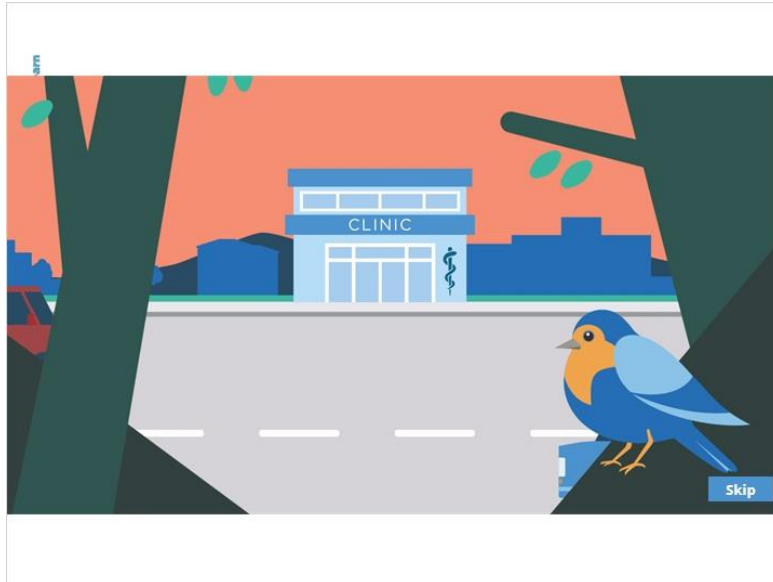


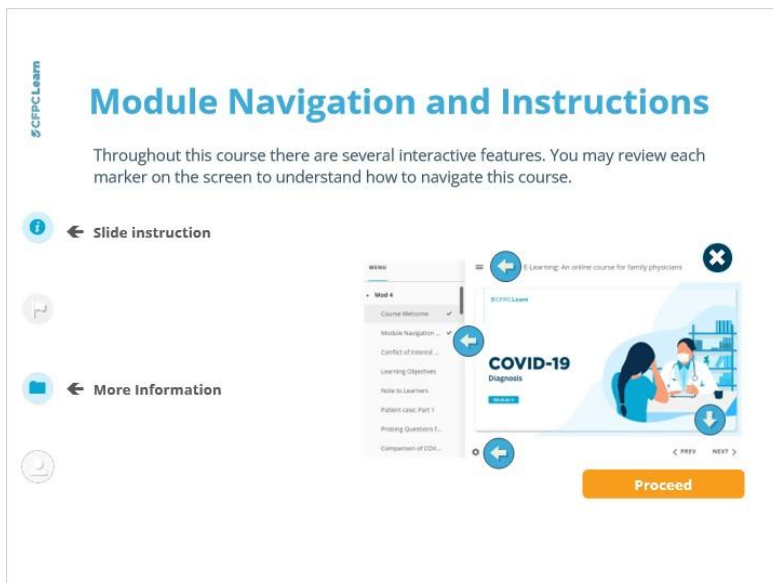
Case 39 Mr Ramakanta, Part II v2

1. Conflicts

1.1 Intro Video



1.2 Module Navigation and Instructions



1.3 Learning Objectives

CFPC Learn

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Learning Objectives

At the end of this module participants should be able to:

1. Identify key factors/findings in family medicine to help establish common clinical diagnoses.
2. Evaluate best evidence/guidance and practice tools to determine preferred treatment options for patients.
3. Synthesize patient preference, evidence and experience to formulate comprehensive plans for patient cases.

Approximately 15 minutes to complete each patient case.

Proceed

2. Mr. Ramakanta

2.1 Mr. Ramakanta

CFPC Learn

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Mr Ramakanta, 75

One month ago, Mr Ramakanta presented to your office with dyspnea and peripheral edema. You suspected heart failure and started him on furosemide 40mg daily. His ECHO confirmed your suspicion: his ejection fraction was 35%.

Unfortunately, he worsened and was admitted for an exacerbation of heart failure shortly after. He was discharged one week ago.

Information

Moving Forward



Information (Slide Layer)

SCFPCLearn

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Mr Ramakanta, 75


Past medical history: NSTEMI (5 years ago)

He moved from Bangalore, South India, to Canada five years ago.

- CBC: WBC 6, hemoglobin 105, platelets 200
- Na 134, K 4.2
- Cr: 103 (eGFR 61); urinalysis: no protein

Information

Moving Forward



2.2 Mr. Ramakanta

SCFPCLearn

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Mr Ramakanta, 75

I feel much better. Now I am back to having a hard time chasing my grandson around - he's a quick one!

They told me to stop eating salt but the food tastes so bland. What do you think?

Moving Forward




2.3 True Statement

(Multiple Response, 10 points, 1 attempt permitted)

CFPCLearn

Which of the following is the most accurate statement?



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☐ Mr. Ramakanta should limit salt intake to less than 2g per day.

☐ Reducing his sodium intake will lower his risk of dying from heart failure.


☒ Reducing his sodium intake may improve his symptoms

Submit

2.4 Answer

CFPCLearn

Review



i

f

l

u

Answer: The correct answer is that reducing sodium may improve Mr. Ramakanta's symptoms.

Study findings - I

Study findings - II

Sodium intake


Click on the buttons to view additional information

Moving Forward

Sodium (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is that reducing sodium may improve Mr. Ramakanta's symptoms.

Study findings - I

Study findings - II

Sodium Intake

How much sodium should he have?


- Guidelines vary from recommending 2-3 g/d (Health Canada) to avoiding very high sodium intake (e.g., avoid >5g/d, European Guidelines).
- Recommendations are shifting from specific limitations of sodium intake to recommendations to eat a healthier diet:
 - Lots of fruits and vegetables
 - Avoiding excessive fats and salt
 - Moderate intake of carbohydrates and animal protein

Moving Forward

findings - I (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is that reducing sodium may improve Mr. Ramakanta's symptoms.

Study findings - I

Study findings - II


Sodium Intake

A systematic review of nine randomized controlled trials (RCTs) compared more sodium intake versus less in patients with heart failure.


- There was insufficient data to meta-analyze results on cardiovascular mortality or hospitalizations.

Moving Forward

findings II (Slide Layer)



Review



Answer: The correct answer is that reducing sodium may improve Mr. Ramakanta's symptoms.

Study findings - I

Study findings - II

Sodium Intake


Other findings from the systematic review:

- Three of seven outpatient studies showed possible improvement of heart failure signs and symptoms with decreased sodium intake.
- Most RCTs evaluated very low sodium intake (e.g., 1.5g/d) in conjunction with water restriction. It is not known whether patients with high sodium intake would benefit from reducing it to levels that have been recommended (~2-3g/d).



Moving Forward

2.5 Which is True

(Multiple Response, 10 points, 1 attempt permitted)



Which of the following statements is most accurate?




☐ Processed food may account for the bulk of Mr. Ramakanta's sodium intake.

☒ Pulse-based dishes (i.e., dishes containing beans, peas, lentils) may account for the bulk of Mr. Ramakanta's sodium intake.


☐ Salt substitutes are dangerous and should not be used to decrease Mr. Ramakanta's sodium intake.

Submit





2.6 Answer



Review



Answer: Pulse based dishes may account for the bulk of sodium intake.




Indian cuisine
Sodium Sources
Salt Substitute


Click on the buttons to view additional information

Moving Forward





Cuisine (Slide Layer)



Review



Answer: Pulse based dishes may account for the bulk of sodium intake.



Indian cuisine
Sodium Sources
Salt Substitute


- Indian cuisine is very diverse. In south India, a meal usually consists of rice/bread with vegetable and pulse-based dishes, all of which have added salt. Pulses comprise ~30% of total sodium intake due to added salt.
- In a cohort of South Indian men, the average sodium intake was ~4g. In fact, persons from Asia have among the highest sodium consumption. The average sodium intake among Canadians is 2.8g (previously, 3.4g in 2004).
- One tablespoon of salt (13-28 g NaCl) is ~5-7g sodium.

Moving Forward

Sodium (Slide Layer)

SCFPCLearn

Review



Answer: Pulse based dishes may account for the bulk of sodium intake.

Indian cuisine

Sodium Sources

Salt Substitute

In European and Northern American countries, sodium mostly comes from processed foods, especially cereals and baked goods. All processed food have higher sodium content. Below is the sodium content per 100g food:


| Unprocessed | Processed |
|---------------------|-------------------------|
| Bran, wheat: ~28mg | Bran flakes: ~1g |
| Hard cheese: ~640mg | Processed cheese: ~1.3g |

Moving Forward

Salt Substitute (Slide Layer)

SCFPCLearn

Review



Answer: Pulse based dishes may account for the bulk of sodium intake.

Indian cuisine

Sodium Sources

Salt Substitute

- In an RCT, villages in rural China were randomized to a salt substitute (75% NaCl and 25% KCl) or regular salt.
- Participants had a history of stroke or were >60 years old with high blood pressure: death from any cause favored the salt substitute (39 versus 45 events per 1000 patient-years).
- Adverse events attributed to hyperkalemia were similar in both groups (~3.3 events per 1000 person-years).

Moving Forward

2.7 Mr. Ramakanta

SCFPCLearn

Mr Ramakanta, 75

This heart failure thing, is it a big deal? It was very scary being in the hospital...

Moving Forward




2.8 True or False 1

(Multiple Response, 10 points, 1 attempt permitted)

SCFPCLearn

In heart failure, higher symptom severity is associated with increased mortality.




☒ True
☐ False

Submit

2.9 Answer

CFPCLearn

Review



Answer: The correct answer is true.

1

2

3

4

HFrEF

NYHA Classes

Mortality and Morbidity


Click on the buttons to view additional information

Moving Forward

HFrEF (Slide Layer)

CFPCLearn

Review



Answer: The correct answer is true.

1

2

3

4

HFrEF

NYHA Classes

Mortality and Morbidity

Heart failure with reduced ejection fraction (HFrEF)


- Ejection fraction <40%
- Mortality from HFrEF is elevated, especially for symptomatic patients.
- The NYHA system is not perfect and only roughly predicts 6-minute walk distances or mortality. However, it is widely used in RCTs.

Moving Forward

Mortality and Morbidity (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is true.

HFrEF

NYHA Classes

Mortality and Morbidity


- Unfortunately, there are no well validated tools in primary care to estimate mortality and morbidity from heart failure.
- Discussions around code status and advance care planning may be appropriate, especially if patients are symptomatic with minimal activity, have been hospitalized, have co-morbidities (COPD, frailty) or are not able to tolerate medical therapy.
- At this time, this is not the case for Mr Ramakanta.

Moving Forward

NYHA (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is true.

HFrEF

NYHA Classes

Mortality and Morbidity

Example: patients on beta-blockers, ACEi and aldosterone antagonists (mean age: 65, mean EF: ~25%)

| NYHA Class | Symptoms | Mortality at 2 years |
|------------|--|----------------------|
| 2 | Mild symptoms during ordinary activity | 13% |
| 3-4 | Marked symptoms with walking 20-100m, symptoms at rest | 35% |

Moving Forward


2.10 Mr. Ramakanta

CFPCLearn

Your blood pressure is 120/80, pulse 70. Your lungs are clear and the leg swelling is much better. Let's see your medications

ASA 81mg PO daily
Atorvastatin 80mg PO daily
Furosemide 40mg PO BID
Candesartan 8mg PO daily
Bisoprolol 2.5mg PO daily

Moving Forward




2.11 Multiple Choice

(Multiple Response, 10 points, 1 attempt permitted)

CFPCLearn

Mr. Ramakanta's ejection fraction is 35-40%. He has mild symptoms. Which of the following statements is most accurate?



☐ Spironolactone is prescribed as commonly as ACEi or ARBs.

☒ Spironolactone provides a similar mortality benefit as ACEi/ARB.

☐ The relative mortality benefit from spironolactone is about 5%.


☐ Gynecomastia is an uncommon side effect.

Submit

2.12 Answer

CFPCLearn

Review



Answer: The correct answer spironolactone provides a similar mortality benefit as ACEI or ARBs.

Mortality benefit

Spironolactone


Click on the buttons to view additional information

Moving Forward

Mortality benefit (Slide Layer)

CFPCLearn

Review



Answer: The correct answer spironolactone provides a similar mortality benefit as ACEI or ARBs.

Mortality benefit

Spironolactone

Relative reductions in mortality (no head-to head trials):

- Aldosterone antagonists: ~25%
- Beta-blockers: ~19%
- ACE inhibitors: ~23%

• For someone with a baseline mortality risk of 10% over the next five years, the risk would decrease to 7.5% with the addition of an aldosterone inhibitor (i.e., 25% relative risk reduction.)


X

Moving Forward

Heart Failure (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer spironolactone provides a similar mortality benefit as ACEI or ARBs.

Mortality benefit


Spironolactone

- Aldosterone antagonists are less commonly prescribed than other agents despite similar effect on mortality.
- Spironolactone costs ~\$12 per month and should be used first line. If gynecomastia or breast pain occur (10% versus 1% in the placebo group), patients can be switched to eplerenone (~\$100 per month).

2.13 Mr. Ramakanta

SCFPCLearn

Mr Ramakanta, 75



They did warn me at the hospital that I will be taking a lot of pills.
They were not kidding!


Moving Forward

2.14 Multiple Choice

(Multiple Response, 10 points, 1 attempt permitted)

CFPCLearn

Which of the following options would be reasonable?



Choose all that apply.


- ☐ Start spironolactone and book a follow-up appointment in one month.
- ☒ Start spironolactone and book a follow-up appointment in one week.
- ☒ Start spironolactone and empagliflozin and follow up in one week.
- ☐ Increase candesartan to 32mg and bisoprolol to 10mg.

Submit

2.15 Answer

CFPCLearn

Review



Answer: The correct answer is start spironolactone and follow up in one week. Also, starting empagliflozin would be appropriate.

CHF Treatment

Titration I

Titration II


Click on the buttons to view additional information

Moving Forward

tx (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is start spironolactone and follow up in one week. Also, starting empagliflozin would be appropriate.

CHF Treatment

Titration I

Titration II

Standard pharmacological care for HFrEF include:


- ACEi/ARB or sacubitril-valsartan (angiotensin receptor-neprilysin inhibitor – coming in next clinic)
- Beta-blocker
- Aldosterone antagonist (e.g., spironolactone),
- Sodium glucose transport 2 inhibitor (SGLT2i, e.g. empagliflozin).

Moving Forward

Titration I (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is start spironolactone and follow up in one week. Also, starting empagliflozin would be appropriate.

CHF Treatment

Titration I

Titration II


- Heart failure carries a significant risk of hospitalization and mortality in the short-term (1-2 years).
- Ideally, medication optimization should be reached within 3-6 months of diagnosis (four agents at the maximum tolerated doses). Titration schedules should be personalized (more on that at Mr. Ramakanta's next visit).

Moving Forward

Titration II (Slide Layer)

SCFPCLearn

Review



Answer: The correct answer is start spironolactone and follow up in one week. Also, starting empagliflozin would be appropriate.

CHF Treatment

Titration I

Titration II

An RCT compared rapid up-titration of medications and close follow-up with standard of care.


- At 90 days, more patients in the rapid titration group were on target doses: ACEi/ARB (55% vs 2%), aldosterone antagonists (84% vs 46%), beta-blockers (49% versus 4%).
- Heart failure re-admissions or mortality: 15% versus 23% (standard of care)
- Adverse events were more common in the rapid titration group: hypotension (5% vs <1%), hyperkalemia (3% vs 0%), renal impairment (3% vs <1%).

Moving Forward

2.16 Create a Plan

SCFPCLearn

Let's Make a Plan



Using what you have learned write a plan for Mr. Ramakanta. It can include any/all of the following: lifestyle intervention(s), prescription intervention(s), lab(s)/test(s) required, follow up appointment time frame, and referral required.

Fill in your plan for the patient here

See how your plan compares

2.17 Plan Answers

Treatment Plan

This is the proposed plan for the patient. How does your plan compare?

Salt & Exercise

Medication

New Medication

Follow Up

Click on the buttons to see suggested answers

What's in a name?

Salt Intake (Slide Layer)

Treatment Plan

This is the proposed plan for the patient. How does your plan compare?

Salt & Exercise

Medication

New Medication

Follow Up



Mr. Ramakanta is interested in decreasing his salt intake as long as food "still tastes good". He will try to use less salt. He will try to take daily walks with his wife.

What's in a name?

Medication (Slide Layer)

SCFPCLearn

Treatment Plan



This is the proposed plan for the patient. How does your plan compare?

1

2

3

4

5

Salt & Exercise

Medication

New Medication

Follow Up

What's in a name?

• You continue

• ASA 81mg PO daily

• Atorvastatin 80mg PO daily

• Candesartan 8mg PO daily



• Bisoprolol 2.5mg PO daily

X

New Medication (Slide Layer)

SCFPCLearn

Treatment Plan



This is the proposed plan for the patient. How does your plan compare?

1

2

3

4

5

Salt & Exercise

Medication

New Medication

Follow Up

What's in a name?

• You start spironolactone 12.5mg PO daily.

• You increase furosemide to 40mg BID.



• Mr. Ramakanta does not want to start any other medications for now

X

Follow Up (Slide Layer)

SCFPCLearn

Treatment Plan



This is the proposed plan for the patient. How does your plan compare?

1

2

3

4

5


Salt & Exercise

Medication

New Medication

Follow Up



What's in a name?

 You book a follow-up appointment in one week. You give him a requisition for Cr, K, Na.

Name (Slide Layer)

SCFPCLearn

Treatment Plan



This is the proposed plan for the patient. How does your plan compare?

1

2

3

4

5


Salt & Exercise

Medication

New Medication

Follow Up

What's in a name?


 **Meaning behind Mr. Ramakanta's name:**


Dr. Ramakanta, the son of a farmer, is a famous cardiovascular surgeon from India. According to Wikipedia, he was once called "one of the safest heart surgeons in the world!"


2.18 References

SCFPC Learn


References







Thanks for visiting the clinic!
References are available [here](#).



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