

Blind c.c. Burchell

October 9, 1972

Dr. Naip Tuna
Bl24 Variety Club Heart Hospital
University of Minnesota
Minneapolis, Minnesota 55455

Dear Naip:

This is a tour de force and I admire the effort in it. Being an "old editor type," I couldn't resist marking up the manuscript, but that is of quite secondary importance.

This is a solid body of carefully gathered and measured material. As you indicated a problem is to decide which tables to include in a publication and which to make available in stencil form. The only alternative (an unlikely one) is to gather \$20,000 for publication of a monograph.

I hope to get to that question later on, but first will make some running commentary as I read through the text:

You might want to put the SVETIII system in perspective. Though most everyone is aware of it, not all know the reasons why one would use it, at the outset, or still and its relative strengths and weaknesses might be discussed briefly.

You might do well to clarify whether the 12-lead ECG was used in your decision about the "normal" clinical designation. If this classification was ECG-dependent, say so, and to what degree and what specific ECG findings led to exclusion.

I have a personal thing about "male and female" when it concerns the human species, feeling they are correctly called "men and women." I recognize that the common clinical jargon ignores this fact, and this bias.

I question the use of milleseconds to the .01 precision. 1/100,000 sec. accuracy is stretching it a bit, even for your group mean values. However, I would bow to Gene Johnson's advice on how much to round off in all your figures.

Mean heart rate would be of some interest, in general, and specifically for the interpretation of the age trends in time intervals. To what degree might they be dependent on slowing of resting heart rate with age?

Your page six mention of "near normal" distribution might be bolstered by some plots of distributions in the appendix, and the discussion might mention the justifications for using means and S.D. The Px-98, of course, allows a rough check of the validity of using means and S.D.

Regarding the sample sizes, you might show in the discussion that you have considered the recent arguments of Pipberger about the N needed for stable limits and for best discrimination by age, sex or disease categories. Then you can answer it perfectly honestly with the expedient argument. But in this day and time I would not ignore the thinking of that group. Now that Cornfield and Dunn have joined efforts with Hubert, the group is undoubtedly on the forefront conceptually

with Hubert, the group is undoubtedly ~~an~~ the forefront conceptually in the field of diagnostic logic (I don't mean to imply their infallibility!).

Would there be any value in looking at the P-R segment duration independently of P duration? Would it tell us anything about aging in A-V conduction?

Table II and the text might indicate that these are spatially correct intervals.

Why not do the simple program step which would give you rate-corrected QT interval. Otherwise, my earlier suggestion is probably next best, i.e. showing mean heart rate by age in that table.

To encourage publishability and ready reference to this work you might want to prepare an appendix table listing all ECG items on the left margin and with age groups across the top. It would be one huge or a set of large complex tables, but many fewer than used here. The user could get to the "norms" more efficiently. I also would consider using the overall spatial values and scalar measurements for the publication and leave the planar values in the separate appendix.

Would partial correlations be of interest? They would to me. It would heighten the value of the article to come up with new data on the contribution of constitutional variables to age trends and sex differences. In other words, the first sentence in your discussion is "nothing new." You could then discuss better the reasons for the age and sex differences.

Your being disturbed over the data scatter is all the more reason to consider the newer methods of discrimination, including cluster analysis and a priori probabilities. These might give hope that your SVEC data would be operationally more useful, since the actual systematic differences from the Frank system values would then lose importance. Of course, you may win the long war, but you have surely lost the present battle on choice of lead systems.

I would be very careful about attributing differences with Pipberger's data ~~on~~ ^{to} racial differences. You might send for his detailed age, sex and race-specific norms before speculating. Maybe you've done so already.

On page 16 I would challenge, but only mildly, the idea that values obtained in one population cannot be applied in another. The use of continuous measurements may actually help to determine that there are population differences. Generally, of course, use of diagnostic standards based on composition of the population is needed. And this is, in fact, the basis for the Cornfield-Pipberger a priori probabilities approach.

Did you mention your method of identifying wave onsets and offsets? I believe you should, and also make the conceptual point in the discussion, about the value of effective interaction between the human and the machine--where each is strongest. It is a good point, and one which should have a strong spokesman. If you ignore the point, it may come out anyway in the criticism. Those uninformed about the

Naip Tuna

October 9, 1972--Page 3

reasons for your choice of this approach may be inclined to think it is an unreconstructed or atavistic idea--when this is not (necessarily) so.

For the other manuscript would it be useful to apply the suggested conversion constants to your data to test how they work out?

It was a pleasure to see this solid work.

Cordially,

Henry Blackburn, M.D.
Professor and Director, and
Professor of Medicine

HB/rs