

urgency to the question of the cost versus benefit in some persons with type 1 diabetes. Very tight control should probably not be considered for patients who give a history of the neuroglucopenic symptoms of hypoglycemia without the early signs and symptoms mediated by the adrenergic nervous system. A practical approach to avoiding severe hypoglycemia in the great majority of insulin-requiring patients who do not give such a history is to aim initially for fasting and preprandial plasma glucose concentrations between 120 and 150 mg per dl and postprandial values between 150 and 200 mg per dl. Once this is reached, insulin doses can be adjusted cautiously to achieve fasting and preprandial levels between 80 and 120 mg per dl and postprandial values less than 150 mg per dl.

The importance of the message for tight control cannot be overemphasized. Since the microvascular complications do not develop until 10 to 20 years after the onset of diabetes, patients have little immediate motivation to go to the trouble of achieving near euglycemia. Physicians (to whom it is also more trouble) must be convinced of the need and instill this conviction in their patients. Unless this can be accomplished early in each patient's course, we will have sacrificed another generation of diabetic persons to the same eventual fate as their predecessors. A cure for diabetes is not yet imminent. We must start to act now with the tools at hand.

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## Sphygmomanometry: The Correct Arm Position

TO THE EDITOR: There are several errors in Dr Rose's recent correspondence "Misleading Blood Pressure Readings."<sup>1</sup>

The most serious mistake is his assertion that the correct arm position for blood pressure readings is with "the patient's arm at his or her side." Indeed, he criticizes home or supermarket readings where the arm is placed on a table or extended forward about 30 to 40 degrees.

Though Rose was unable to find instructions on arm position in basic medical texts, the official recommendations of the American Heart Association (AHA) state clearly the standard position: "the arm slightly flexed and with the whole forearm supported at heart level on a smooth surface."<sup>2</sup> Heart level is further clarified as the fourth intercostal space at the sternum. This recommendation derives from prior studies which had demonstrated that lowering the arm raises the blood pressure, probably due to hydrostatic forces.<sup>3,4</sup> Dr Rose suggests that blood pressure readings taken with the arm elevated may produce spuriously low results. To the contrary, by taking readings with the arm at the side, Dr Rose may be overdiagnosing hypertension.

He should be commended, however, for bringing to our attention the often-ignored effect of arm position on accurate sphygmomanometry. How many physicians take the blood pressure in the standard position recommended by the AHA? How many take it with the arm either higher or lower, or change their technique from patient to patient?

Other variables play an important role as well. For example, an appropriately elevated but unsupported arm may produce a falsely elevated reading, possibly related to the effects of isometric exercise.<sup>5</sup> The physician Rose criticizes for taking blood pressure readings by holding the patient's arm in his armpit may be the most accurate of all.

Two other major confounding variables in Rose's mini-study design deserve attention. First, the order of his readings at different arm positions was not randomized or varied in any of his subjects. It is known that the passage of just a few minutes can alter subsequent readings from the initial one. Second, the observer bias, which can be considerable, was not eliminated by a device for blinding readings, such as a zero muddler device.

Blood pressure variability is a fascinating and complex subject. Since our therapeutic decisions depend on small changes in blood pressure readings, we must standardize our technique as much as possible.

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### Dr Rose Responds

TO THE EDITOR: Dr Kroenke's criticisms and commendation are appreciated, as well as his pertinent literature search which I did not pursue far enough.

With reference to Merendino and Finnerty's 1961 article the drawings and readings show the observed pressures were higher with the entire arm hanging at the patient's side. The other drawing with the correct position shows the forearm resting on the table but below heart level; however, the cuff is at heart level. In the 1964 article by Mitchell and co-workers the photograph shows the arm awkwardly abducted and few would take a seated reading in such a manner. In Silverberg's 1971 article he states the cuff must be at heart level with the arm supported in a sitting or standing patient to avoid isometric contraction of the arm which could raise the blood pressure.

Further readings were taken on seated patients with the forearm *supported* in the patient's lap or on the armrest of the chair with the cuff at heart level and no significant differences were recorded. My original seated readings were taken with the forearm supported in the lap. These positions removed the dependency factor of Merendino and the isometric factor of Silverberg. The awkward position of Mitchell still has the cuff close to heart level as would occur with the forearm resting on a table in front of the patient so on that point I stand (sit) corrected. However, the height of the patient relative to the table could result in elevation of arm and cuff above heart level so care has to be taken.

I am sure that Dr Kroenke would agree that too often health care personnel, with a patient supine, seated or standing, elevate the patient's arm for the observer's comfort, and by raising the entire arm including cuff above heart level obtain a false low reading—and that such maneuvers should be avoided. Also, depending on the relative height of patient and observer, the holding of the patient's arm in the observer's armpit could give a false low reading.

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### Polymicrobial Enteric Septicemia From Coffee Enemas

TO THE EDITOR: Enemas are used as part of several different "alternative treatment" programs prescribed as cancer therapy. As part of the Gerson Cancer Therapy,<sup>1</sup> coffee enemas may be administered as frequently as every two hours. The caffeine allegedly is absorbed into the portal circulation and stimulates hepatocellular

function to detoxify the products of tumor cell metabolism. We report here a case of polymicrobial enteric septicemia associated with coffee enema therapy.

A 23-year-old woman with advanced breast cancer failed to respond to standard chemotherapeutic regimens. After rapidly progressive hepatic metastatic lesions developed, she sought "alternative therapy" in Tijuana, Mexico. Despite treatment, including liver extract administration and frequent coffee enemas until the day before admission to our hospital, hepatic failure occurred. Admission paracentesis yielded sterile ascitic fluid, but stool culture and two separate sets of blood cultures grew *Salmonella enteritidis* group D and *Campylobacter fetus* subspecies *intestinalis*. The patient died before further gastrointestinal evaluation could be completed, and permission for autopsy was not granted.

A recent report described two coffee enema-related deaths attributable to severe electrolyte imbalance.<sup>2</sup> An outbreak of colonic amebiasis has been traced to a contaminated colonic irrigation apparatus used in another "alternative" treatment setting. We are aware of no previous reports of coffee enema-related septicemia.

Numerous authors have studied the bacteremic risk of colonic instrumentation (sigmoidoscopy or barium enema). A transient bacteremia can frequently be documented during these procedures, with enteric organisms cultured from up to 23% of blood specimens taken during or immediately following such manipulations.<sup>4-6</sup> Cases of significant septicemia complicating barium enema are also rare.<sup>7-9</sup> This virtual absence of persistent bacteremia may be attributable to effective clearance in the hepatic reticuloendothelial system of bacteria entering the portal circulation.

We believe that our patient's polymicrobial septicemia from two unusual enteric pathogens was induced by enema therapy in the setting of severely compromised hepatic function and portal hypertension. This complication should be considered an additional potential risk of coffee enema therapy.

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