not have active *Pneumocystis carinii* pneumonia (PCP). All of these patients had a history of single or recurrent episodes of PCP and were receiving aerosolized pentamidine isethionate as prophylaxis against recurrence of PCP. It was suspected that the pneumothoraces were caused by coughing due to the irritative effect of pentamidine therapy on the airways superimposed on abnormal decreased lung compliance secondary to interstitial fibrosis caused by previous PCP.

From January 1, 1988, to January 1, 1991, 1,200 known human immunodeficiency virus-positive patients were admitted to our institution. Thirty-two patients had spontaneous pneumothorax either on admission or during hospitalization. Twenty-four patients (75 percent) with spontaneous pneumothorax were not receiving PCP prophylaxis, and only three patients (10 percent) were receiving aerosolized pentamidine prophylaxis. The incidence of spontaneous pneumothorax in our AIDS group admitted to the hospital was 2.7 percent.

At the Fifth International Conference on AIDS, Newsome et al.\(^2\) reported that pneumothorax occurred in eight (2.5 percent) of the 327 patients with prior PCP who had been receiving aerosolized pentamidine prophylaxis for three to 13 months; the majority (75 percent) had evidence of active PCP.

When we compared the incidence of pneumothorax in patients receiving aerosolized pentamidine prophylaxis (2.5 percent) with that in our group, who for the most part received no prophylaxis, we found no statistical difference. Although we cannot exclude the possibility that inhaled pentamidine can directly cause pneumothorax, the evidence presented more likely implicates predisposing damage from prior episodes of PCP or, more likely, ongoing tissue destruction from recurrent or active infection.\(^2\) It would be helpful to know whether other institutions have any significant differences in the incidence of pneumothorax in patients treated with prophylactic aerosolized pentamidine and in those who receive no prophylaxis.

Kaveh Bagheri, M.D.,
Terrance J. Truitt, M.D., and
Benjamin H. Safirstein, M.D., F.C.C.P.,
Pulmonary Division,
Saint Michael's Medical Center,
Newark, New Jersey

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Catheter-Related Infections and Associated Septicemia

To the Editor:

We are writing to express our concern about the article by Norwood et al.,\(^1\) which appeared in the April 1991 issue of *Chest*. While we agree with the authors that much of the literature addressing this topic is plagued by varying definitions of catheter-related infection and anecdotal evidence, the recommendations that arterial catheters, pulmonary artery catheters, and central venous catheters be changed only when there is evidence of catheter-related local infection or bacteremia is disturbing for several reasons.

First, the data presented by the authors are derived mainly from surgical (trauma) ICU populations, which represent a younger population without prior multiple medical conditions. Extrapolation of their data to other surgical and medical ICU patients may not be valid.

Second, the work of Norwood et al. suggests that patients with more severe underlying illness (eg, sepsis) may be at greater risk for catheter-related infection; however, their recommendations do not appear to take this into consideration.

Third, catheter-related infections, including cellulitis, septic thrombophlebitis, and bacteremia, are a major cause of nosocomial infection,\(^3\) the risk of which increases with duration of catheterization.\(^3\) Catheter-associated bacteremia is associated not only with endocarditis, metastatic infection, and septic shock, but also with prolonged hospitalization and extended intravenous antibiotic therapy. The mortality from staphylococcal bacteremia varies from 21 percent\(^1\) to 62 percent.\(^2\) Prevention of these complications should be a heart of policies regarding intravascular catheters.

The incidence of catheter-related infection in our medical ICU has decreased by at least 50 percent since the institution of strict guidelines regarding catheter insertion and duration of catheterization. Only one catheter-associated infection has been reported during the past four reporting months. Furthermore, the complication rate with more frequent catheter placement has remained unchanged at less than 1 percent.

The authors’ recommendation to remove central venous and pulmonary artery catheters only after a catheter-related infection is clinically evident leaves us in the less-than-desirable situation of treating, rather than preventing, potentially fatal iatrogenic complications. The only way to minimize catheter-related infection is to limit the time in which central venous and pulmonary artery catheters are in situ. We applaud the efforts by Dr Norwood and his colleagues to help clarify a controversial topic; however, we question their conclusions and the decision by the ACCP Critical Care Council to publish this paper in what appears to be the form of a policy statement.

Randolph J Lipchik, M.D., F.C.C.P., and Ralph M Schapira, M.D.,
Pulmonary and Critical Care Medicine,
Medical College of Wisconsin,
Milwaukee

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To the Editor:

I thank Dr Lipchik and Dr Schapira for their comments about our review article, and I would like to reassure them that we share their concerns about catheter-related infections and associated bacteremia. Our recommendations should not be interpreted as representing a lackadaisical or hopeless attitude toward preventing infection. It is, rather, an attempt to arrive at some conclusions
based on our own experience and the currently available literature. I strongly disagree with Dr Lipchik and Dr Schapira in their assumption that our ICU population represents a younger population with no prior medical problems. Trauma, especially blunt trauma, is not confined to young, healthy individuals. A large percentage of our patient population, especially those with head injuries, are older patients. As a matter of fact, at the time of this letter, the average age in our surgical ICU population was 56 years (range, 30 to 79 years). I do agree that extrapolation of any data from one unit to another may not be valid, which is why individual studies in each ICU should be encouraged.

Their report of only one catheter-related infection in four months is to be highly commended. I assume that they performed semi-quantitative cultures on every catheter placed during that time period to arrive at this conclusion, and I would be interested to know their written policies regarding duration of catheterization and dressing changes.

I will summarize our recommendations again, since there appears to be some confusion in interpretation. Arterial catheters should be exchanged only for signs of ischemia to the distal extremity, suspected infection at the insertion site, unsafe location (such as the brachial artery), or the presence of a positive blood culture. Pulmonary artery catheters may remain in place as long as needed, provided there is no evidence of catheter-related sepsis, such as unexplained fever, a positive blood culture, or local signs of infection at the insertion site. Central venous catheter guidelines are similar to those for pulmonary artery catheters.

In practice, it is extremely unusual in our ICU population for more than five to seven days to pass without either the development of a positive blood culture, which is not usually due to a catheter, or the development of a significant fever elevation, the cause of which is usually difficult to determine. Furthermore, it is also extremely rare to have a catheter in place for more than five to seven days without either exchanging it over a guide wire or discontinuing it because it is no longer needed.

We do not advocate routinely exchanging a catheter to a different site or over a guide wire in patients who are afebrile with no clinical signs of infection, and the majority of studies in the recent literature support our view.

Our practice in the early 1980s was to routinely change all catheters every three days to new sites regardless of the patient's clinical status. We now believe that practice is unnecessary in the majority of patients and puts them at a needless risk for venipuncture and arterial complications.

I also do not think that the Council on Critical Care intended our recommendations to be policy. It is very difficult to make policy statements about a problem that is so multifactorial, and optimal techniques and policies will vary from institution to institution depending on the expertise of the individuals inserting the catheters and the patient population.

Perhaps further technological advances, such as the development of the Vitacuff subcutaneous silver-impregnated collagen cuff (Vitaphone Corporation, Menlo Park, Calif) and the antibiotic-bonded catheter, will eventually render our clinical ineptitude with catheter insertion techniques and site management irrelevant in the future.

Scott Norwood, M.D., F.C.C.P.
Critical Care and Trauma Services
Carle Foundation Hospital
Urbana, Illinois

Empyema Thoracis

To the Editor:

In an article that appeared in the May 1991 issue of Chest, Ashbaugh1 presented data relating to the surgical treatment of empyema thoracis in 122 patients. The treatment groups were chest tube only, open drainage, and decortication. Postoperative stay was reduced in the decortication group compared with the group receiving open drainage (11.5 vs 18.6 days, \( p = 0.018 \)), and patients undergoing decortication were demonstrated to have the lowest mortality (6.1 percent).

The discussion in the above-mentioned article failed to mention the role of intrapleural instillation of streptokinase in the treatment of empyema thoracis. This modality was initially described by Tillet et al in 1951.2 We have recently described the utility of this technique in three patients with thoracic empyema.3 Although the optimal number of instillations is individualized by patient response, treatment may be repeated for up to 14 days as needed.4

Limitations exist in the application of intrapleural streptokinase in the treatment of thoracic empyema. Long-standing, well-organized empyema may possibly be more effectively treated via surgical intervention, and although multicenter, controlled trials will likely be necessary to determine definitive indications for the use of intrapleural streptokinase, it is clear that a subgroup of patients with empyema thoracis may be effectively treated with this modality, allowing avoidance of surgical intervention.

We agree with Dr Ashbaugh that in the setting of pneumonia, at the earliest sign of pleural effusion accumulation, diagnostic thoracentesis should be performed and a chest tube should be inserted when indicated. When drainage is incomplete, however, we feel consideration should be given to the use of intrapleural streptokinase prior to the relegation of the patient to either open drainage or decortication, particularly in the patient with short-term symptoms of pleural disease.

Sandra K. Willie-Ediger, D.O., F.C.C.P.,
Gary A. Salzman, M.D., F.C.C.P., and
George R. Reisz, M.D., F.C.C.P.
Division of Respiratory and Critical Care Medicine,
School of Medicine,
University of Missouri-Kansas City,
Kansas City

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To the Editor:

I have read the article by Drs Willie-Ediger, Salzman, and Reisz. Due to the small numbers, probably one should look on this as an anecdotal report. Of their three cases, two probably would fall in the fibrinopurulent stage of empyema, and only one in the organizing stage. The two patients in the fibrinopurulent stage predictably did well initially: one went home in six days, but the other one eventually died in the hospital of preexisting liver disease. The third patient in the organizing phase required 17 days of hospitalization and ten different instillations of streptokinase. The overall mortality was 33 percent.

Although there is little question that streptokinase can be a useful adjunct in some patients and that today's purified preparation of streptokinase has many fewer side effects than earlier preparations of streptokinase, which often caused allergic reactions, I still do not