PHYSIOLOGICAL BASIS OF ACUTE CARE

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INTRODUCTION
The circulatory system is responsible for the flow of blood that brings oxygen and other essential requirements to the tissues and removes carbon dioxide and waste products produced in the tissues to the lungs and other organs for excretion. Blood flow is made possible by the pumping action of the heart. The human heart consists of two pumps, one on the right side responsible for pushing blood through the lungs and one on the left side, for delivering blood to the rest of the body. The blood vessels are the conduits through which blood flows throughout the body, from the heart to the tissues and back again, enabling a constant delivery of oxygen to the cells. The conduits can be subdivided into the distributive (aorta and arteries), the resistance (arterioles), the exchange (capillaries) and the capacitance (veins) portions as they play different roles in the cardiovascular system (Figure 6.1, overleaf).

THE PUMP
Cardiac Output
Cardiac output is the volume of blood that is pumped out by the heart in a minute. It is a measure of flow from the heart. It also gives us an idea of the capacity of the heart to perform its function of delivering oxygen to the tissues, as this parameter determines the amount of oxygen that can be carried to the tissues.

The cardiac output is determined by four factors:

1. The volume of blood entering the heart which is to be pumped out is called the preload. This blood referred to as ‘venous return’ returns to the heart from the rest of the body. In normal conditions, the venous return will equal the cardiac output.

2. The amount of resistance the heart encounters when it pumps blood out. This is referred to as the afterload, which in usual circumstances is the total peripheral resistance resulting from the state of constriction or dilatation of the arterial vasculature.