new blunt needles, like other product lines for O.R. safety, still are in their infancy: the manufacturers are striving to develop and refine them to suit the needs of more and more surgeons in various subspecialties. Meanwhile, the Centers for Disease Control and Prevention expresses great concern about poor compliance with safety practices by surgeons. This is in part due to surgeons' resistance to change; this must be overcome by education. The other major cause for noncompliance is surgeons' limited access to safety devices. Too many surgeons don't use eye protection or impervious gowns routinely, nor double glove routinely, because of their perception of these practices as nonuser-friendly; but those surgeons may not have seen yet the particular devices that could work for them in a user-friendly manner. No one would deny a carpenter a given tool if the desired result is a job well done. No less consideration should be given the surgeon, whose work is held to the highest standard. Too often, hospital cost-containment committees preselect and limit the menu of O.R. products. Surgeons are creative problem-solvers with individual needs. They alone should establish the selection criteria and must be allowed to choose those devices they feel will protect them best-devices that won't interfere with their ability to care for patients effectively. Even if extra pennies are spent to allow this to happen, the savings will

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