
doi:10.1093/occmed/kqi091

**Reply**

We appreciate the careful reading of our paper and the commitment to public health by Dr Mets. However, we disagree that ZPP measurements add any additional useful information in the context of a lead screening program. The paper by Wildt et al. compares a ZPP cutoff of 90 µg/dl to a blood lead level of 60 µg/dl [1]. These are undesirably high thresholds. False elevations of ZPP were found in 40 out of 306 men (14%) but more alarmingly, among the 19 men who exceeded this blood lead level, 2 (>10%) did not show corresponding elevations in ZPP. Contrary to Dr Met’s assertion, these authors did not recommend ZPP as an adjuvant to screening by whole blood lead. In fact, they state, ‘ZPP monitoring can therefore replace PbB [blood lead] monitoring to a large extent’ [1].

In 1991, Grandjean et al. did advise against abandoning ZPP in spite of the variable findings [2]. At that time, ZPP was thought to add temporal information and early, unconfirmed data suggested it was a more sensitive indicator of kidney and nervous system toxicity. In our paper, we cite more recent literature which refutes this notion [3]. In the 1998 paper by Froom et al. they concluded that ZPP was not of any value in determining current lead toxicity but believed it was of use in determining ‘incipient’ lead toxicity since they documented an elevated risk of lead toxicity 6 months after a worker had a ‘non-toxic’ lead with an elevated ZPP [4]. We are unaware of any confirmation of this finding, which cannot be explained by the current understanding of the mechanism of ZPP elevation.

As discussed in our paper, the temporal limitation of ZPP is significant while a large body of literature has now shown that ZPP does not correlate with the early biological effects of lead exposure [3]. Moreover, all of these studies, including our correspondent’s own work, choose a blood lead threshold which is not reflective of the evolution in our understanding of what constitutes a safe level [5]. In the United States, the Department of Health and Human Services currently recommends that blood lead levels not exceed 25 µg/dl for adults [6]. If this lower threshold were applied, the sensitivity and specificity of ZPP would be even poorer. There is no doubt that blood lead is a more sensitive and a more specific test for lead poisoning. Its predictive value is superior for both positive and negative results. Lower sensitivity, specificity, and predictive value is a weak argument for inclusion of ZPP as part of a surveillance effort designed to detect lead poisoning.

In the lead poisoned patient, additional testing should always be done, and that is the cost effective time to obtain the small additional temporal information which may reside in the ZPP.

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**References**


doi:10.1093/occmed/kqi103

**Safe inoculation of blood for liquid culture**

Dear Sir,

Moller et al. [1] reported a case of occupational needlestick injury in a laboratory technician while inoculating...
a blood specimen into a culture vial. In order to avoid further such exposure they identified a safer device. However, from the paper it seems that all the blood samples assigned for mycobacteria (MB) culture are drawn into tubes at the bedside level by a nurse and then transferred into the culture bottles, by a technician, at the laboratory level. If this is true, there is a doubling of risk for needlestick injuries, at least for blood samples, the first at the time of blood drawing and the second at the time of blood transfer from the tube to the culture bottles.

In fact, bottles for haemoculture are designed to be used directly to draw blood from the patients with the same plastic holders utilized for tubes [2]. The use of available needlestick prevention devices for blood drawing could minimize the risk of injuries during this procedure [3].

In this way only samples different from blood such as bone marrow should be transferred to bottles for haemocultures.

These procedures attain not only to MB detection but to haemocultures in general. In our Institute, where roughly 8500 haemocultures per year are processed both for MBs and other bacteria, similarly to Moller we had to review our procedures following two accidents that occurred in the laboratory, related to haemocultures for aerobic bacteria. During the use of droppers to perforate the rubber cap to transfer the culture liquid medium to the solid ones for bacterial identification, the gas formed during the culture caused the abrupt spill of the contaminated liquid against the cabinet walls and the personal protection of the technicians. Subsequently we abandoned the droppers and looked for a safer procedure for seeding solid media with liquid culture. Actually, we transfer only bone marrow and, more frequently, liquid specimens obtained from normally sterile sites, different from blood, from tubes to bottles, using a disposable syringe equipped with a sliding shield. The shield is moved up and down by the technicians during the procedures for sampling, transferring and seeding the samples in such a way that the needle is always covered by the shield when it could represent a possible hazard of accidental needlestick and being completely protected from contaminants. Moreover, the gas eventually formed in the bottle presses the liquid culture in the syringe and protects the laboratory environment and workers from contamination.

After the transfer procedure is accomplished, the shield is firmly blocked in the safe protecting position to ensure the correct disposal of the syringe.

This procedure ensures that, at least for haemocultures, aerosols are not formed during the decapping step, avoiding cross contamination and false-positive results in the routine cultures for MB [4,5].

In our laboratory, in the last 5 years no accidents have been recorded related to haemoculture and we have not had false-positive results due to cross contamination.

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Acknowledgements
Performed within Ministero della Salute Progetto AIDS e Ricerca Corrente IRCCS.

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