

fications have been made, or are in progress at Roswell Park Memorial Institute.

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*Dr. Rhame responds to Dr. Rotstein's comments.*

In my September 1985 editorial<sup>1</sup> I expressed concern that Rotstein et al had misleadingly modified a scientific submission<sup>2</sup> to mitigate their medical-legal exposure. I now believe that concern to be unwarranted. In the editorial I listed three items present in the NY State Health Department report<sup>3</sup> on the Roswell Park aspergillosis outbreak which I believed Rotstein et al had omitted: 1) an expansion of the multivariate analysis from the 26 BMTU patients to all 76 Roswell Park bone marrow transplant patients which found the BMTU to be an independent risk factor for aspergillosis, 2) an analysis of room-specific attack rates which showed a correlation between aspergillosis and room air change rates, and 3) a detailed description of the large scale construction events underway during the BMTU outbreak. Of these three discrepancies, only the first was critical. As Rotstein et al point out above their article *did* contain the expanded multivariate analysis. Unfortunately, the

manuscript provided to me by *Infection Control*, which I presume was the original submission, contained no multivariate analysis involving more than the 26 BMTU patients. The final version, perhaps revised in response to reviewers' comments, was not provided to me. I aggravated the problem by submitting my editorial close to the deadline making it difficult for the editor to detect the discrepancy.

Perhaps I am overly sensitive to the medico-legal implications of scientific articles. However, I have little doubt that the Rotstein article will figure prominently in any trials involving these events. As an alumnus of the Dalkon Shield wars, I am familiar with the way attorneys use scientific articles. An article presenting a conclusion supporting one side of a dispute will be presented to the jury as the absolute truth. This presentation will be preceded by a thorough discussion of the peer review process and the purported assurance that truth results. This rationale may well be extracted from the expert witness of the other side. These maneuvers are very effective because jurors perceive the articles to be unbiased in an otherwise highly adversarial proceeding.

Let us now turn to the more important issue: Why did the Roswell Park BMTU aspergillosis outbreak occur? In the letter above Rotstein et al indicate that the satellite building and the BMTU had the same filtration system but not, during the outbreak period, the same aspergillosis attack rate. The original article<sup>2</sup> indicates that the intake for the BMTU was at the 8th floor while that of the satellite building was at ground level. More information about the precise details of the location of these intakes and the construction projects would be useful. Also important are the practices with respect to leaving windows open on the respective stations and other data bearing on air infiltration.

Ultimately, each of us must judge the plausibility that chronic myelogenous leukemia (CML) and aplastic anemia are really as likely to be critical predisposing factors as the Rotstein et al multivariate analysis indicates.<sup>2</sup> Most bone marrow transplant authorities view acute leukemia patients as among the most immunosuppressed and aplastic anemia

patients the least, with CML patients arrayed in between according to the phase of their illness. Seven of the eight CML patients transplanted on the BMTU were in the accelerated phase implying a greater degree of immunosuppression than those transplanted in the chronic phase. In two other large series<sup>4,5</sup> of bone marrow transplant recipients subjected to multivariate analysis of risk factors for aspergillosis, no excess risk due to CML was recognized although the number of CML patients in the first series<sup>4</sup> was small (four patients) and in neither series were data presented on underlying disease as an independent risk factor.

It is unlikely that we will ever be able to unequivocally reconstruct the causes of the Roswell Park aspergillosis outbreak. As scientists, we live with ambiguity, probabilities and incomplete resolution, a luxury not permitted courtroom juries. Regardless, the fundamental lesson remains that special efforts to provide relatively spore-free air to bone marrow transplant patients are clearly warranted.

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1. Rhame FS: Lessons from the Roswell Park bone marrow transplant aspergillosis outbreak (Editorial). *Infect Control* 1985; 6:345-346.
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The Editor and Acting Editor apologize to Dr. Rotstein and colleagues and to Dr. Rhame for not sending the revised manuscript to Dr. Rhame prior to preparation of his Editorial.

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