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# Fever in the ICU

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## Keywords

Aetiology, fever, infection, intensive care unit, post operative fever

# Comments

This is an observational study of reasonable size which reinforces the belief that fever in the ITU is common and frequently of non-infectious aetiology. The authors discuss that their results may not translate to other ITUs because of different case-mix, and that the mechanisms behind 'post-operative fever' remain poorly understood. However we are given no new information on which to base therapeutic decisions. Furthermore, the authors comment that the '1020F' rule used by others in decision making did not hold in their study. Fever will continue to be measured on the ITU, but it is only of use in decision making when studied alongside relevant clinical and microbiological data.

# Introduction

Fever is a common occurrence on the ICU and it is interesting that the pathophysiology of a simple and frequently measured clinical sign is only just beginning to be understood. Broadly speaking fever may be the result of infectious or non-infectious conditions which can be difficult to distinguish. This prospective study attempts to delineate the epidemiology of fever in the ICU.

# Aims

To determine the number of episodes, causes and outcome of fever in the ICU.

# Methods

All patients admitted to an English, inner-city, tertiary care ICU over a four month period were prospectively observed during their admission. No additional interventions or investigations were performed as a consequence of this study. The definitions used in this study were:

fever = core temperature greater than or equal to 38.4$^{o}$C,

postoperative fever = occurring within the first 4 post-operative days and of non-infective aetiology.

# Results

A total of 100 admissions relating to 93 patients (6 admitted more than once) were followed. Fifty percent were admitted after abdominal surgery, pneumonia accounted for a further 11%, and cardiac surgery 7%. The median APACHE II score was 15, and the hospital mortality was 37.6%. Fever was common (70 episodes) and the majority occurred in the first couple of days. Infection caused 53% of fevers and the majority of non-infectious fevers fell into the postoperative fever group, who were all febrile within 24 h of ICU admission. Mortality was not determined by the presence or absence of fever alone. However, fever present for > 5 days implied an infectious aetiology and was associated with a significantly higher mortality (62.5% vs 29.6%).

# Discussion

This study tries to define a frequently measured, but poorly studied, parameter (fever), which often determines therapy on the ITU, such as commencement of antibiotic therapy. As expected, fever was common, and was caused by an equal number of infective and non-infective pathologies. Interestingly, fever seen early on following ITU admission was often of short duration. However, fever persisting for longer than 5 days was nearly always of infective aetiology and carried a higher mortality. Unlike other authors these researchers found no relationship between the height of fever and aetiology. Obviously the case-mix of this ITU determines the aetiology of fever and a predominantly neuro-intensive care unit would expect different epidemiology. Similarly no attempt was made to control for antibiotic usage, dialytic therapies etc which will all influence fever characteristics.

# Additional information

An editorial accompanies this article.

# References

1. Circiumaru B, Baldock G, Cohen J: A prospective study of fever in the intensive care unit. Intensive Care Med. 1999, 25: 668-673