

Workbook to Accompany
**INTENSIVE
CORONARY
CARE**

Third Edition

Jacquelyn Deal, R.N.

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Preface to the Second Edition

A revision of a book for beginners? That means now it's more sophisticated and complex. More difficult, right? Yes and no.

Yes, a revision — because the current health care knowledge explosion mandates that we update or go the way of the metal bedpan. No, not more sophisticated or complex or difficult. Dr. Meltzer and his colleagues have revised and updated their book without losing sight of their audience. That's YOU — the beginner in coronary care. And so this workbook is updated. Its aim is to help you acquire the knowledge base for *tomorrow's* coronary care nursing and to acquire it as painlessly and joyfully as possible.

Preface to the First Edition

Good grief! Another book on coronary care nursing? I'm sure you can find more than a score of texts about the coronary field and the nurse's role. Certainly, you have every right to ask:

1. Then why this book? Because it speaks to the beginner. As other coronary texts have appeared, each has outdone its predecessor in sophistication and complexity. This book reverses the trend: it is aimed solely and wholeheartedly at the beginner. And all of us start out as beginners.

2. But beginners attend classes — why this book? Over 60% of our coronary patients are treated in hospitals with less than 100 beds; not all small hospitals can conduct their own courses or send all their nurses to classes at larger hospitals or universities.

Furthermore, many of the educators conducting classes have lost touch with the “ordinary” nurse. They don't appreciate what she knows or doesn't know, and often they seem to take for granted that all nurses graduated the same year from the same school. This book says, “You, the beginner, are unique. Use your own knowledge and skills and let's build on those.”

This book was written by a nurse who remembers her own cold, trembling hands when she first pushed open that door marked CCU. (And I've never forgotten my first CCU class. Everyone else looked so much smarter than I felt.) Now I'd like to help ease you, the beginner, through that door by sharing with you my experiences — successes and failures.

If you're an RN or LPN studying alone, come on, I'll help you. If you're an inservice educator or a school instructor, please consider this book as an aide for your students, to complement, reinforce, and extend your own time and effectiveness.

Finally, I wish to explain that this book is organized to go with *Intensive Coronary Care — A Manual for Nurses*; you'll see what I mean when you read the “Let's Get Acquainted” chapter. Even if you have another basic text, you still should find this a welcome helping hand.

Once more, let me emphasize: this is not a book for experts. It is a book for beginners. If you are a beginner or you work with beginners, what are we waiting for? Let's go!

Let's Get Acquainted

Come on in to CCU:

closed shades —
hushed voices —
flashing lights —
buzzing alarms —
Scary.
Now here's a closer view:
pleading eyes —
reaching hands —
healing hearts —
needing you —
Patients.

Do come in. Let's get to know each other. You're obviously interested in coronary care nursing, or you wouldn't be here. It would really be much nicer if we could meet over coffee or at the Coronary Care Unit desk, but at the moment let's get acquainted through the pages of this book. I'll just be myself and talk with you, and I'd love it if you would talk back to me — laugh, disagree, argue, whatever.

I'm a coronary care nurse of the 7-3, 3-11, 11-7 variety, and I'd like to introduce you to a world I love. I hope that I can help you enter this world without the usual cold hands and knocking knees, and that you'll learn to love it, too.

While I've taught coronary care classes and done inservice education, I'm not comfortable as a formal instructor. (I tend to sit on tables and discuss rather than lecture.) So I'd prefer to help you on a one-to-one basis. And that's what this book is all about. I plan, in a sense, to sit by your side (or at least be at the nurses' station) while you begin your studies in coronary care. Through these pages I'll share some of my ideas with you, ask you some questions to see if you understand the material, and try in a variety of informal ways to make your introduction to coronary care a pleasant and valuable experience.

Since we can't actually sit side by side during your training course, I had to find a common meeting ground for our discussions, and I chose to use *Intensive Coronary Care — A Manual for Nurses, Third Edition*, for this purpose. This wasn't a very difficult decision, since the "yellow manual" (as it is popularly called) is by far the best known book in the field, and the majority of nursing schools use it as the text for their coronary care courses. Any book that has sold nearly 700,000 copies and has been translated into four languages must have something special going for it. By going through the Manual together, we will be able to find many things to talk about.

However, *A Workbook to Accompany Intensive Coronary Care* is more than a coattail rider. It doesn't attempt to simply present the information in a different way. Instead it is meant to help you sort out the facts, apply what you learn, and test your own knowledge. Here are a few of the methods I have used in trying to make this a useful guide:

Situations: Role-plays, dialogues, and case studies are presented. These are designed to make you feel "you are there" and encourage you to exercise your judgment and knowledge. Use your imagination to project yourself into these situations: make mistakes on "my" patients; then do it right on your own. At times, I'll ask you to pretend that you're in charge of a CCU.

Questions and fill-in-the-blanks: In these pages you'll find hundreds of specific questions to test your knowledge. In many instances they follow a programmed approach leading you step by step to a conclusion. Answers are provided so that you may check yourself. In the sections where the answers are shown in the right-hand column directly across from the questions, put a 2-inch-wide strip of paper over the answer column. Read the first question, answer it in your own mind, and fill in the answer blank. Then move the strip of

paper down to expose the answer. Were you right? Congratulations! Were you wrong? Well, now you know what the correct answer is. Go ahead and complete the rest of the questions in this manner.

Application: You'll also be invited to ask yourself, your doctors, and your colleagues questions, and then draw your own conclusions. Some questions are purely reflective; answer them in the context of your own situation and environment. I don't have all the answers, as you will see.

Crossword Puzzles: These are a fun way to test your knowledge. I love doing them, but making them is something else! (I'm indebted to my 12-year-old friend Holly Bayer and her mother, Mary, for helping me with these.) If crossword puzzles are a bore to you, don't fret; just answer the questions and check the results on the completed puzzle.

Word Rounds: This type of word game is quite popular among puzzle enthusiasts, and I think it can help make learning less stuffy. I'll explain how to play word rounds when we get to them. Again, if "games" don't appeal to you, use these exercises to check your knowledge by simply answering the questions.

Electrocardiographic Rhythm Strips: I've selected a series of rhythm strips taken in my own coronary unit for us to go over together. I'll tell you a little bit about the patients, and we'll see what you would do under the circumstances. Incidentally, don't worry about interpreting electrocardiograms. If you can master a temperature graph, you'll be able to conquer electrocardiograms.

Now that I've told you something about the contents of the *Workbook*, I should point out that you can use the book in different ways. You can choose the method that suits you best:

1. For each chapter in Dr. Meltzer's Manual, there's a corresponding chapter in the *Workbook*. You may wish to read an entire chapter in the Manual first, and then pick up the *Workbook* so that we can go through the material in that chapter together.
2. You may prefer to start with the *Workbook* and then read the appropriate pages in the Manual as they relate to each subject being discussed. The *Workbook* clearly lists where the material can be found in the Manual.
3. You may go back and forth with the two books. Read a whole chapter in the Manual and then return to various sections as we come to them in our discussions from the *Workbook*.
4. Finally, if you're using a text other than *Intensive Coronary Care — A Manual for Nurses*, you can still put the *Workbook* to good use, both as a workbook and as a means of testing your knowledge. After all, even though the texts are different, they should cover the same fundamental material.

Before we begin, I'd like you to reassure yourself that you're not a complete stranger in foreign territory. Ask yourself the following questions and as you think about your answers, please, realize how much you already know about coronary care nursing.

1. Have I seen or cared for patients with heart attacks?
2. Can I remember how those patients felt and acted?
3. Can I remember some of the problems they had?
4. Has a family member or friend ever had angina or a heart attack?
5. Can I list some of their symptoms?
6. What else do I know about coronary heart disease?

The point is that you are not really entering an unknown world. You've already had some experience in dealing with coronary disease. In fact, you probably know a great deal about this illness. We're ready to start organizing that knowledge and building on it. You have a way to go and the aim of this book is to see that you don't get lost.

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1

Coronary Heart Disease

ANATOMY REVIEW

In *Intensive Coronary Care: A Manual for Nurses*, 3rd edition, the authors give a brief review of the anatomy of the heart and the circulatory system. Have you got it? To find out, do Exercise 1 now.

Exercise 1

A. Fill in the correct names for the chambers, valves, and vessels as numbered in Figure 1.1. Cover the answers in the right hand column.

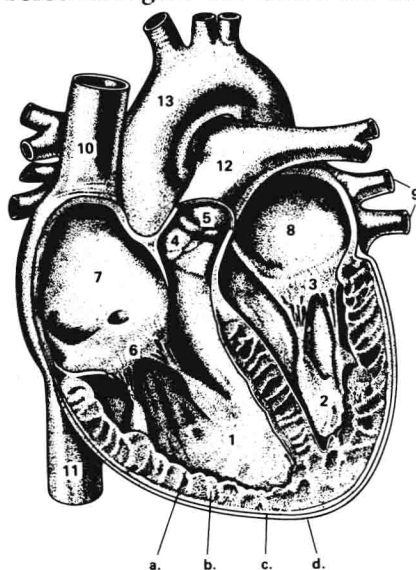


Figure 1.1. Cross section of the heart.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

right ventricle
left ventricle
bicuspid, or mitral, valve
semilunar aortic valve
semilunar pulmonary valve
tricuspid valve
right atria
left atria
pulmonary vein
superior vena cava
inferior vena cava
pulmonary arteries
aorta

B. Describe how blood circulates through the heart and major vessels. Use the appropriate numbers from Figure 1.1 for each part you list.

Venous blood returns to the heart through the ____ and the _____. It then passes through ____, ____, ____, ____, and ____ to reach the lungs. From the lungs it moves through the ____, ____, ____, ____, and ____ to the body.

10, 11
7, 6, 1, 5, 12
9, 8, 3, 2, 4
13

C. Name the three layers of the heart wall as lettered in Figure 1.1.

- A. _____
- B. _____
- C. _____

endocardium
myocardium
epicardium

D. What is the membrane surrounding the heart?

pericardium

How did you do? If you're dissatisfied, why not dig out your old anatomy and physiology book and refresh your memory. When you are satisfied with your knowledge, go on to the next section.

CORONARY ARTERIES (ICC, 3rd. ed., pp. 1–2)

An erroneous conception held by many patients (and perhaps a few nurses as well) is that the heart muscle feeds from the blood within its chambers. Actually, the myocardium (heart muscle) receives its oxygen supply from blood carried by the coronary arteries. If a coronary arterial branch becomes blocked, the area of heart muscle it serves is deprived of its oxygen supply. This can cause a heart attack. In order to understand heart attacks, you must have a basic knowledge about the coronary arteries.

Exercise 2

1. There are _____ main coronary arteries that carry blood to the myocardium.
2. These arteries are called the _____ coronary artery and the _____ coronary artery.
3. The left coronary artery divides into two large branches: the _____ artery and the _____ artery.

2

left, right

left

anterior descending (LAD), left circumflex (LCA)

Let's use abbreviations from now on.

4. The term anterior in LAD refers to the _____ part of the heart.
5. Thus, the LAD serves the anterior wall of the _____.
6. The LAD also supplies the anterior portion of the _____.

front

ventricle

interventricular septum

Stop and get this picture in your mind before we continue.

7. The other main branch of the left coronary artery is the _____.
8. This branch serves the left _____ and the _____ aspect of the left _____.
(See Fig. 1.2, ICC, 3rd ed., p. 2, if you're confused).

left

circumflex artery (LCA)

atrium, lateral
ventricle

9. The right coronary artery also arises from the _____.

aorta

10. It serves both the right _____ and the right _____.

atrium, ventricle

11. The right coronary artery comes down the (anterior/posterior) surface of the heart.

posterior

12. Thus it serves the _____ portion of the _____ ventricle.

posterior, left

13. It also serves the posterior portion of the _____.

interventricular septum

(Note: Coronary artery patterns vary; this is the most common.)

14. There (are/are not) many other small arterial branches that serve the myocardium.

are

15. The branches (do/do not) interconnect to form a network.

do

16. 250 ml of blood per minute passes through the coronary arteries carrying oxygen to the myocardium.
 How many milliliters of blood per hour is this? _____
 How many liters per hour? _____
 How many milliliters of blood per 24 hours? _____
 How many liters of blood per 24 hours? _____
 (Can you imagine squeezing a bulb syringe about 70 times a minute and ejecting 15 liters of water into a sink for 1 hour? In effect, your heart does just that!)

15,000 ml
 15 liters
 360,000 ml
 360 liters

CORONARY ATHEROSCLEROSIS (ICC, 3rd ed., p. 3)

Now you know a bit about the coronary arteries and the tremendous blood flow they handle constantly. Next let's think about the disease process that blocks them and interferes with the passage of this 360,000 ml of blood per day to the myocardium.

Exercise 3

- The most common disease affecting the coronary arteries is called _____.
- As a result of this process the coronary arteries may become _____ and the blood supply to the myocardium _____.
- If the myocardial blood supply becomes insufficient to meet the metabolic demands of the heart, then _____ exists.
- Which of the following is a critical factor in CHD?
 - The existence of atherosclerosis.
 - The extent of arterial narrowing.
 - The presence of plaque in the arteries.
- The extent of arterial obstruction resulting in atherosclerosis is as follows:

Grade ____ = ____ % reduction of arterial lumen

Grade ____ = ____ % reduction of arterial lumen

Grade ____ = ____ % reduction of arterial lumen

Grade ____ = ____ % reduction of arterial lumen
- Obstruction of less than ____ % can usually be tolerated.
- Grades ____ or ____ are considered significant obstructions.
- Atherosclerosis is most dangerous when the narrowing involves which branch of the coronary arteries? _____
 (Can you understand why? Go back to the section on *Coronary Atherosclerosis* and review which portions of the heart are served by this very important branch.)
- An x-ray technique called _____ can be used to determine the extent of coronary atherosclerosis.
- The exact cause of coronary atherosclerosis (is/is not) known.

atherosclerosis
 narrowed (obstructed)
 diminished
 coronary heart disease (CHD)
 B
 1, 25
 2, 50
 3, 75
 4, 100
 75
 3, 4
 LAD
 coronary arteriography
 is not

CAUSES OF CORONARY HEART DISEASE: RISK FACTORS (ICC, 3rd ed., pp. 4-7)

The concept of risk factors is vitally important. Because we still don't know how to prevent or cure coronary heart disease, we can only attempt to control these risk factors.

To become more familiar with the dangers associated with risk factors, read some of the booklets published by the American Heart Association.* These pamphlets give you many of the facts you will need to answer the questions your patients may ask you about risk factors.

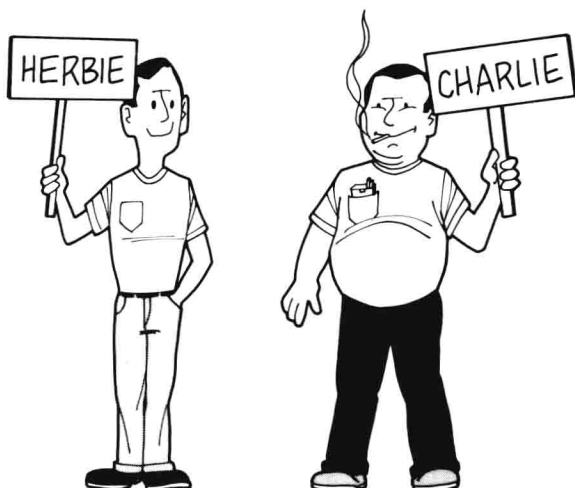


Figure 1.2

Exercise 4

Let's compare the risk of a heart attack to two middle-aged men. Good ole Herbie is normal — and, I suspect, a little blah. He has none of the risk factors mentioned on pp. 4–7 of ICC, 3rd ed. Chubbie Charlie, on the other hand, has a few problems. He is overweight, diabetic, has high blood pressure, and smokes 2 packs of cigarettes a day.

1. What would you guess are Charlie's chances of having a heart attack before the age of 65?
1 in _____. (Go ahead, guess.)
2. What about Herbie's? 1 in _____.

2, or a 50% chance
50, or a 2% chance

Furthermore, the American Heart Association warns people like Charlie that, if they do have a heart attack, their chances of dying are much greater than Herbie's because Charlie is a smoker.

Exercise 5

Perhaps making profiles of individuals with low- and high-risk factors would help us visualize the importance of risk factors. The person with low-risk factors stands a lesser chance of developing CHD, while the person with many risk factors has a greater chance of developing CHD.

For each category listed, fill in the blanks in the following table. (Use numbers for blood pressure and serum cholesterol and short, descriptive terms for the other risk factors.) One pair is filled in as an example.

* Two very good pamphlets are *Your Heart Has Nine Lives* and *Reduce Your Risk of a Heart Attack*.

Table 1.1 Types of Risk Factors by Degree and Category

Categories	Low Risk	High Risk
1. Sex 2. Sex and age 3. Family history of CHD 4. Metabolic diseases 5. Weight 6. Diet 7. Serum cholesterol 8. Blood pressure 9. Cigarette smoking 10. Activity 11. Lifestyle 12. Personality type	women	men

Table 1.1 Answers

Categories	Low Risk	High Risk
1. Sex 2. Sex and age 3. Family history of CHD 4. Metabolic diseases 5. Weight 6. Diet 7. Serum cholesterol 8. Blood pressure 9. Cigarette smoking 10. Activity 11. Lifestyle 12. Personality type	women women under 40 none none normal low fat below 190 below 160/95 nonsmoker active nonstressful Type B	men men over 50 paternal history, especially diabetes, gout obese high fat over 240 above 160/95 smoker sedentary stressful Type A

CLASSIFICATION OF CORONARY HEART DISEASE

(ICC, 3rd ed., pp. 7–12)

Exercise 6

From now on we'll abbreviate coronary heart disease as CHD. (Nurses don't mind abbreviations; it's the doctor's handwriting that we can't stand!) To help you fix the classification of CHD firmly in your mind, complete the following statements.

1. CHD is caused by obstruction in the coronary _____.
2. Minimal obstruction may not decrease the blood supply to the _____.
3. Minimal obstruction is unlikely to produce symptoms and may be discovered only after an _____.
4. Coronary arteries may be grossly obstructed but still not produce any _____.
5. This is because the oxygen needs of the myocardium have been supplied by _____ circulation.
6. Coronary atherosclerosis (is/is not) synonymous with CHD.
7. Asymptomatic CHD is sometimes called _____.
8. Inadequate blood supply to the myocardium results in a lack of _____ for the cardiac cells.

arteries

myocardium

autopsy

symptoms

collateral

is not

coronary artery disease (CAD)

oxygen

9. Insufficient oxygenation is called _____.
10. Myocardial ischemia causes chest pain known as _____.
11. Angina pectoris is classified as a form of _____ CHD.

ischemia
angina pectoris
symptomatic

ANGINA PECTORIS (ICC, 3rd ed., pp. 8–9)

Angina pectoris is one of the most important symptoms of CHD. Note how carefully the chest pain pattern is described in ICC, 3rd ed. Because you will have to decide whether a patient is experiencing angina, you will need a clear understanding of the clinical picture.

Exercise 7

1. Angina is characterized by its _____ (or precordial) location.
2. It frequently radiates to any of several sites, including the arms, _____, _____, _____, or _____.
3. The pain (is/is not) relieved by changes in breathing or position.
4. The pain is usually described as a _____ or a _____.
5. The pain often begins during _____.
6. It usually _____ as soon as activity ceases.
7. Angina generally lasts only a few _____.
8. It is almost always relieved by _____.
9. Nitroglycerin _____ the coronary arteries.
10. This (increases/decreases) the blood and oxygen supply to the myocardium.
11. The most common side effect of nitroglycerin is _____.
12. The above statements refer to _____ angina.
13. Angina that is more severe and occurs unpredictably is termed _____ angina.
14. Nitroglycerin (does/does not) always relieve the pain of unstable angina.
15. Unstable angina (is/is not) considered an ominous progression of CHD.

substernal
neck
jaw, teeth, upper back
is not
pressure, tightness
physical exertion
stops
seconds
nitroglycerin
dilates
increases
headache
stable
unstable
does not
is

INTERMEDIATE CORONARY SYNDROME AND MYOCARDIAL INFARCTION (ICC, 3rd ed., pp. 9–12)

As you now realize, angina pectoris is only a symptom of CHD. It is a warning that the heart isn't getting all the blood it needs at that moment. It does not mean that the myocardium has been injured. In fact, patients can sometimes have angina for many years without ever getting a heart attack—and they can also have normal electrocardiograms.

Intermediate coronary syndrome is a more serious problem. Here the heart is being deprived of oxygen for minutes, rather than seconds, and there is a great chance that myocardial damage may occur in this period.

Myocardial infarction is, of course, the most advanced form of CHD. It means that local death of a portion of the myocardium has occurred due to an insufficient supply of blood to the heart.