BLOOD TRANSFUSION

A CONCEPTUAL APPROACH

John G. Kelton, M. D.
Nancy M. Heddle, A. R. T.
Morris A. Blajchman, M. D.
With
Elizabeth A. Brain, M. D.

BLOOD TRANSFUSION

A CONCEPTUAL APPROACH

John G. Kelton, M.D.
Nancy M. Heddle, A.R.T.
Morris A. Blajchman, M.D.

with
Elizabeth A. Brain, M.D.
Medical Editor

Faculty of Health Sciences
McMaster University
and the
Canadian Red Cross
Blood Transfusion Service
Hamilton, Ontario
Canada

Illustrated by
Gerald W. Farrell

Typing and Typesetting:
Christine M. Leng
Maryann L. Visser
Michelle Bérubé

Audio Visual Services
McMaster University
Hamilton, Ontario
Canada

Churchill Livingstone New York, Edinburgh, London, and Melbourne 1984

Distributed in the United Kingdom by Churchill Livingstone, Robert Stevenson House, 1-3 Baxter's Place, Leith Walk, Edinburgh EH1 3AF and by associated companies, branches and representatives throughout the world.

ISBN 0-443-08272-3

First published 1984
Printed in USA

7 6 5 4 3 2 1

Library of Congress Cataloging in Publication Data

Kelton, John G.
Blood transfusion.

1. Blood—Transfusion. I. Heddle, Nancy M. II. Blajchman, Morris A. III. Brain, Elizabeth A., 1933– . IV. Farrell, Gerald W. V. Title.
[DNLM: 1. Blood transfusion. WB 356 K29b]
RM171.K45 1984 615'.39 83-21030
ISBN 0-443-08272-3

Preface

The transfusion of blood products is an important part of health care practice; however, the principles of transfusion medicine are often less well understood than other aspects of patient care. This book attempts to simplify blood banking practice and to introduce some of the underlying concepts, using illustrations. It is designed to help medical and nursing students, laboratory technologists, physicians and nurses in understanding the principles of transfusion medicine.

This is not meant to be a laboratory manual, and does not provide details of the technological procedures.

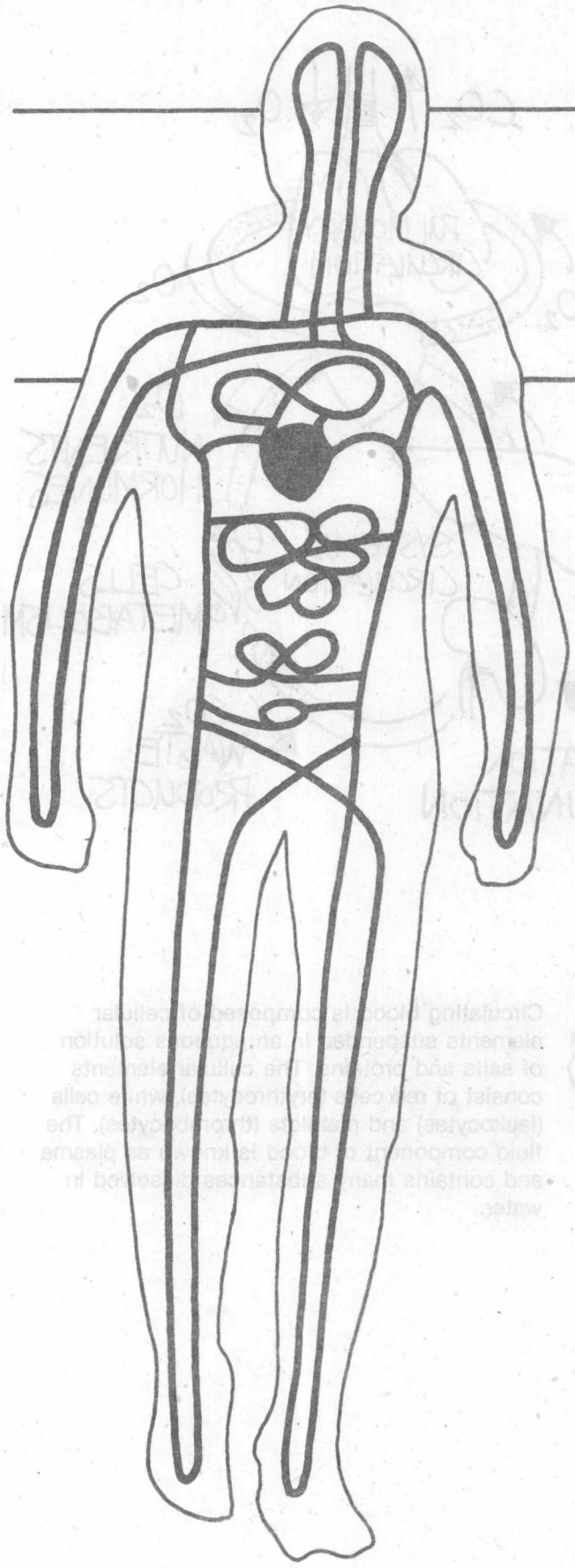
"Blood transfusion - A Conceptual Approach" is a companion volume to "Hemostasis and Thrombosis - A Conceptual Approach" by Jack Hirsh and "Fluids and Electrolytes - A Conceptual Approach" by Kinsey Smith. All have been produced in the Faculty of Health Sciences, McMaster University, where they are used in the various undergraduate and postgraduate programs.

October 1983

Table of Contents

Chapter 1

Constituents of Blood



The Function of Blood

Blood is a unique tissue with many properties. It is a transport medium for oxygen and other substances necessary for the metabolism of cells. Some constituents provide protection against invasion by foreign organisms. Others preserve the integrity of healthy blood vessels, limit blood loss from damaged vessels, and maintain the fluidity of the blood.