June 10, 1968

Professor Ronald E. Lane, C.B.E.
3 Daylesford Road
Cheadle, Cheshire, England

Dear Ron:

I hasten to reply to your letter of May 8 lest, in setting it aside for a day or two, I find myself responsible for delaying it unduly. Several other tasks are awaiting completion, and I don't want to add to the list. It is also true that this, coming from you, has a high priority in my mind. Furthermore, I agree with you that there is good reason for concern about the state of mind of physicians generally in relation to the diagnosis of lead poisoning. The diagnostic problem is not really difficult if a few basic facts and principles are accepted and acted upon, and I believe your statement may go far toward bringing this about.

The statement is clear generally, and I would be glad to go along with it. I would modify it slightly, however, in a few respects, as I am indicating below:

(a) Under Clinical Findings (page 2, line 2 below that heading), I would alter the advice to "include one or more of the following" to say "to include some combination of the following."

My reason for this suggestion is that certain individual symptoms or signs are not sufficient, in themselves, to merit such diagnostic weight. For example, anemia is much too common among industrial workmen to be taken as an important diagnostic sign, except in association with other evidence; the same is true of pallor (although there is a type of pallor that is often significant; likewise a "metallic taste" turns out, almost as a rule, to be a non-specific bad taste. I would not suggest the elimination of these terms, but would combine them with others. This statement is certain to acquire medico-legal significance, and the legal mind, as we see it in action, siezes upon "a symptom of lead poisoning" as valid specific evidence, and would take great satisfaction in emphasizing the fact that any one of the symptoms listed is said, by a group of experts, to be important evidence. I recognize that your following, qualifying statement tends to clarify the issue, but the statement says "one or more." What you are really trying to impress upon the inexperienced clinician is that there is a pattern of complaints and signs - a variable pattern, to be sure, but still a pattern. One symptom does not make a pattern, and not even any one seemingly specific sign, i.e., the blue line, signifies illness.

(b) I would separate the paragraphs on the third page from Clinical Findings by giving them a different heading, as, for example, Limitation of Exposure.

I would then use the first paragraph under this heading as an argument, so to speak, in favor of the two recommendations that follow. Just how this is done is not of crucial importance, but I would put it somewhat like the following:

Since the incidence of sequelae increases not only with increase in the degree of excessive lead absorption but also with the duration of the period of excessively rapid absorption, further absorption on the part of an individual workman whose absorption is found to be excessive should be greatly reduced or terminated completely.

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The sentence (paragraph) concerned with Category C should, I think, be a bit more informative. It does not help the average industrial physician to handle a situation properly to tell him that the exposure should be reduced. Relatively little exposure to lead is required to maintain a fairly high level of absorption following a prolonged period of even mildly excessive absorption. It is necessary, therefore, to make sure that a significant degree of reduction in the exposure has been achieved. In our experience, about half of the men who are moved to jobs involving reduced exposure (and are monitored analytically) must later be removed entirely from exposure in order to achieve a significant degree of reduction in the levels of lead in urine and blood. One must know the extent of the actual exposure in the new work site (this is not always done well), and the extent of the response of the workman to the new work environment. All of this is troublesome and costly, and in some industries action is based on assumptions instead of data. In the long run, therefore, it is better to transfer the workman to a "lead-free" job or area. However, I realize that this is not always necessary.

I would rewrite the two paragraphs (Category C and D) to say something like the following:

When the results of biochemical tests, without positive clinical evidence, reveal the existence of moderately excessive exposure to lead (Category C), such exposure should be reduced* significantly and checked to insure that it is significant.

When a workman is found to have an highly excessive level of absorption (Category D), he should be removed* immediately.

As I have indicated previously, I shall not quibble about details before signing the statement. I submit these suggestions for such use as you think suitable.

With highest regards,

Sincerely,

Robert A. Kehoe, M.D.
Professor Emeritus of
Occupational Medicine

RAK:wp

* Under suitable circumstances, the workman can be returned to his original employment, without prejudice to his health. However, since this statement is concerned primarily with diagnostic criteria, further information relative to other medical and hygienic procedures should be sought elsewhere.

RAK

KE 0012175

Note Concerning Table Headed Categories of Lead Absorption

Line 1 under B, Blood Lead, Acceptable - The range for lead in blood should be 40 - <80, or if you wish to use figures alone 40 - 70.
Explanation - Cases of lead poisoning occur occasionally in persons whose blood lead is 80, according to the methods of analysis employed in Kettering Laboratory.

Line 3 under B, Coproporphyrin, Acceptable - I doubt the validity of these numbers. In our experience, there is little evidence of a gradual increase in the level of coproporphyrinuria with increase in lead absorption. There is, on the contrary, I believe, a comparatively small range of findings in people whose lead levels in blood and urine are normal, and a sharp break in those whose blood levels are in the potentially dangerous range, i.e., 80 or more micrograms per 100 grams.

Line 3 - We have not had the experience in terms of precise analytical determinations of ALA in satisfactory specimens of urine to enable us to say that the figures as given are valid or unvalid. I doubt their validity. I believe it likely that there is a sharp break at the point of danger. If you have data that you believe to be trustworthy, I cannot object to your table. There are variables which influence both coproporphyrin and ALA, to such an extent that I distrust some of the statements in the literature. Such variables are (1) the freshness of the specimens, (2) the possible influence of the various preservatives of the urine (all of which must be tested until a completely satisfactory one is found), (3) the intrinsic physiological variability, (4) the influence of other materials absorbed into the body, or of other diseased states on the porphyrin and relevant amino acid metabolism.

I consider that the foregoing matters must be reduced to certainty before it is conceivable to substitute them for analyses of the blood and urine for lead, in view of the certainty and specificity of the available information on the latter.

Signed: _____
Robert A. Kehoe, M.D.

June 10, 1968

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