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## Reply to Dr. Tourtier's Letter to the Editor "Human errors in (inhuman?) triage"

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Dear Editor,

It was with great interest that we read the letter written by Dr. Tourtier et al. in response to our article entitled "Cancellations of (helicopter-transported) mobile medical team dispatches in the Netherlands" [1].

In his letter, Dr. Tourtier questions whether prehospital overtriage is caused by failure of triage criteria in identifying major trauma victims or is a result of non-achievement to implement these criteria. As he stated, strict adherence to triage protocol is rare.

Since the mobile medical team (MMT) is a limited and expensive resource with safety risks involved, it is important to use this facility appropriately. Adherence to criteria is one part of the problem. Several studies have indeed shown that misinterpretation of triage protocols increase overtriage to high levels [2]. Nevertheless, misinterpretation of criteria can also lead to considerable undertriage rates. In the Netherlands, MMT dispatch rates and criteria adherence seem to be low. A previous study showed that there is still room for almost a sevenfold increase in MMT dispatches if strict adherence to dispatch criteria is maintained [3].

But the problem is also located in the ability of triage criteria to identify the patients who really need high levels of care (i.e., multitrauma, severe head injury). According to the literature, many triage protocols show a low sensitivity

and specificity for identifying these patients. Systems based on mechanism of injury (MOI) criteria are known to cause unnecessary use of trauma resources. By integrating new parameters (mostly based on physiology and anatomy) to these guidelines, it is possible to significantly decrease triage errors [4].

Regarding triage in real disaster settings, it is known that triage guidelines, applied in daily trauma care on individual trauma patients, are not useful in large-scale settings, although, as Dr. Tourtier stated, current triage models for these kinds of situations show high rates of over- and undertriage. Therefore, new specific triage criteria have been introduced in disaster medicine. A recent study showed that by simply modifying existing criteria for mass casualties, a much higher sensitivity for appropriate triage can be achieved [5].

As we concluded in our study, we find the cancellation rate of almost 50% acceptable. Across Europe, there is a great variation in organization of trauma care. In a trauma system like in the Netherlands, where primary MMT dispatches are mostly based on the MOI, it is difficult to have low overtriage rates. Nevertheless, because of the high level of knowledge and expertise of Dutch EMS personnel, we think that it is possible to reduce primary and secondary overtriage to lower levels by implementing stricter agreements between prehospital caregivers, simplified dispatch criteria, and in the future using standardized cancellation criteria in our trauma region. Therefore, we do not totally agree with Dr. Tourtier that nowadays triage, in the daily trauma setting, is inhuman. In the future, we hope to be able to validate the abovementioned measures in our trauma system in further studies.

Furthermore, we must not forget that adequate training and experience remain crucial for accurate triage and care in the prehospital trauma setting.

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