Heat Balance

Yoo Kuen Chan

INTRODUCTION
Heat is produced by every living cell in the body. Heat production is related to metabolism, and as long as the cell is alive, metabolism will occur and heat will be produced as a result. Apart from being a ‘by-product’ of metabolism, the heat produced is also necessary to maintain life. In the human body, the core temperature is maintained between 36.6–37.2°C; the range within which the enzyme and chemical reactions occurring at cellular level function optimally. Any excess heat is lost from the body. Inadequate production with resultant decrease in core temperature will result in attempts by the body to increase heat production and minimize heat loss in order to maintain this normal range of temperature.

HEAT PRODUCTION
Some cells/tissues, for example, the brain and the liver, generate more heat as a result of greater metabolic activity. Temperatures taken of the various tissues/organs in the body will be different, with the brain and the liver showing a higher temperature compared to, for example, the skin.

DISTRIBUTION OF HEAT
Organs cannot function optimally if the excess heat generated is not dissipated. The heat is dissipated away by the circulating blood to areas where heat production is lower as well as to regions where it can be lost. If this were not the case, organs that produce a lot of heat would not be able to dissipate it fast enough and may ‘burn’ themselves out! The circulation balances out the differences in temperatures between the tissues/organs. It is no surprise that the organs that produce a lot of heat receive a greater proportion of the cardiac output.