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**The role of human factors in suboptimal outcomes in dermatologic surgery in reply to "Preventing and Managing Complications in Dermatologic Surgery"**

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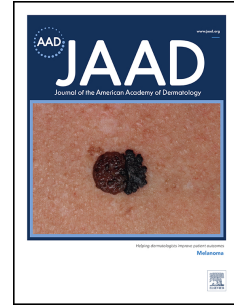
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# Journal Pre-proof



The role of human factors in suboptimal outcomes in dermatologic surgery in reply to “Preventing and Managing Complications in Dermatologic Surgery”

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27 To the Editor:

28 We read with interest the 2-part review “Preventing and Managing Complications in  
29 Dermatologic Surgery” which is comprehensive aside from the influence of human factors.<sup>1</sup>  
30 Some disappointing outcomes are unavoidable e.g. a tumour with significant subclinical  
31 extensions persisting at excision margins or partial failure of a full thickness skin graft  
32 despite text-book technique.

33 Other unsatisfactory outcomes are due to poor technique, lack of training or lack of  
34 knowledge. Others are influenced by suboptimum systems e.g. lack of a scrub nurse, not  
35 enough time allocated, too many patients, distractions, interruptions, or inadequate  
36 resources. Clinician physical or emotional factors may contribute to poor decisions e.g.  
37 feeling hungry, angry/anxious, late, or tired (HALT).<sup>2</sup> Also, it is important to recognise the  
38 role of cognitive biases (CB)<sup>3,4</sup> and we wish to share several examples. Readers interested in  
39 understanding CBs may wish to read Pat Croskerry’s seminal paper.<sup>4</sup>

40 Aggregate heuristic is seen when a dermatologist believes that aggregated data, e.g. in a  
41 guideline, does not apply to their individual patient and so chooses to deviate from the  
42 guideline e.g. taking a 2mm margin for a BCC or not re-excising a microinvasive melanoma  
43 which has achieved 5 mm radial clearance.

44 Taking excessive margins is an example of commission bias and a fear of regret. The  
45 dermatologic surgeon may be afraid of the resultant defect and therefore compromise their  
46 clinical margins(omission bias) resulting in incomplete or very narrow clearance. Other  
47 biased tendencies include reluctance to refer for Mohs surgery versus overuse of Mohs  
48 surgery, a tendency to perform an excessive number of local skin flaps(LSF) versus a fear or  
49 reluctance to perform LSFs, antibiotic overuse versus underuse, over-reliance on one  
50 specific LSF or second intention healing or full-thickness skin grafts. Stereotyping bias is  
51 seen when one assumes an elderly patient would prefer second intention healing. Not  
52 wishing to get help or a second opinion from a fellow dermatologic surgeon or another  
53 surgical specialty illustrates over-confidence, sunk costs and ego biases. Ego or commission  
54 bias is also seen when there is a preference for more complex repairs, for example, the

55 need to always resurface defects when a simple method like second intention healing may  
56 be more appropriate.

57 Some dermatologists prefer to not expand their reconstructive repertoire (status quo,  
58 omission bias) and others push their limits and perhaps perform reconstructions outwith  
59 their competency (overconfidence, ego and commission biases).

60 Outcome bias is seen when a risky decision, for example, performing a complex flap which  
61 will be less likely to succeed is rewarded with a lucky favourable outcome when in reality a  
62 different decision with less risk would have been preferable. Representative and availability  
63 bias is seen when a specific LSF is avoided due to a poor outcome from a previous attempt.

64 Clinical care may never be free of error, however, we can continue to strive for excellence  
65 and improve our ability by gaining experience and knowledge, openly reflecting on our own  
66 errors, as well as being conscious of our limitations and the CBs we fall victim to and seek to  
67 correct them.<sup>5</sup>

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