ber domes,\textsuperscript{5,6} \textit{ie}, using chemical methods of disinfection with agents (such as aqueous solutions of benzalkonium) that are not reliably effective against many gram-negative bacilli.

Disposable domes for transducers, which are now available, seemingly should obviate the problems of resterilization of the components of the transducer within hospitals; however, the outbreak reported by Buxton et al, another epidemic to reinforce in the minds of physicians the iatrogenic hazards of invasive monitoring, points out most convincingly that even if commercial items are truly sterile when they arrive in the hospital, as they fortunately usually are, they can readily become contaminated during clinical use. Moreover, seemingly insignificant practices in the use of such items, such as using a solution of dextrose in water rather than saline solution as the infusate in monitoring systems, can have portentous consequences. The use of disposable sterile items must not inculcate a sense of false security and relax attention to good aseptic practices or diminish vigilance for related iatrogenic disease.

Unfortunately, the initial source of contamination of permanent components of transducers in the epidemic at Hartford Hospital was not identified. Most likely, a single transducer became contaminated during use; this contamination was perpetuated and spread by the failure of personnel to routinely decontaminate transducers after use in each patient. Personnel were apparently deluded that the use of sterile disposable domes provided a fail-safe barrier against any contamination reaching the patient. All reusable components of transducers should be cleansed and sterilized, ideally with ethylene oxide gas, between use with different patients.\textsuperscript{4}

Relatively few studies have examined the infectious hazards of intra-arterial catheters \textit{per se} when used for hemodynamic monitoring. In a recent prospective study of 130 intra-arterial catheters used in patients with prolonged respiratory and other multi-organ failure, we found that 18 percent of the catheters produced local infection, and 4 percent produced septicemia;\textsuperscript{5} overall, 12 percent of all nosocomial bacteremias identified in these patients during the study originated from an arterial catheter. All catheter-related septicemias occurred with arterial cannulations exceeding four days (P < 0.001), and placements of catheters by cutdown (rather than percutaneously) were associated with an increased risk of infection. Intercurrent systemic antimicrobial therapy did not protect against catheter-related septicemia but may have been responsible for the predominance of enterococci, gram-negative bacilli, and Candida in these infections.

It is now clear that all types of invasive monitor-

ing systems have significant potential for producing infection, often of life-threatening degree. In the closed setting, of the hospital and especially the intensive care unit, these infections may occur in epidemic numbers and may stem from seemingly innocuous “safe” apparatus or materials. “Beware of Greeks bearing gifts.”

\textit{Dennis G. Maki, M.D.* and Jeffrey D. Band, M.D.* Madison, Wis}

\textsuperscript{*Infectious Disease Section, Department of Medicine, University of Wisconsin.}

\textbf{REFERENCES}


8 Band JD, Maki DG: Infections caused by indwelling arterial catheters for hemodynamic monitoring. Read before the 18th Interscience Conference on Antimicrobial Agents and Chemotherapy, Atlanta, Oct 4, 1978

"And the Lord Said to Moses and Aaron"

\textbf{We} are told on the highest authority (Leviticus 11:13-19) that there are 19 species of birds that should not be eaten. Since chicken was not included in the list, by inference from the negative, the benefits of this bird have been bestowed on mankind from antiquity in cult and culture.

The origins of this winged vertebrate are obscure. Some archeologists estimate that the chicken was domesticated about 5,000 years ago.\textsuperscript{1}

The chicken has been the subject of religion, folk wisdom, and magic. Even today, the Azande in Zelandia in the Sudan use the chicken as an oracle.
In this ritual a chicken is fed poison and asked questions. If the chicken dies, the answer is affirmative; if it lives, the answer is negative. With a little knowledge of toxicology, the opportunities for rigging are limitless, another example of what science can do for politics.

As an object of intellectual curiosity, the chicken, known to the Romans as *Gallus domesticus*, fell into neglect during the first 1,500 years of the Christian era, while Western man contemplated the important philosophic problems of his relationship to God. Then there was an awakening to more pragmatic matters. The most comprehensive modern work on the chicken was written by Aldrovandi, professor of natural history at the University of Bologna, in the 16th century. He wrote: “They furnish food for both humans who are well and those who are ill and rally those who are almost dead.” Indeed, before physicians emerged as a distinct professional group in the 18th century, the first reaction of many people to illness of body or mind was to reach for a chicken.

While medicinal properties have been attributed to almost every anatomic structure in the chicken, perhaps its broth has received the most respect. The Reverend Edmund Saul Dixon, rector of Intwood-with-Keswick, wrote in 1849 that cock broth, good for cough, was made by running an old cock “till he fall with weariness, then kill and pluck him, and gut him, and stuff him with proper physic, and boil him until all the flesh falls off, then strain it. This broth mollifies...and moves the belly...”

Modern medical science was remiss in its study of this potential source of materia medica until February, 1975. In that month, Dr. Alfred Soffer, the editor-in-chief of *Chest*, a physician with great insight and vision, published a case report by Caroline and Schwartz entitled “Chicken Soup Rebound and Relapse of Pneumonia.” It seems that a 47-year-old physician became acutely ill with symptoms and signs of respiratory infection. He was put on a regimen of 500 ml of chicken soup every four hours by mouth, and his condition improved; however, he made the serious mistake of discontinuing his medication prematurely, relapsed, and required major thoracic surgery, which might have been avoided if he had maintained his original therapy as prescribed.

This report by Caroline and Schwartz was a milestone in the advance of medicine. Egged on by Dr. Soffer, numerous letter writers flooded *Chest* with commentary over the next three years. The letters came from practitioners and academics as far away as South Africa.

The comments covered a great variety of research interests, *ie*, pneumococcal resistance to chicken soup; the pharmacology and biochemistry of chicken soup; the use of rendered chicken fat in the treatment of impotence, premature ejaculation, and the relief of sexual frustration in adolescent males; and even the use of chicken soup as a potential aircraft fuel. There were loud exhortations to the medical community from Mr. Ralph Packman, founder of the Chicken Soup Institute in Philadelphia, for more research, especially in the breeding of happy chickens, not only to enhance the therapeutic value of the broth but to build some advance good will in case chickens ever become the ascendant species and take over the world.

There were observations on the efficacy of the active agent in chicken soup as a cure for gonorrhea, based on a personal communication, and observations on the use of that well-known additive, matzoh balls, as self-destructing esophageal bougies. Mason decried the lack of a standard chicken soup, emphasized the broad-spectrum activity of chicken soup garnished with various doughy enhancers, and recounted the serendipitous discovery of the antimicrobial potency of chicken soup fumes described by Levin in the *Journal of Irreproducible Results* as long ago as 1966. Caveats were voiced against fly-by-night substitutes.

Some writers underscored the need for randomized double-blind concurrent controlled clinical trials. Now, at long last, after thousands of years of mere anecdote, trivia, and faith, Sackkhoo, Januszkiewicz, and Sacker have published the results of the first really scientific evaluation of chicken soup in *Chest*. While the case report by Caroline and Schwartz was obviously a satire, this study by Sackkhoo et al is a serious investigation designed to seek a modicum of truth in the welter of folklore. Marvin Sacker, M.D., Chief of the Division of Pulmonary Disease at the Mount Sinai Medical Center in Miami Beach (where else?), and his coauthors found that chicken soup by mouth caused a transient increase in nasal mucus velocity and was superior to mere hot water. Although the aroma of the medicament precluded a double-blind experiment, this investigation strongly suggests that one of the properties of chicken soup is to hasten the removal of pathogens from the nose. Who knows what other near-miraculous properties would come to light if we were to mount the kind of program that put a man on the moon?

*Vivat Gallus domesticus!*

William Weiss, M.D.*
Philadelphia

*Professor of Medicine, Hahnemann Medical College and Hospital.
Reprint requests: Dr. Weiss, 6401 New College Building, 230 N. Broad Street, Philadelphia 19102.

488 EDITORIALS

CHEST, 74: 5, NOVEMBER, 1978
Pulmonary Function following the Adult Respiratory Distress Syndrome

The 1972 report of the task force on problems in respiratory disease from the National Heart and Lung Institute made a conservative estimate that the incidence of adult respiratory distress syndrome in adults was approximately 150,000 cases per year, with an average mortality of 40 percent. The fate of the surviving 60 percent, i.e., approximately 90,000 adults per year, has recently received much attention. The report by Yahav and associates in the September 1978 issue of Chest is another such study of 15 patients who were relatively young and were in good health prior to the onset of the adult respiratory distress syndrome.

The consensus of opinion from the various reports is that although residual abnormalities are present, they are minimal, with a tendency to improve with time. This outcome is heartening when one considers the severity and the high mortality of the acute illness. On follow-up examination the majority of the patients are asymptomatic and physiologically are either normal or very close to being normal.

The results of the earlier published series are summarized in Table 1. As can be seen, approximately 40 percent of the survivors have abnormal results on tests of pulmonary function, including mild restriction, impairment of gas transfer, fall in arterial oxygen pressure (PaO₂) with exercise, and minimal symptoms. Obstruction of airflow, as defined by either evidence of obstruction of large or small airways or improvement in rates of flow following inhalation of bronchodilator drugs (when specifically sought), has been present in approximately 25 percent of the cases. Obstruction of airflow may develop during recovery, while other data on pulmonary function continue to improve. The obstructive abnormality seems to be primarily in the small airways; several of the patients improved following inhalation of bronchodilator drugs.

A recent report by Simpson and associates from Denver showed that four of eight patients had evidence of obstruction of airways on follow-up examination. Obstruction in three of the four was reversible, and two of the four patients had an abnormal response to challenge with inhalation of methacholine. The factors that predispose to later development of obstructive disease are not yet known. It is interesting to speculate that differing forms of primary pulmonary injury (i.e., via the vascular route or the route of the airways) might have differential effects on the function of either large or small airways following recovery; however, no such evidence has been available to date, since the number of patients studied has been small.

When one attempts to correlate the pathologic abnormalities of the acute changes with functional recovery, the data of Lamy and associates and of Fallat et al are encouraging. Even though 13 of the 45 patients studied had extensive fibrosis during the acute phase of the syndrome, three of these 13 patients survived with moderate to good pulmonary function, suggesting that at least some of the acute fibrotic changes may be reversible. In this context the experimental studies of Vracko may be pertinent. They indicate that intactness of the basal lamina at the time of the acute injury plays a major role in the organization of the process of recovery; i.e., when the basal lamina is intact, cellular reorganization is relatively good, and when the basal lamina is disrupted, reorganization is poor.

From the previously mentioned studies, it would seem reasonable to speculate that the residual abnormalities upon recovery from the adult respiratory distress syndrome are dependent upon the precipitating cause, the severity of the acute illness, and the age and previous pulmonary status of the patient.

Table 1—Recovery following the Adult Respiratory Distress Syndrome

<table>
<thead>
<tr>
<th>Functional Abnormality</th>
<th>No. Studied</th>
<th>No. with Abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal exchange of gases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(low carbon monoxide diffusing capacity)</td>
<td>58</td>
<td>21</td>
</tr>
<tr>
<td>Fall in PaO₂ with exercise</td>
<td>37</td>
<td>11</td>
</tr>
<tr>
<td>Obstruction of airflow**</td>
<td>58</td>
<td>14</td>
</tr>
<tr>
<td>Pulmonary volumes</td>
<td>↑</td>
<td>↑</td>
</tr>
</tbody>
</table>

*Sources of data were Yernault et al, Lakshminarayan et al, Klein et al, Rotman et al, and Yahav et al.
**Abnormal values for forced expiratory flow during the middle half of forced vital capacity (FEF25-75%), for maximal expiratory flow at 50 percent of vital capacity, and for airway resistance.
†Wide variation.