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Maternal mortality

Sir—Carine Ronsmans and colleagues (Dec 20/27, p 1810)¹ state that simple "before and after" studies can be useful in the evaluation of safe motherhood programmes. This suggestion is dangerous irrespective of its simplicity and affordability.

Without a contemporaneous control group, it is not possible to ascribe cause. If an epidemic or other crisis occurs between the beginning and end of a project and maternal mortality rises, we cannot know without a control group whether this negative outcome is due to the intervention. We cannot know from a simple before and after comparison whether a reduction in maternal mortality is the result of our intervention or other unknown factors, for example, an improvement in the economy or a successful nutrition programme. Very good control groups can be attained, as shown in the recent randomised controlled trial of vitamin A supplementation and maternal mortality in Nepal. Conducting a randomised controlled trial requires resolve, substantial funding, good, and usually large, samples, knowledge of sampling and study design, and good field management.

Further evaluation with the best research design possible—ie, one that randomises sampling units at the lowest level possible—is needed to make evidence-based decisions to reduce maternal mortality. When adequate funding or the necessary commitment does not exist, further assessment of the intervention may be best implemented by simpler controlled "before and after" evaluative approaches. The progress of safe motherhood can only be hindered by avoiding the difficult but necessary controlled evaluations of safe motherhood interventions.

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Lice buried under the ashes of Herculaneum

Sir—On Aug, 24, 79 AD, during the festival of the Divine Augustus, a dramatic eruption of Mount Vesuvius overwhelmed Pompeii, Herculaneum, and several other nearby small towns and villages, burying unique archeological treasures and many inhabitants under a hail of ashes and pumice or steaming mud lava.¹ The eruption is vividly described by Pliny the Younger, in a letter to Tacitus.

Recent paleopathological investigations of the skeletons of the so-called fugitives discovered in the boat sheds on the ancient beach of Herculaneum provide insight into common diseases of classical antiquity. In particular, the skull of individual E52 presents a thick brownish encrustation around the vertex.

The individual was a woman, about 25 years old, who was 8 months pregnant when she died; the tiny bones of her fetus are perfectly preserved. The encrustation on her skull is strongly radio-opaque, and consists mainly of iron dioxide and carbon, which is what remains of an iron hairpin. The acidity of the hot volcanic mud that buried the woman rapidly rusted the pin; the iron salts that were released impregnated the immediate area, including her hair, which is remarkably well preserved, showing the elaborate hairstyle typical of wealthy, high ranking young Roman women. Chemical analysis showed that the hairs were almost entirely made up of iron oxide, with a carbon content of less than 2%, and there are no traces of sulphur typical of keratin. This finding indicates that here was complete diagenesis, with destruction of the original proteins and their replacement mainly by iron salts.

Each hair was examined microscopically, and one was found to have an egg attached, whose dimensions and position with respect to the hair shaft showed it to be a louse egg. The egg was identical to those of both current forms and ancient specimens (figure). Indeed, the egg from Herculaneum showed no appreciable differences in form or size with even the oldest eggs known (found in the Nahal Herman Cave, Judean Desert, 6900-6300 BC),² or with those found on South American Pre-Columbian mummies, prehistoric north American remains, or Egyptian or Chinese mummies; this similarity confirms that the morphological evolution of lice (and their eggs) has



Scanning electron micrograph of louse egg attached to hair

occurred gradually, following the gradual biological evolution of their human hosts.

Above theinion skull E52 displays a flattened area with an oval outline whose maximum transverse diameter is about 20 mm, in which the external tabula is rough and porous. This supra-inion depression³ is an area of superficial bone remodeling produced by irritation of the local periosteum. Anthropologists have correlated this depression with the presence of impetigo, tinea, or pediculosis, which are pathological changes that can produce periosteal reaction either directly or through the inflammatory processes that begin as a result of scratching. About 22% of the skulls from Herculaneum show this supra-inion depression, with no difference between the sexes or with age. This finding is hardly surprising, and contemporary writers note that lice were quite common in Ancient Rome: both Scilla the Dictator and the Greek poet Alcamon died as a result of their infestation.⁴

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