

Correspondence

Reply

To the Editor:

We thank Drs Mulla and Simon¹ for their interest in our article,² "The etiology and incidence of anaphylaxis in Rochester, Minnesota: a report from the Rochester Epidemiology Project." They have raised an interesting question regarding changes in frequency over the course of the calendar year, as well as some questions regarding our statistical methodology. For the purpose of clarity, we will address their comments sequentially.

First, Mulla and Simon¹ expressed interest in more detail regarding our seasonality results, which we are happy to provide. Monthly case counts were highest in July (n = 28), August (n = 29), and September (n = 26) and lowest in March (n = 10), June (n = 8), and November (n = 10). Table 1 defines 3-month seasons to include the peak months of July/August/September, as noted by Mulla and Simon.¹

The seasonal effect was statistically significant ($P < .0001$, 3 df χ^2 test), with more cases in the summer months. Some 83 (39.3%) cases were observed in July/August/September compared with 52.75 (25%) expected cases. Bee stings appear to account for most of the excess cases. These results regarding season would seem to concur with the concurrently published findings of Simon and Mulla.³

Second, they suggested that the temporal linear trend in Fig 1 appears to be from a linear regression model and that the trend might be tested by using time series models (on monthly or quarterly data), which can account for autocorrelation. Although not noted because of space limitations, we used Poisson regression to perform the test for trend. Poisson distribution is often preferred for rare events, and Poisson regression is considered a viable alternative to time series analysis.⁴ Although time series analysis seems a reasonable approach, as noted by Mulla and Simon,¹ a span of at least 50 time points is preferred. Although we would have 44 (11 years $\times$ 4) quarterly periods, the average number of cases per period would be less than 5, making quarterly rate estimation rather unreliable.

Third, they also expressed concern that our rate of 49.8 cases per 100,000 (adjusted with the US total 2000 population) is not comparable with the rate listed by Yocum et al⁵ of 21 per 100,000 (adjusted to the 1980 US white population). Although this is technically correct, adjustment of the current study rate to the US 1980 white population yielded only a slightly lower rate of 49.5 cases per 100,000.

In closing, we hope that the information provided on seasonality is useful, and we found it an interesting exercise. We are

confident that the statistical methodology used was appropriate but welcome the dialogue on this topic with our colleagues. We do concur that an additional 7- to 10-year period of data, which would bring the data set from 2000 to the present, would be an important next step in defining the increase in the incidence of anaphylaxis.

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TABLE I. Frequency of cases over the course of the year

Season	Anaphylaxis cases	Expected no. of cases*	Bee sting as inciting allergen, % (no.)
January/February/March	42	52.75	0.0 (0)
April/May/June	44	52.75	9.1 (4)
July/August/September	83	52.75	38.6 (32)
October/November/December	42	52.75	7.1 (3)
Totals	211	211.00	18.5 (39)

*Assuming no effect of season and approximately equal intervals.