

October 26, 1956

Air Mail

Dr. D. Kerr Grant
231 Macquarie Street
Sydney, Australia

Dear Doctor Grant:

I find to my dismay that a letter which you wrote me almost a year ago found its way into the collection of things that are always waiting on my desk for me to find some free time to deal with them. These are mostly things to be read and pondered on rather than things that require reasonably prompt action. Unfortunately I have been hard pressed for time during the past year, and only recently have I been able to consider the possibility of catching up. I regret the unreasonable delay in replying to you. Certainly this was not willful neglect or discourtesy.

You are quite right that the most useful diagnostic procedure in the case of small children suspected of having absorbed significant quantities of lead is that of analyzing the blood. For a number of very practical reasons, such as the very great likelihood of the contamination of the urine in the process of its collection, on the one hand, and the wide range in the excretory rate, on the other, the results obtained on the urine of children, are open to misinterpretation very frequently. In contrast is the case of interpretation of the results of the analyses of properly collected samples of blood in most instances. We undertake to obtain duplicate samples of the blood, collected into containers which we provide, by methods and with equipment which, also, we prescribe. We are rarely in doubt concerning the significance of the results, and when we are in doubt, we can usually resolve the doubt by careful attention to the nature of the illness presented by the child whose blood contains lead in amounts that are of borderline significance.

It is true that reasonably satisfactory results can be obtained by the analyses of suitable samples of urine. We relied upon such results before we had satisfactory methods for analyzing the blood. At present, however, I insist upon having samples of blood for analysis in all cases of childhood lead poisoning, and in all cases of lead poisoning in the adult, except those rare cases of tetraethyl lead poisoning which occur under highly unusual or accidental circumstances (when tetraethyl lead is absorbed, the blood level increases little or none, apparently because the intermediate compounds resultant upon the decomposition of the molecule in the tissues are not capable of combining with the component of the erythrocyte that is involved when inorganic lead compounds are absorbed).

The analytical procedures which we use for the urine are not different, essentially, from those which apply to the blood. The problem throughout is the use of methods of high sensitivity and precision and the avoidance of equipment, reagents, and procedures that introduce lead. This requires proper and carefully designed laboratory facilities and skilled personnel. This is no job for an ordinary laboratory technician and indeed ~~ones~~ should not attempt such

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analyses unless he is a well trained analytical chemist who understands every step of the procedure. Moreover, one should not attempt to carry out occasional analyses of this type. It is better to depend entirely on one's clinical judgment, than to have the misleading information obtained from an inadequate analysis.

There is no good reason, however, why there should not be at least one satisfactory laboratory for work of this type in every large urban center that is equipped with other medical facilities. The frequency with which cases of lead poisoning are seen, or alternatively the frequency with which the disease is suspected, in any such urban center in which there is industry, is such as to justify such a facility. If you have not succeeded in finding such a laboratory in your general area, you should see what can be done to bring about its establishment. If we can help you let me know. We have been instrumental in setting up a number of such laboratories in various parts of this and certain other countries (England, France, Germany, Dominion of Canada).

I am sending you a booklet on methods recently issued by the APHA, which was prepared for the appropriate committee, by Mr. Cholak of our staff, with my assistance, on the sampling problem. It may be of help to you.

Sincerely yours,

Robert A. Kehoe, M.D.
Director

RAK:bd

~~Enc.~~ Methods for Determining Lead in Air and in Biological Materials - APHA, sent under separate cover.

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