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## CASE STUDY #31 COLON CANCER AND MALNUTRITION

### INTRODUCTION

This is a study of colon cancer that leads to protein-calorie malnutrition and a home health care dilemma. The latest chemotherapy drugs are used. Basic nutrition and advanced nutritional assessment are necessary

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### SKILLS NEEDED

#### ABBREVIATIONS:

OTC and SC are the only new abbreviations used in the study (Appendix C).

#### LABORATORY VALUES:

You will need to be able to interpret the nutritional significance of the following laboratory values for this case study: BUN, Cl, Cr, glucose, hct, hgb, K, lymphocytes, MCH, MCHC, MCV, Mg, Na, P, RBC, ser alb, and WBC (Appendix B).

#### FORMULAS:

The formulas used in this case study include ideal body weight, percent ideal body weight, percent usual body weight, BEE using the Harris-Benedict equation, stress factors, and total energy and protein needs, all of which can be found in Appendix A, Tables 7, 8, 13, and 17.

#### MEDICATIONS:

Become familiar with the following medications before reading this case study. Note the diet-drug interactions, dosages and method of administration, gastrointestinal tract reactions, etc.

1. Synthroid (levothyroxine); 2. Cordarone (amiodarone hydrochloride); 3. Digoxin (Lanoxin); 4. Advil (ibuprofen); 5. Megace (megestrol acetate); 6. Lomotil (diphenoxylate hydrochloride with atropine sulfate); 7. Donnatal Tablets; 8. Kopectate; 9. Lovenox (enoxaparin); 10. Xeloda (capecitabine).

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GW is a 75 YOWM who has worked hard as a dairy farmer in the south and, even though his son does most of the work now, he still works hard for his age. The long hours and hard work have kept him active and, unlike his four siblings, he has never had a weight problem. In fact, his weight has been on the low side of normal all of his life, weighing between 138 and 142 consistently. He is 5'7" tall. He has a Hx of hypothyroidism for which he takes Synthroid (levothyroxine). He also has a Hx of arrhythmias for which he takes 200 mg of Cordarone (amiodarone hydrochloride) and 0.25 mg of Digoxin (Lanoxin) daily. Recently, he started having diarrhea and noticed blood in his stool on occasion. He did not have a change in the way he felt other than being tired, but he thought that came with age. Being a stubborn man and not liking doctors, he refused to go see his physician. When the diarrhea and bleeding persisted and got worse, his wife stepped in and convinced him to make an appointment.

His family practitioner sent him to a gastroenterologist who scheduled him for a colonoscopy. A mass was found in the sigmoid colon and a biopsy was taken. The physician felt sure it was malignant and his suspicions were correct. GW was sent to a surgeon and surgery was planned immediately.

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#### QUESTIONS:

1. Describe the action and any nutritional side effects of the following drugs:

Digoxin:

Synthroid:

Cordarone:

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 Upon admission GW weighed 135 lbs and his admission labs were as follows.

CBC							
TEST	RESULT	REFERENCE UNITS		TEST	RESULT	REFERENCE UNITS	
		Conventional	SI			Conventional	SI
Hgb	12.8 g/dl	14 - 17.4 g/dl	140-174 g/L	WBC	5.2 10 <sup>3</sup> /μl	4.5-10.5 x 10 <sup>3</sup> /cells/ mm <sup>3</sup>	4.5-10.5 x 10 <sup>9</sup> /L
Hct	36%	42 - 52%		% Lymph	23%	25 - 40% of total WBC	1500- 4000 cells/mm <sup>3</sup>
RBC	4.7x10 <sup>6</sup> /μ	3.6- 5.0x10 <sup>6</sup> /L	3.6- 5.0x10 <sup>12</sup> / L	MCH	27 pg/cell	26-34 pg/cell	0.40-53 fmol/cell
MCV	76 μm <sup>3</sup>	82-98μm <sup>3</sup>	82-98 fL	MCHC	36 g/dl	32-36 g/dl	320-360 g/L

BASIC METABOLIC PACKAGE							
TEST	RESULT	REFERENCE UNITS		TEST	RESULT	REFERENCE UNITS	
		Conventional	SI			Conventional	SI
Glu	80 mg/dl	70-110 mg/dl	3.8-6.1 mmol/L	Na	138 mEq/L	136±145 mEq/L	136-145 mmol/L
BUN	5 mg/dl	6-20 mg/dl	2.1-7.1 mmol/L	K	3.8 mEq/L	3.5-5.2 mEq/L	3.5-5.2 mmol/L
Cr	0.9 mg/dl	0.9-1.3 mg/dl	80-115 μmol/L	Cl	103 mEq/L	96-106 mEq/L	96-106 mmol/L
Ca	8.9 mg/dl	8.8-10.0 mg/dl	2.20-2.60 mmol/L	Mg	1.8 mEq/L	1.8 - 2.6 mEq/L	136-145 mmol/L
Ser alb	3.1 g/dl	3.5-4.8 g/dl	39-50 g/dl	P	2.5mg/dl	2.7-4.5 mg/dl	4.7-6.0 kPa

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**QUESTIONS CONTINUED:**

2. Compare GW's UBW to his IBW. If his UBW has been slightly lower than his IBW all his life, is that of any major concern? Is the fact that he is now, upon admission to a hospital for colon cancer, a little below his UBW of concern? Explain.

3. Does the additional information obtained from the labs add any concern?

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4. If you were the oncology RD responsible for GW, what, if anything, should you do at this point?

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The RD reviewed GW's chart and visited him and his wife to perform an admission screening prior to surgery. After an appropriate entry into his room and properly identifying GW, the conversation went something like this:

**RD:** Well, Mr. W, I want you to take me through a *typical* day when you are at home and feeling well. Tell me what time you get up and what is the first thing you have to eat or drink?

**GW:** I get up about 3 AM and get a cup of coffee.

**RD:** Three AM? Do you just get up to get coffee or what?

**GW:** You don't live on a farm do you? I'm a dairyman. I have to get my cows in for milking.

**RD:** At 3 AM? Every morning?

**GW:** Every morning, seven days a week.

**RD:** Oh, uh... well, uh... what do you put in your coffee?

**GW:** Nothing, I drink it black.

**RD:** Do you have anything else with your coffee?

**GW:** Nothing, I set the automatic coffee maker the night before and when I'm going out the door it's ready to go.

**RD:** I see. When are you finished with your cows?

**GW:** I come back in between 6 and 7 AM and my wife has breakfast.

**RD:** And what does breakfast consist of?

**GW:** I have cream of wheat every morning, a few strips of bacon, some toast and a cup of hot chocolate.

**RD:** Hot chocolate huh. Well, do you put anything on your toast?

**GW:** A little margarine.

**RD:** When is the next time you eat or drink?

**GW:** Welllll.... after I read the paper, about 8:30 or so, I usually go down to Corn Crib and sit around with some of my friends and have some more coffee.

**RD:** The corn crib? Is that in your barn?

**GW:** Noooo, that's the name of a country store down the road. We have a little corner in there where we get together in the morning and solve the world's problems.

**RD:** Oh. Do you have anything with your coffee?

**GW:** Not usually. I still drink it black.

**RD:** When is the next time you have something to eat or drink?

**GW:** Lunch time. I go back to the house about 10:30 or 11 and have lunch.

**RD:** Isn't that early for lunch?

**GW:** Not when you get up at 3 o'clock it's not.

**RD:** No, I guess not. What do have to eat then?

**GW:** Well, we always have a vegetable, like green beans or squash.... always some kind of beans or peas, like butter beans or pink-eye purple-hull Crowder peas.... some kind of meat.... like some ribs or pork chops.... and cornbread, always have to have cornbread.

**RD:** Wow!... What do you have to drink?

**GW:** Sweet tea.

**RD:** When is the next time you have something to eat or drink?

**GW:** Suppertime, about 5:30. We usually eat light at supper, some soup or cereal, toast, something like that.

**RD:** How about before you go to bed, do you have anything then?

**GW:** Usually not.

GW actually did not get up every morning at 3 AM like he used to; his son does most of the early morning milking, but he does get up with him some of the time. Old habits are hard to break. He seldom goes out in the afternoon any more for the afternoon milking like he used to. Lately, he has not been getting up early at all because he has been so tired.

The surgical procedure went as well as could be expected. After surgery, GW received two units of whole blood because of his previous bleeding and the blood lost during surgery. The tumor was in the distal sigmoid. A double barrel colostomy was performed with the proximal descending colon being brought to the outside for defecation. The distal end of the sigmoid was also brought to the outside. The colon in-between was removed. The surgeons planned on giving GW chemotherapy and allowing his colon to heal before performing another surgical procedure in three months to reconnect the two ends of the colon. After resection, GW would be able to have normal bowel movements. After spending a few days in ICU, GW returned to a private room. He was started on clear liquids and advanced to full liquids but everything he drank gave him diarrhea. He was given a nutritional supplement to drink with meals and between meals but he did not like it. He liked chocolate but he said chocolate and vanilla soured on his



9. Research prealbumin and describe exactly what it consists of and its relationship to albumin and total protein.

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Because of the pain GW was having, and because of the weakness he was experiencing from the loss of blood and not eating, he was difficult to get out of bed and walk as was ordered. His inactivity caused stasis in his legs and he started having pain in his left calf and soreness to touch. He had developed thrombophlebitis and had to be put on heparin. The heparin caused his blood to be too thin and he started spontaneous bleeding. This was finally corrected and GW eventually began tolerating his tube feeding better, but still had some problems with diarrhea. He gained three pounds back and the feeding tube was removed. GW was taking some food by mouth and probiotics were initiated but he continued to have diarrhea, severe at times. He did not like the colostomy and complained of abdominal cramps almost continuously. GW's main problem now was eating and gaining his strength back. There was nothing else they could do for him in the hospital and the physician thought that his home environment would be more conducive to GW eating so he discharged him with the following orders:

- ▶ Advil (ibuprofen) OTC for pain
- ▶ Megace (megestrol acetate) 4 teas/d 40mg/ml for appetite
- ▶ Lomotil (diphenoxylate hydrochloride with atropine sulfate) 2.5 mg bid for diarrhea
- ▶ Donnatal Tablets 1 or 2 qid for diarrhea
- ▶ Kopectate, OTC for diarrhea
- ▶ Lovenox (enoxaparin) 0.8 ml (80 mg/0.8 ml) SC every day for blood clots

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10. Research the following drugs and describe their function, side effects, and nutritional implications.

Megace:

Lomotil:

Donnatal Tablets:

Kopectate:

Advil:

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14. On a separate sheet of paper, prepare a menu for GW based on the information listed in question 12.  
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GW went home but continued with diarrhea for several days. Even with the Megace, his appetite was poor. GW was not going to have to get up at 3 AM to attend to his cows because of his age and his condition; his son would do that. His schedule changed to that of a more normal person, getting up around 7 AM, having breakfast, etc. He tried taking supplements between meals but could not tolerate them. He continued to slowly lose weight, constantly being bothered with diarrhea. In less than the planned three months, he went back into the hospital to have his colon reattached. The physicians were thinking that this would help his diarrhea and he would eat more. His hospital stay was uneventful as far as the surgery was concerned, but further tests revealed a suspicious spot on his liver and two on his left lung. Even with this news, GW returned home optimistic that he would be able to eat again. His weight dropped because of the surgery and was now down to 125 lbs. He went home with the same meds as before and a new medication he was to take when he got over the diarrhea.

Once home the second time, his new routine included a light breakfast, a small amount of nutrition at mid-morning and at lunch, a larger evening meal, and a banana and more supplement at night. He alternated between Ensure and Boost because he got tired of the same supplements over and over. He has not been able to take in enough supplements to gain weight or strength. He still has diarrhea though it is not as bad. GW now has protein-calorie malnutrition and is depressed.

The physician's plan was to increase GW's weight and strength and then start Xeloda, an oral chemotherapy medication. Xeloda was ordered to be taken as six 500 mg tablets, three twice a day 12 hours apart, for three weeks. A rest period of one week would be followed by another three-week treatment. This was to be repeated four times. Xeloda could not be started until GW was stronger because the side effects are harsh, including severe diarrhea. GW asked around and found two people that took this drug and had a variety of severe side effects. GW became more depressed and decided he did not want to take the drug.

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15. Research the medication Xeloda and record its action and side effects.

16. Assume you are a home health dietitian and are assigned to GW. You have access to his chart and all of the information above. You visit him at home and do a complete assessment. Answer the questions below on a separate sheet of paper.

- a. Outline the components of your home health assessment.
- b. Considering protein-calorie malnutrition, what are you going to recommend as a goal for GW's calorie and protein intake?
- c. What route of administration, or combination of routes, are you going to recommend?
- d. Your above assessment may be completely correct and your recommendations may be the best anybody could make, but you have a problem. GW thinks he still has cancer and he thinks the cure is worse than the cause so he thinks he is going to die and does not want to eat. How are you going to handle this problem?

## Oncology Chart Notes

### Assessment

The patient is a 75-year old male diagnosed with colon cancer.

#### *Anthropometric Data*

Ht: 5'7"

Wt before diagnosis: between 138 – 142 lbs

CBW: 125 lbs

BMI: 19.6

#### *Pertinent Lab Values:*

Albumin 2.7 g/dL

Prealbumin 7 mg/dL

#### *Medical History:*

Hypothyroidism, arrhythmias.

#### *Medications:*

Synthroid (hypothyroidism), Amiodarone and Digoxin (arrhythmias), Advil (pain), Megace 4 teas/d 40 mg/ml (appetite), Lomotil 2.5 mg bid (diarrhea), Donnatal 1-2 tablets qid (diarrhea), Kopectate (diarrhea), Lovenox 0.8 ml SC everyday (blood clots).

#### *Diet History:*

Typical day before diagnosis:

Breakfast: Coffee, cream of wheat, few strips of bacon, toast with margarine, hot chocolate

Lunch: Green beans or squash, some kind of meat (ribs or pork chops), and cornbread, sweet tea

Dinner: Soup or cereal, toast

Snack: None

Current meal routine: light breakfast, Ensure or Boost for lunch, larger dinner, a banana, and a supplement at night.

### Diagnosis

Unintended weight loss related to iatrogenic malnutrition as evidenced by weight loss of 17 lbs, diagnosis of protein calorie malnutrition, and severe diarrhea.

### Intervention

1. Advise the patient to consume 4-6 small meals per day instead of 3.
2. Counsel the patient and narrow down which foods are better tolerated and doesn't cause diarrhea.
3. Recommend a protein supplement or discuss consuming protein dense foods.

### Monitoring and Evaluation

1. Monitor patient weight.
2. Monitor severity of diarrhea and make changes to the diet as needed.

## Questions:

1. Intern's comments about nutritional intervention(s) for this patient. How receptive was / were the patient and family to nutrition intervention? What were the factors that influenced this the most? Patient/family factors? Institutional/environmental factors?

N/A

2. Was the nutrition intervention successful? Why/Why not?

N/A

## Glossary of unfamiliar terms:

**Double barrel colostomy** – a surgical procedure which creates two end stomas (proximal and distal). The proximal stoma is where the stool is expelled. The distal stoma functions as a mucous fistula.

**Iatrogenic malnutrition** – type of malnutrition caused by treatments, medications, and hospitalization.

**Stasis** – slowing or stoppage of the flow of fluids

**Thrombophlebitis** - inflammation that causes blood clots to form and block one or more veins.

## Applies to:

**CRDN 1.6** Incorporate critical-thinking skills in overall practice.

**CRDN 2.1** Practice in compliance with current federal regulations and state statutes and rules, as applicable and in accordance with accreditation standards and the Scope of Nutrition and Dietetics Practice and Code of Ethics for the Profession of Nutrition and Dietetics.

**CRDN 2.2** Demonstrate professional writing skills in preparing professional communications.

**CRDN 2.11** Show cultural competence/ sensitivity in interactions with clients, colleagues and staff.

**CRDN 3.1** Perform the Nutrition Care Process and use standardized nutrition language for individuals, groups and populations of differing ages and health status, in a variety of settings.

**CRDN 3.3** Demonstrate effective communications skills for clinical and customer services in a variety of formats and settings.

**CRDN 4.10** Analyze risk in nutrition and dietetics practice.