Document allergies on approved form and ensure medication reconciliation has been reviewed as per organizational process

CHFS Heart Failure Order Set

Admission

☒ Admit to: _____ Dr. _____ to assume MRP
☒ Diagnosis: Heart Failure
☒ Date of Admission: _____ (yyyy-mm-dd) ☒ Expected Date of Discharge: _____ (yyyy-mm-dd)
Allergies or hypersensitivities? ☐ None Known ☐ Yes: Refer to organization's allergy documentation/process
☒ Code Status: ☐ Full Resuscitation ☐ DNR ☐ _____
☐ Primary Care Provider: _____
☒ Inform Primary Care Provider of patient's hospitalization for HF

Precautions

☒ Antibiotic Resistant Organism (ARO) Screening and Management Clinical Protocol
☐ _____

Consults

Note: If patient at nutritional risk based on the Malnutrition Screening Tool assessment, ensure dietitian consulted.

☐ Cardiologist - Reason: _____ ☐ Pharmacist - Reason: _____
☐ Dietitian - Reason: _____ ☐ PT for early ambulation
☐ Internist - Reason: _____ ☐ RRT - Reason: _____
☐ OT to screen for frailty ☐ SW for discharge planning
☐ Palliative Care Service - Reason: _____ ☐ _____ - Reason: _____

Diet/Nutrition

☐ NPO, medications with sips ☐ NPO, no PO medications
☐ Cardiac[1] ☐ Diabetic _____ kJ ☐ Renal ☐ _____
Restrictions: ☐ _____ Litres fluid in 24 hours (1.5 or 2 Litres[1]) ☐ 2 g Na in 24 hours[1] ☐ _____
☐ _____

Activity

☐ Activity as tolerated, encourage early mobilization[2] ☐ Early ambulation, aim to ambulate three times per day
☐ _____

Vitals/Monitoring

Vitals

☒ Weigh patient on admission: Weight: _____ kg
☒ Weigh daily in morning[1] after voiding, before breakfast
☒ Vitals, SpO_2, Pain Score as per policy/procedure

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Vitals/Monitoring Continued…

Monitoring

☐ Telemetry for 48 hours, then reassess
☒ CAM score q _____ h and PRN
☒ Intake and Output q _____ h
☒ Assess falls risk and implement falls prevention strategies as per policy/procedure

Capillary Blood Glucose Monitoring

☒ For patient with diabetes, Capillary Blood Glucose monitoring as per applicable diabetes management order set
☐ Capillary Blood Glucose _____ (frequency)

Respiratory

Oxygen Therapy

Supplemental oxygen is recommended in patients who are hypoxemic to achieve an oxygen saturation greater than 90%[1,3]

☒ Target SpO_2: ☐ 88 - 92%[4,5] ☐ Greater than 92%[5,6] ☐ SpO_2: _____ - _____ %
☒ Oxygen Titration Clinical Protocol

Patient with Obstructive or Central Sleep Apnea

☐ Patient to use own PAP machine at patient's prescribed settings[4,7] after RRT/BioMed equipment check
☒ Request RRT to assess PAP machine, prescribed settings, and to enable O_2 entrainment if O_2 required
☐ _____

Lab Investigations

Lab Investigations on Admission (if not already done in ED)

Hematology, Coagulation

☐ CBC[1,3] ☐ APTT ☐ INR ☐ _____
☐ Ferritin[3] ☐ Transferrin saturation[3] ☐ Serum iron[3]

Chemistry

Note: Digoxin level may be considered if not performed in the past 6 months. If digoxin level ordered, ensure level is not in toxic range.

☐ Electrolytes[1,3] ☐ Lactate ☐ BNP[1,3] ☐ A1C[1,3]
☐ Creatinine[1,3] ☐ Ca[1,3] ☐ NT-proBNP[1,3] ☐ TSH[1,3]
☐ Glucose[1,3] ☐ Mg[1,3] ☐ Troponin[3] ☐ Digoxin level
☐ Albumin ☐ ALT, ALP, Bilirubin[3] ☐ Uric Acid ☐ _____
☐ HDL, LDL, Total Cholesterol, Triglycerides[3] ☐ LDH ☐ _____

Lab Investigations Day 2 and Onwards

Consider daily electrolytes, creatinine while patient is receiving IV diuretic therapy[8]

☐ Daily Electrolytes, Creatinine

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

Document allergies on approved form and ensure medication reconciliation has been reviewed as per organizational process

CHFS Heart Failure Order Set

Diagnostics

☐ 12-Lead ECG[1,3] ☐ 15-Lead ECG

☐ CXR PA + Lateral[1,3] Reason: _____

Repeat echocardiogram **only** if no recent assessment of LV function performed in past 12 months and clinical status change warrants investigation

☐ Echocardiogram[1–3] Reason: _____

☐ _____ Reason: _____

IV Therapy

☐ Saline lock; flush as per policy/procedure ☐ _____ at _____ mL/h

Heart Failure Medications

Diuretics

IV diuretics are recommended as first-line therapy for patients with pulmonary or peripheral congestion[1]

If symptomatic hypotension arises, consider holding diuretics and reassessing for volume overload

Assess daily volume status and manage diuretics accordingly

☐ furosemide _____ mg IV for 1 dose STAT **(max 200 mg/dose)**

☐ furosemide _____ mg IV q _____ h

☐ furosemide _____ mg/h IV continuous infusion (5 – 20 mg/h)

☐ furosemide _____ mg PO q _____ h

☐ bumetanide _____ mg PO q _____ h (0.5 mg; **max 10 mg in 24 hours)**

☐ metolazone _____ mg PO q24h, administer 30 minutes prior to loop diuretic (2.5 mg; **max 20 mg in 24 hours)**[2]

☐ _____

Angiotensin-Converting Enzyme-Inhibitors (ACEI)

☐ perindopril _____ mg PO q24h (initiation dose 2 – 4 mg; target regimen 4 – 8 mg q24h)[1]

☐ ramipril _____ mg PO q12h (initiation dose 1.25 – 2.5 mg; target regimen 5 mg q12h)[1]

☐ _____

Angiotensin Receptor Blockers (ARB) For Patient Intolerant to ACEI

☐ candesartan _____ mg PO q24h (initiation dose 4 – 8 mg; target regimen 32 mg q24h)[1–3]

☐ valsartan _____ mg PO q12h (initiation dose 40 mg; target regimen 160 mg q12h)[1–3]

☐ _____

Angiotensin Receptor Neprilysin Inhibitors (ARNI)

Patients who remain symptomatic despite triple therapy, consider changing ACEI/ARB to an ARNI[1,9]

Concomitant use with an ACEI or ARB is contraindicated; if an ACEI was administered, wait 36 hours before administering ARNI[1,9]

☐ sacubitril 24 mg/valsartan 26 mg, 1 tab PO q12h (target regimen sacubitril 97 mg/valsartan 103 mg, 1 tab q12h)

☐ sacubitril 49 mg/valsartan 51 mg, 1 tab PO q12h (target regimen sacubitril 97 mg/valsartan 103 mg, 1 tab q12h)

☐ sacubitril 97 mg/valsartan 103 mg, 1 tab PO q12h

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Heart Failure Medications Continued…

Beta-Blockers

☐ bisoprolol _____ mg PO q24h (initiation dose 1.25 mg; target regimen 10 mg q24h)[1]

☐ carvedilol _____ mg PO q12h

(initiation dose 3.125 mg; target regimen 25 mg q12h [if weight greater than 85 kg, target regimen 50 mg q12h])[1]

☐ _____

Mineralocorticoid Receptor Antagonist (MRA)

☐ eplerenone _____ mg PO q24h (initiation dose 25 mg; target regimen 50 mg q24h)[1–3]

☐ spironolactone _____ mg PO q24h (initiation dose 12.5 mg; target regimen 50 mg q24h)[1]

Vasodilators

The combination of isosorbide dinitrate and hydralazine are recommended in addition to standard treatment for black patients with HFrEF with advanced symptoms or patients unable to tolerate ACEI, ARB or ARNI therapy[1]

☐ hydralazine _____ mg PO q8h (initiation dose 25 mg; target regimen 75 mg q8h)

And ☐ isosorbide dinitrate _____ mg PO q8h (initiation dose 20 mg; target regimen 40 mg q8h)[1]

☐ _____

Sinoatrial Node Modulator

Ivabradine can be considered in patients with HFrEF who are in sinus rhythm with a resting heart rate of greater than or equal to 77 beats per minute and have had a previous HF hospitalization within the past year despite being at the maximally tolerated dose of beta-blockers[10]

☐ ivabradine _____ mg PO q12h

(initiation dose 2.5 – 5 mg[1] [if greater than 75 years old, initial dose 2.5 mg]; target regimen 7.5 mg q12h[1])

Digoxin

Digoxin may be considered in patients in sinus rhythm who continue to be symptomatic with triple therapy[1,3]

☐ digoxin _____ mg PO q24h (0.125 – 0.25 mg)

Sodium-glucose Cotransporter 2 (SGLT2) Inhibitor

SGLT2 inhibitors should be started once medically stable or upon discharge given risks of euglycemic DKA; not indicated for routine therapy in acute heart failure

Dapagliflozin may be considered in patients with mild to moderate HFrEF (LVEF less than/equal to 40%) regardless of concomitant type 2 diabetes[11] (do not use in patients with type 1 diabetes)

Caution should be exercised when combining SGLT2 inhibitors, ARNI, and diuretics because of their concomitant effects to promote diuresis[11]

Note: If serum creatinine is increasing, dapagliflozin should not be initiated or be reassessed if initiated.

☐ dapagliflozin 10 mg PO q24h[12]

☐ Initiate on _____ (yyyy-mm-dd) at _____ (hh:mm)

Electrolyte Management

☐ Non-Critical Care Potassium Oral Replacement Clinical Protocol

☐ _____

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Glycemic Management

If applicable, prescriber to complete diabetes management order set

- Diabetes Insulin Management Order Set (NPO Patient)
- Diabetes Insulin Management Order Set (Patient Eating Meals)

☒ Hypoglycemia Management Clinical Protocol

☐ _____

Smoking Cessation

Pharmacological treatment combined with counselling is more effective than pharmacological treatment alone[13]

☐ Nicotine Replacement Therapy In-patient Clinical Protocol

If applicable, prescriber to complete Smoking Cessation Pharmacologic Aids In-patient Order Set.

VTE Prophylaxis

VTE Pharmacological Prophylaxis Not Required

☐ No pharmacological prophylaxis: On therapeutic anticoagulation

☐ No pharmacological prophylaxis: Fully mobile and expected length of stay 24-48 hours and no additional risk factors

☐ No pharmacological prophylaxis: Bleeding/high risk of bleeding

☐ No pharmacological prophylaxis - Reason: _____

VTE Pharmacological Prophylaxis

☐ Initiate prescribed anticoagulant on _____ (yyyy-mm-dd) at _____ (hh:mm)

LMWH[14]

☐ dalteparin 5,000 units Subcutaneous q24h

☐ enoxaparin 40 mg Subcutaneous q24h

Unfractionated Heparin

☐ heparin 5,000 units Subcutaneous q _____ h (q8-12h)

VTE Mechanical Prophylaxis

If mechanical prophylaxis is used alone, reassess daily for conversion to anticoagulant prophylaxis

☐ Apply bilateral intermittent pneumatic compression devices[14]

☐ Apply bilateral, calf-length elastic compression stockings[14]

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Discharge Planning

Strategies to reduce readmission rates include early patient discharge planning and scheduling of follow-up appointments prior to discharge[1-3]

Note: Refer to heart failure discharge checklist.

Appointments to be Arranged Prior to Discharge

☐ Arrange for the following appointment(s) for patient to be seen post-discharge within the time frame specified below:

- ☐ Cardiologist/Internist: - Dr. _____ within _____ week(s) of discharge
- ☐ PCP: _____ within _____ week(s) of discharge
- ☐ _____ within: ☐ _____ day(s) ☐ _____ week(s)

☒ If patient does not have a PCP, ensure they are connected to a PCP before discharge as per policy/procedure. If no PCP is available, notify MD/NP for alternate provision of care arrangements

Referrals to be Arranged Prior to Discharge

☐ If barriers (e.g. financial) to obtaining discharge medication(s) or equipment,[15] arrange referral to: _____

☐ Smoking Cessation Program

☐ Arrange for the following referral(s) for patient to be seen post-discharge within the time frame specified below:

☐ Cardiac Rehabilitation Program	Reason: _____	within:	☐ _____ day(s)	☐ _____ week(s)
☐ Heart Function Clinic	Reason: _____	within:	☐ _____ day(s)	☐ _____ week(s)
☐ Home and community care	Reason: _____	within:	☐ _____ day(s)	☐ _____ week(s)
☐ Palliative care service	Reason: _____	within:	☐ _____ day(s)	☐ _____ week(s)
☐ _____	Reason: _____	within:	☐ _____ day(s)	☐ _____ week(s)

☐ _____

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Discharge

☒ Discharge date: _____ (yyyy-mm-dd) ☒ Length of stay (LOS): _____ day(s)

☒ Discharge patient to: ☐ Home ☐ Complex Continuing Care ☐ Long Term Care ☐ _____

☒ Discharge diagnosis: _____

☐ Comorbidities: _____

Clinical Assessment at Discharge

☐ New York Heart Association (NYHA) Functional Classification[16]: ☐ Class I ☐ Class II ☐ Class III ☐ Class IV

☐ Left Ventricle Ejection Fraction (LVEF): _____ %

☐ Discharge Weight: _____ kg

Lab Values: ☐ Creatinine: _____ ☐ K: _____ ☐ Na: _____ ☐ Other(s): _____

Discharge Information

☒ Ensure discharge Medication Reconciliation process has been completed as per policy/procedure[17]

☐ Ensure a follow-up phone call to patient/caregiver has been arranged to be done within _____ hours of discharge (24-72 hours)[18–20]

For Patient

☒ Ensure a copy of the Patient Discharge and Follow-up Information page(s), the patient's care plan, and the Medication Reconciliation form have been provided to the patient/caregiver as per policy/procedure[17,20–22]

For Community Health Care Providers

☒ Ensure a copy of this document, the patient's care plan, the Discharge Summary, the Medication Reconciliation form, Letter to the PCP and other relevant documents have been provided to the following as per policy/procedure[17,20–22]:

☒ PCP ☐ Home care service ☐ Specialist: _____

☐ Patient's community pharmacy ☐ _____

Patient Education and Self-management

☒ Initiate and complete the applicable patient education checklist[23] with patient/caregiver and ensure discharge instructions have been provided as per policy/procedure. Use teach-back technique to assess and confirm patient/caregiver understanding[24,25]

☒ Ensure the following education is provided at a level appropriate for the patient/caregiver[16]:

- Advance care directives
- Daily weight monitoring
- Diet, e.g. nutrition, fluid, salt restriction
- Heart failure risk modification
- Symptoms of worsening heart failure
- Definition of heart failure and cause
- Diuretic monitoring and management
- Lifestyle, e.g. alcohol, smoking
- Medication management
- When to seek medical attention, e.g. specific symptoms or weight changes
- Physical activity/exercises[26]
- Self-management
- Smoking Cessation

☒ Advise patient to talk to their PCP about recommended vaccinations

☒ Provide applicable written education materials[27] in patient's preferred language and review with patient/caregiver as per policy/procedure[21,28]

☐ _____

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Discharge Patient Information

This 'Heart Failure Discharge and Patient Information' section is to provide instructions to the patient, and when completed, should be printed and given directly to the patient for their review and to take with them upon discharge.

Instructions

- Review the information provided to you before you go home and again when you arrive home.
- Bring your Medication Reconciliation form and plan of care to your Pharmacist at your next visit.
- Bring this document, the Medication Reconciliation form and plan of care to your Primary Care Provider, e.g. family doctor or nurse practitioner.

Information

- The Canadian Heart Failure Society Patient Resources: https://heartfailure.ca/education/patient-resources
- The Canadian Cardiovascular Society Heart Failure Program: http://www.ccs.ca/en/guidelines/heart-failure-program
- Heart and Stroke Foundation: https://www.heartandstroke.ca/-/media/pdf-files/canada/health-information-catalogue/en-living-with-heart-failure.ashx?rev=3238e9abfabc4027b4b56a042a5d804e&hash=1B4D04630249286D09B8544119E36772
- How to stop smoking: Smokers Helpline: 1-877-513-5333 http://www.smokershelpline.ca
- Finding a family doctor or nurse practitioner: Health Care Connect: 1-800-445-1822 https://www.ontario.ca/page/find-family-doctor-or-nurse-practitioner

Home Care Services

- If home care services arrangements have been started for you, and you have not been contacted by your home care coordinator within _____ hours, please phone the following number: _____
- If respiratory services arrangements have been made for you, and you have questions or concerns, please phone the following number: _____

Diagnostic Tests

Patient with HF seen in the ED and/or admitted to hospital for HF should have an assessment of LV function within last 12 months of admission date or planned within 30 days from discharge from ED[8]

☐ Echocardiogram Reason: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange test. Test to be done in _____ week(s) **or** _____ month(s)

☐ Cardiac MRI Reason: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange test. Test to be done in _____ week(s) **or** _____ month(s)

☐ _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange test. Test to be done in _____ week(s) **or** _____ month(s)

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Discharge Patient Information

Appointments

☒ Heart Failure Clinic: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

☒ Primary Care Provider: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

☒ Cardiologist/Internist - Dr. _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

☒ Cardiac Rehabilitation Program: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

☐ Diabetes Clinic: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

☐ Smoking Cessation Program: _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment

☐ _____ Phone Number: _____
- ☐ Arranged by hospital: Date: _____ Time: _____ **or** ☐ Patient will be notified
- ☐ Patient to arrange appointment to be seen in _____ day(s) **or** _____ week(s)

Submitted by: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) ☐ Read Back

Practitioner: _____ (ID) _____ (PRINTED NAME) _____ (YYYY-MM-DD HH:MM) _____ (SIGNATURE)

CHFS Heart Failure Order Set

Order Set Development and Implementation Consideration

The CHFS acknowledges the partnership with Think Research and the important contribution of the following hospitals' heart failure order sets in the development of the present document: Alberta Health Services, the St-Boniface Hospital (Winnipeg), and the Sunnybrook Health Sciences Centre (Toronto).

Updated

This order set was last updated in May 2020.

Abbreviations

ACEI = Angiotensin-Converting Enzyme Inhibitor
ARB = Angiotensin II Receptor Blocker
BioMed = Biomedical Engineering
BNP = Brain Natriuretic Peptide
CAM = Confusion Assessment Method
DKA = Diabetic Ketoacidosis
ED = Emergency Department
EF = Ejection Fraction
GFR = Glomerular Filtration Rate
HF = Heart Failure
HFrEF = Heart Failure with Reduced Ejection Fraction
LV = Left Ventricle
LVEF = Left Ventricle Ejection Fraction
NT-proBNP = Prohormone of BNP
PAP = Positive Airway Pressure
PCP = Primary Care Provider

Patient Care Considerations

- **Antiplatelet Therapy:** Antiplatelet therapy (e.g. acetylsalicylic acid) is recommended in patients with HF who have had or at risk for atherosclerotic cardiovascular events.[1]
- **BNP and NT-proBNP:** BNP and NT-proBNP are natriuretic peptide (NP) biomarkers that are used to establish the presence and severity of HF.[9] NP screening can be helpful in establishing if a patient is at risk for HF and if echocardiography is necessary. The following table provides information regarding the NP levels and diagnosis of HF[1]:

	Age	HF is unlikely	HF is possible but alternative diagnoses to be considered	HF is very likely
BNP	All	Less than 100 pg/mL	100 – 150 pg/mL	Greater than 500 pg/mL
NT-proBNP	Less than 50	Less than 300 pg/mL	300 – 450 pg/mL	Greater than 450 pg/mL
	50 – 75		450 – 900 pg/mL	Greater than 900 pg/mL
	Greater than 75		900 – 1800 pg/mL	Greater than 1800 pg/mL

Note: BNP levels may increase early after initiation of ARNI therapy as BNP is a substrate for neprilysin.[9,29] Prognostic value of BNP typically resumes after the first 6 months of therapy. Though NT-proBNP is not a substrate of neprilysin, its level may lower early after initiation of ARNI therapy; however, it retains its prognostic value during this time.[29,30]

- **Choosing an ACEI in HF:** Determining which ACEI to prescribe in patients with HF depends on several factors, including: ejection fraction (EF), stroke volume (SV), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), renal function, adverse effects, and mortality. Many factors go into determining which ACEI to choose for patients with HF and more research needs to be done to determine if there is an ACEI that is superior to others, particularly in reducing rehospitalization and cardiac death.[31]
- **Discharge Checklist:** Key considerations for discharging a patient include the following[1]:
  - **Symptoms and Disease:**
    - Intercurrent cardiac illness adequately diagnosed and treated
    - Presenting symptoms resolved
    - Chronic oral HF therapy initiated, titrated, and optimized (or plan for same)

CHFS Heart Failure Order Set

- **Stability:**
  - Return to "dry" weight and stable for greater than 24 hours
  - Vital signs resolved and stable for greater than 24 hours, especially blood pressure and heart rate
  - Greater than 30% decrease in natriuretic peptide level from time of admission and relatively free from congestion
- **Transition:**
  - Communication to primary care provider and/or specialist physician and/or multidisciplinary disease management program (ideally patient to be seen by cardiologist or internist within 7 days of leaving the hospital)
  - Clear discharge plan for laboratory tests, follow-up, and other testing
  - Education initiated, understood by patient, and continued education planned; this includes:
  - Formal education session on HF management for patient and family members
  - Education on controlling sodium intake, weighing self, and recognizing symptoms of worsening HF
  - Education on algorithms to adjust diuretics in patients with recurrent fluid retention
- **MRAs and Potassium and Kidney Function:** MRAs can increase serum potassium, especially when a patient has a dehydrating illness where renal dysfunction can worsen. This requires patients to have kidney function (e.g. creatinine, GFR) and potassium, to be closely monitored when on these medications.[1]
- **Patients at Risk for Hypercapnia[4]:** Chronic Obstructive Pulmonary Disease (COPD) is the most common disease to cause hypercapnia[4]; other patients at risk for hypercapnic respiratory failure include those with cystic fibrosis (CF), non-CF bronchiectasis (often in association with COPD or severe asthma), severe kyphoscoliosis or severe ankylosing spondylitis, severe lung scarring from old tuberculosis (especially with thoracoplasty), morbid obesity (BMI > 40 kg/m^2), musculoskeletal disorders with respiratory muscle weakness (on home mechanical ventilation), overdose of opioids, benzodiazepines or other respiratory depressant drugs. The target SpO_2 in patients with COPD who are at risk of hypercapnia is 88-92%. The target SpO_2 in patients with other risk factors for hypercapnia is 88-92%; this is based on expert opinion which was extrapolated from observational studies.
- **SGLT2 Inhibitor:** The Canadian Cardiovascular Society (CCS) recommend SGLT2 inhibitors, such as dapagliflozin, be used in patients with mild to moderate HF due to reduced LVEF (less than/equal to 40%) and without concomitant diabetes, to improve symptoms and quality of life and to reduce the risk of hospitalization and cardiovascular mortality (Conditional Recommendation, High-Quality Evidence).[11] This recommendation is based of the results of the Dapagliflozin on Incidence of Worsening Heart Failure or Cardiovascular Death in Patients with CHF (DAPA-HF) trial.[12]
- **Sleep Apnea:** Obstructive sleep apnea (OSA) and central sleep apnea (CSA) are the main types of sleep disordered breathing (SDB). Around 40% of patients with HF have CSA and 11% have OSA. Many patients with HF with SDB go undiagnosed, likely due to limited resources and awareness. It is recommended that clinicians treating patients with HF refer to experienced sleep physicians and sleep laboratories to help differentiate between OSA and CSA.[1]
- **Supplemental O_2 and Target Ranges:** In acutely ill adults, evidence shows that liberal O_2 therapy increases mortality without improving other patient-important outcomes. Supplemental O_2 might become unfavourable above an SpO_2 range of 94-96%.[32] A systematic review and meta-analysis by Chu et al shows that patients treated liberally with O_2 had a dose-dependent increased risk of short-term and long-term mortality.[32] Individual randomised controlled trials have suggested an increased risk of respiratory failure, new shock episodes, recurrent myocardial infarction, arrhythmia, and other cardiovascular adverse events as potential mechanisms of harm with liberal O_2 therapy.[32] An upper level of 96% avoids the potential risks of hyperoxia and allows for patient improvement to be recognized earlier during monitoring so that O_2 can be down-titrated.[6]

CHFS Heart Failure Order Set

Administration/Organizational Considerations

- **Advance Care Planning Discussions**: Advance Care Planning discussions may be undertaken by different health care professionals, e.g. MD/NP, nurse, SW. Localization of this content will involve alignment with the facility's resources, workflows, and policy/procedure. Advance Care Planning discussions may trigger a process leading to the creation of a separate legal Advance Directive document.[33] If the patient has an Advance Directive, it should be incorporated into the patient's Advance Care Plan in alignment with the facility's policy/procedure, and applicable law.
- **Code Status**: Facilities should localize code status orders in alignment with policy/procedure and applicable law.
- **Malnutrition Screen:** Facilities should have a process in place to screen all patients for malnutrition with a simple assessment tool such as the Canadian Nutrition Screening Tool.
- **Risk Scores:** HF prognostic and risk scores can be easily accessed and calculated, and when possible should be incorporated into practice.[1] Organizations are to determine what risk scores are appropriate in their setting and implement them into practice as they see fit.

References

Key references[1-33]

All medication guidance has been reviewed using Lexicomp and Compendium of Pharmaceuticals and Specialties (eCPS).

1. Ezekowitz JA, O'Meara E, McDonald MA, et al. 2017 Comprehensive update of the Canadian Cardiovascular Society guidelines for the management of heart failure. Can J Cardiol. 2017;33(11):1342-1433. doi:10.1016/j.cjca.2017.08.022.
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