Why an update?

A reflection of the constantly evolving practice of nursing, this 2012 update of the 2nd edition (2010) and the 2011 update of the *Preparation Guide for the Professional Examination of the Ordre des infirmières et infirmiers du Québec* mainly concerns a situation in the written part, more specifically the last part of situation 10 in chapter 3, which deals with cardiopulmonary resuscitation. This part of the situation was revised in order to take into account the Canadian Heart Foundation’s new standards.

Similarly, pages where changes have been made have also been enclosed. Please consult them in order to update your document.
Successful completion of the professional examination is the final step in obtaining a permit to practice nursing in Quebec for all graduates from a training program recognized as giving access to the permit, whether the training was given in colleges or universities in Quebec or elsewhere.

For eligible Quebec graduates, sitting the exam may be a challenge. However, preparing for the exam is part of a continuum and is related to their training. Graduates from outside Quebec face a double challenge: preparing for an exam that assesses practice standards in an unfamiliar practice context and sitting an exam with an unfamiliar format. This is compounded, for some, by language difficulties.

Since 2003, the Ordre des infirmières et des infirmiers du Québec (OIIQ) has published a *Preparation Guide for the Professional Examination* to help graduates from Quebec and elsewhere to successfully complete this final step. A highly versatile tool, the Guide is more than a mere collection of questions and situations. Candidates can use the Guide to familiarize themselves with the format, content, procedure and organizational aspects of the professional examination. Users will also learn effective strategies, review some of the knowledge that will be assessed in the exam and improve their knowledge by studying the rationales and references provided. Furthermore, this document, the first edition of which was produced with the financial support of the Ministère des Relations avec les citoyens et de l'Immigration, provides an overview of nursing practice in Quebec that will be particularly useful for graduates from outside Quebec.

This new edition of the *Preparation Guide for the Professional examination* takes into account recent amendments to the *Nurses Act* following the coming into effect of the *Act to amend the Professional Code and other legislative provisions as regards the health sector*. It takes into account the documentation standard for the therapeutic nursing plan, the application of which has been mandatory since April 1, 2009. It comprises four chapters.

Chapter 1 provides general information about the format, content and procedure of the professional examination as well as information of a practical nature.

Chapter 2 suggests different strategies for preparing for the professional examination.

Chapter 3 presents 97 open-ended, short-answer questions. In addition to the questions, users will find the answers, rationale and additional information, a list of the references used along with suggestions for further reading.

Chapter 4 presents 14 simulated OSCE (objective structured clinical examination) clinical situations in the form of exercises that will help the candidate understand the thinking process she should follow in order to intervene appropriately. Each situation includes two exercises followed by a rationale and additional information on the topic covered. Lastly, suggestions for further reading are provided for candidates who would like to learn more about the topic.

At the beginning of chapters 3 and 4, instructions are given as to how to work through the exercises. These chapters will allow candidates to test their ability to apply their knowledge and skills in the various clinical situations presented.
This chapter provides general information about the format and content of the OIIQ’s professional examination along with information of a practical nature.\(^1\)

The OIIQ’s professional examination is the entry-to-practice exam for nursing in Quebec. It assesses aptitude to practice, which results from the integration of knowledge, attitudes and skills and the ability to apply them in order to resolve nursing problems in an optimal and appropriate manner (OIIQ, 1999). It is a prescribed mechanism that allows the OIIQ to fulfil its public protection mandate.

The exam comprises two indissociable and complementary parts: a written part and a practical part. The clinical situations are allocated to the written or the practical part depending on the nature of the material being assessed. For example, if the clinical reasoning behind an intervention in a given situation is being assessed, the situation will be included in the written part, whereas if a teaching activity is being assessed, the situation will be included in the practical part. In the following pages, the same example (Mr. Harris) is used in each part to illustrate the difference between the two parts of the exam.

**Important:**

Since the exam assesses the candidate’s aptitude to practice nursing as a nurse, the candidate must respond and intervene accordingly.

In the exam, the therapeutic nursing plan (TNP) must be documented in accordance with the standard. In the Guide, since there is often more than one possible answer, the date, the time and the initials will be written for each entry (finding or directive).

In the exam, the candidate will not be using the sections of the TNP entitled “Professional/department involved” and “Program/dept.” These sections will be shaded in both the Guide and the exam to indicate that no answer is expected.

**The written part**

The written part consists of open-ended, short-answer questions. The questions are designed to evaluate the exam candidate’s ability to carry out a clinical assessment, intervene, ensure continuity of care, including determining and adjusting the therapeutic nursing plan, and give the rationale for her clinical decisions.

The written part of the exam is comprised of 100 open-ended, short-answer questions divided into two separate booklets. A period of a maximum of two hours and five minutes (2 h 5 min.), or roughly 2 min. 30 s per question, is allocated to answer the 50 questions in each booklet. It should be noted that in addition to the 50 questions, the first booklet may include up to five experimental

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\(^1\) The examination is prepared by a team of nurses with the support of the Université Laval.
Clinical situations (contextual component)

Each clinical situation relates to a person (client, family and friends) with his personal characteristics (age, lifestyle, stage of life, etc.) and environment (physical, sociocultural, etc.), who is experiencing a situation that may be related to a pathology, a diagnostic test, a medical treatment, a surgical procedure or that may involve risks (falls, pressure sores, suicide, etc.). These elements determine the context in which the nurse must intervene.

The selection of clinical situations assessed in the professional examination is influenced by:

- the various fields of practice, including general care in medicine and surgery, geriatrics, perinatal care, pediatrics and mental health;
- the major health problems encountered in Quebec (e.g., cardiovascular disease, diabetes, cancer, cognitive deficits, mental health problems, respiratory illnesses, etc.);
- the most common diagnostic tests and medical or surgical treatments (e.g., angiography, amputation, parenteral nutrition, barium enema, etc.);
- situations that involve risks (e.g., suicide, nosocomial infections, pressure sores, violence, neglect, etc.);
- public health issues (e.g., vaccine-preventable diseases, breast cancer screening, alcoholism, sexually transmitted and blood-borne infections, HIV/AIDS, etc.).

The Guide therefore presents situations related to the major health problems encountered on nursing units, for example, diabetes, ischemic heart disease and chronic obstructive pulmonary disease (COPD).

Professional dimensions (professional component)

In each clinical situation, the nurse must perform a number of activities, some of which are fundamental in terms of aptitude to practice. The different nursing activities assessed in the exam relate to nine professional dimensions grouped into three categories. These dimensions define the content of the activities assessed in the exam: what the candidate must do to assess the situation, intervene and ensure continuity of care. Depending on the situation, the questions in the written part or the expected behaviours in the practical part relate to one or more professional dimensions. A description of each dimension is provided in the following table.
The written part of the exam and the progress notes in the practical part, including any therapeutic nursing plan, are corrected by a team of correctors supervised by the team of nurses responsible for preparing the exam.

The observations noted in the Observation checklist are scanned for each station. Compiled using the weights pre-determined for each element, as illustrated previously, they determine the candidate’s score for the practical part of the exam.

**Notification of results**

When the exam has been corrected, the results are compiled and mailed to all candidates at the same time. Candidates are sent a report card with a “pass” or “fail” rating for the exam. Candidates who fail the exam are also sent a report indicating their areas of weakness. A few weeks later, they also receive collective feedback on the main difficulties encountered in the exam by candidates across the province (see table, p. 30). These difficulties were taken into consideration when selecting the situations to be included in the Guide.

Individual results are sent only to candidates.

**Application for review**

A candidate who fails the exam may ask for her result to be reviewed. The candidate must contact the OIIQ’s Student Services, which will provide the information required to obtain a review; an administrative fee applies. The request must be submitted within 30 days of the date the results were mailed. The candidate’s answers will be checked to determine whether they correspond to the expected answers in the written part and to those pertaining to the elements assessed in the progress notes or therapeutic nursing plans in the practical part. The Université Laval then does a manual and electronic recount of the points awarded in both parts of the exam. The candidate may not be present during the review of her result.

**Exam retake**

Every exam candidate is allowed three attempts, that is, if she fails the first time, she may sit the exam again twice. The candidate must take both the written part and the practical part of the exam in a single exam session, since the content of each exam and its allocation according to the clinical fields, professional dimensions and fields of knowledge assessed vary from one session to the next.
Context

At 9:30, Noémie Lessard, age 2½, was transferred from the emergency room to your unit following an episode of bronchospasm. This is the third time she has been admitted for the same type of problem. On admission, Noémie presents with moderate xiphoid, substernal and lower intercostal retractions and an occasional dry cough. Her vital signs are: P 96/min., reg., R 46/min., reg., T° (rectal) 37.7°C. When you auscultate the lungs, you hear wheezing in both pulmonary areas. Her oxygen saturation (SpO2) is 92% at room air. Her mother says that Noémie's sleep has been disturbed and that she has been more tired than usual over the past few days.

Question 1

What other signs must you check to complete your assessment of Noémie's respiratory condition? Identify four (4).

Noémie weighs 12 kg. The doctor has prescribed:

• prednisolone (Pediapred) 12 mg qd (corticosteroid)
• salbutamol (Ventolin HFA) 2 mg in 3 ml of normal saline serum qid by nebulization
• fluticasone (Flovent HFA) 125 mcg 2 puffs bid with a spacer and mask
• O2 via nasal prongs at 1.5 L/min.

Before she was hospitalized, Noémie wasn't taking any medication on a regular basis at home. Treatment was started as soon as the child arrived in the emergency room. At 22:00, Noémie's mother says to you: “My daughter’s breathing seems to have improved, but she is very restless and won’t go to sleep. She’s not usually like this.”

Question 2

Other than anxiety, what could explain the change in Noémie’s behaviour?
Situation 3

Noémie will be discharged tomorrow.
Her discharge prescription is as follows:
• salbutamol (Ventolin HFA) 100 mcg 2 puffs q 4-6 h PRN
• fluticasone (Flovent HFA) 125 mcg 2 puffs bid for 14 days, then discontinue completely
• prednisolone (Pediapred) 12 mg qd in the morning for 4 days

Question 3

a) Which medication (inhaler) must the mother administer first when both medications (inhalers) have to be given?
b) Give the rationale for your answer, specifying the desired effect of this medication.

a) First medication:

b) Rationale:

Question 4

How long must Noémie’s mother wait:

a) Between two puffs of the same medication?
b) Between administering the salbutamol (Ventolin HFA) and the fluticasone (Flovent HFA)?

a) Between two puffs:

b) Between the two medications:
Mr. Beaupré is receiving an NaCl 0.45% infusion with dextrose 5%, 1000 ml + 20 mEq KCl at 30 ml/h. At 9:00, you must administer a 1st dose of ceftriaxone 750 mg IV in 30 minutes. You have a 1000 mg vial that you must dilute with 9.8 ml of sterile water without a bacteriostatic agent. Once the solution has been diluted, the vial contains a total volume of 10 ml. Before administering the medication, you must also dilute it with 100 ml of infusion fluid. The drip factor of the tubing is 15 drops per millilitre.

**Question 4**

a) What volume will you draw from the vial to obtain the prescribed dose?

b) What flow rate (drops per minute) will you set the infusion at to respect the administration time?

**a) Volume:**

**b) Flow rate:**

Before starting the infusion, you check it against the medical prescription, medication, dose, route and time of administration, as well as against the medication record. You must also check the client’s identity.

**Question 5**

Identify two (2) additional checks you must carry out before you start to administer the medication.
Context
You are a nurse in a seniors’ residence. One week ago, Mrs. Tremblay, age 70, was admitted for locomotor problems and loss of autonomy.

You obtain the following information from the file:
Medical history:
• heart failure for approximately ten years
• atrial fibrillation
• beta-blocker intolerance
• vital signs on admission: BP 112/80, P 58/min., reg., R 16/min., reg., normal depth

Mrs. Tremblay’s usual medication:
• digoxin (Toloxin) 0.125 mg 1 tab qd at suppertime
• ramipril (Altace) 5 mg bid 1 tab (8:00; 22:00)
• furosemide (Lasix) 40 mg 1 tab qd (8:00)
• pravastatin (Pravachol) 40 mg 1 tab hs
• ASA (Aspirin) 81 mg 1 tab qd (8:00)

The above medication was prescribed again when Mrs. Tremblay arrived at the residence.

It is 17:00 and you are about to give Mrs. Tremblay the Toloxin. Her vital signs are: BP 110/72, P 60/min., reg., R 18/min., reg., normal depth.

Question 1
a) Will you give Mrs. Tremblay the Toloxin? Yes No
b) Identify one [1] factor that you will base your decision on.

Two weeks after her admission to the residence, Mrs. Tremblay says that she has felt a little more breathless than usual for the last few days. She has difficulty accomplishing certain activities of daily living (ADL). You take her vital signs immediately: BP 95/55, P 112/min., reg., R 22/min., reg., normal depth, SpO₂ 95%.

Question 2
During your clinical examination of Mrs. Tremblay, identify two [2] other signs that would indicate a deterioration of her heart condition.
Situation 10

Given Mrs. Tremblay's signs, the dose of furosemide (Lasix) was increased to 80 mg qd 2 days ago. This morning, Mrs. Tremblay presents with fatigue, anorexia, dizziness, muscle weakness and altered colour perception.

You read her laboratory results:
- Na: 135 mmol/L (normal: 135–145 mmol/L)
- K: 3.4 mmol/L (normal: 3.5–5.0 mmol/L)
- Cl: 99 mmol/L (normal: 100–106 mmol/L)
- Digoxinemia: 2.6 mmol/L (normal: 1.0–2.6 mmol/L)

**Question 3**

a) Will you give her the digoxin (Toloxin)?
   - Yes ☐
   - No ☐

b) Explain your decision.

One week later, Mrs. Tremblay has recovered well. She is playing cards in the community room. Suddenly, she puts a hand to her chest and collapses in her chair. She doesn’t respond to her name or to pain. You see that she is unconscious and is not breathing. You place her on her back on a hard surface, call 911 and ask for an automated external defibrillator.

**Question 4**

Placing them in chronological order, identify three (3) other priority interventions you must carry out, given the absence of a pulse, while awaiting emergency services.
Context

Mrs. Carrier, age 70, has been hospitalized for a secondary bronchial infection. It is her second hospitalization in the last two months. She is recovering well. She has moderate to severe chronic obstructive pulmonary disease (COPD). At the report, you are told that she was given her 7:00 medication and that she slept well.

The medical orders in the file are as follows:

- tiotropium (Spiriva), 18 mcg/cap, 1 cap by inhaler qd (7:00)
- fluticasone and salmeterol (Advair Diskus) 250/50 mcg, 1 inhalation bid (7:00; 22:00)
- salbutamol (Ventolin HFA) 100 mcg 2 puffs q 4 h (PRN)
- prednisolone (Pediapred) 50 mg PO qd (8:00)
- moxifloxacin (Avelox) 400 mg 1 tab PO qd (8:00)
- O₂ 1 to 3 L/min. via nasal prongs to maintain SpO₂ ≥ 92%
- capillary blood gases qd at 7:30

It is 8:10, you go into Mrs. Carrier’s room: she has just come out of the bathroom. She is sitting on a chair, leaning forward. Her vital signs are: BP 158/74, P 82/min., reg., R 32/min., reg. and shallow, SpO₂ 88%. She is receiving O₂ via nasal prongs at 2 L/min. You stay at her bedside to reassure her.

Question 1

Identify two (2) other priority interventions you must carry out immediately to relieve Mrs. Carrier’s dyspnea.

Question 2

What additional signs and symptoms must you verify to confirm the deterioration in Mrs. Carrier’s respiratory condition? Identify four (4).
Context

Mrs. Sanschagrin, age 45, has been hospitalized for right ankle cellulitis. She was given her first dose of antibiotics intravenously in the emergency room this morning.

During the initial interview, you obtain the following data:

- followed for bipolar disorder
- treated with lithium: she has a blood test for the medication every month

Medication at home:

- lithium carbonate (Lithane) 300 mg PO tid (mood stabilizer)
- lorazepam (Ativan) 1 mg hs PO PRN if insomnia (anxiolytic)

For the past week, the client says she has had the following signs and symptoms: diarrhea (3 to 4 stools per day), nausea and vomiting, speech difficulties, muscle weakness and blurred vision.

Question 1

What additional priority item of information must you obtain to complete the initial assessment of Mrs. Sanschagrin?

The following day, Mrs. Sanschagrin is agitated and euphoric. She is listening to the radio and the television in the common room at the same time. She sings, dances and makes jokes with a sexual connotation. She is bothering the other clients and visitors.

Question 2

Given Mrs. Sanschagrin’s behaviour, what will your intervention be?
Situation 3

Noémie weighs 12 kg. The doctor has prescribed:
- prednisolone (Pediapred) 12 mg qd (corticosteroid)
- salbutamol (Ventolin HFA) 2 mg in 3 ml of normal saline qid by nebulization
- fluticasone (Flovent HFA) 125 mcg 2 puffs bid with a spacer and mask
- O$_2$ via nasal prongs at 1.5 L/min.

Before she was hospitalized, Noémie wasn’t taking any medication on a regular basis at home. Treatment was started as soon as the child arrived in the emergency room. At 22:00, Noémie’s mother says to you: “My daughter’s breathing seems to have improved, but she is very restless and won’t go to sleep. She’s not usually like this.”

Question 2

Other than anxiety, what could explain the change in Noémie’s behaviour?

Expected answer

- It is a side effect of the medication: salbutamol (Ventolin HFA).

Rationale and additional information

Salbutamol (Ventolin HFA) often causes restlessness in children. In the present situation, Noémie is taking this medication for times a day. This frequency increases the risk of adverse effects. In addition to restlessness, the child may experience tachycardia. It is important to explain to parents why their child’s behaviour has changed and to reassure them by telling them it is temporary.

It should be noted that in pediatrics, the dose prescribed is based on the child’s weight. Weight is therefore an essential item of data collection during the initial assessment of the child.
Situation 3

Noémie will be discharged tomorrow.

Her discharge prescription is as follows:

- salbutamol (Ventolin HFA) 100 mcg 2 puffs q 4-6 h PRN
- fluticasone (Flovent HFA) 125 mcg 2 puffs bid for 14 days, then discontinue completely
- prednisolone (Pediapred) 12 mg qd in the morning for 4 days

Question 3

a) Which medication (inhaler) must the mother administer first when both medications (inhalers) have to be given?

b) Give the rationale for your answer, specifying the desired effect of this medication.

Expected answers

a) First medication: salbutamol (Ventolin HFA).

b) Rationale: salbutamol (Ventolin HFA) opens the airways, allowing the anti-inflammatory, fluticasone (Flovent HFA), to penetrate more deeply and be more effective.

Rationale and additional information

Salbutamol (Ventolin HFA) is a fast-acting bronchodilator. It opens the airways, allowing the fluticasone (Flovent HFA) to penetrate more deeply. Once Noémie’s asthma symptoms (cough, retractions, wheezing and dyspnea) are under control, fluticasone (Flovent HFA) can be administered on its own, since the salbutamol (Ventolin HFA) is prescribed as needed. Fluticasone (Flovent HFA) will have little effect during the initial treatment of the asthma attack, for it works in a slow and gradual manner. This inhaled corticosteroid takes around 24 to 48 hours to take effect. Unlike salbutamol (Ventolin HFA), fluticasone (Flovent HFA) is used in the longer term, as maintenance anti-inflammatory therapy in asthma management, to prevent recurrent bronchoconstriction.

In the acute phase of an asthma attack, an oral corticosteroid, prednisolone (Pediapred), is generally administered for a short period of time, to quickly reduce the bronchial inflammation. Prednisolone (Pediapred) can cause adverse effects in children, including mood changes, which are manifested by restlessness, aggression or euphoria. These manifestations generally develop with prolonged treatment or after taking high doses. Oral prednisolone (Pediapred) should be administered as soon as it is prescribed, then every morning, for blood cortisol levels are at their highest at this time.
Situation 3

Question 4

How long must Noémie's mother wait:

a) Between two puffs of the same medication?
b) Between administering the salbutamol (Ventolin HFA) and the fluticasone (Flovent HFA)?

Expected answers

a) Between two puffs: 1 minute.
b) Between the two medications: 3 to 5 minutes.

Rationale and additional information

Respecting the time interval between the two puffs of the same medication and between the two medications will optimize their effect and ensure better asthma management.

In the literature, an interval of 3 to 5 minutes is usually recommended between salbutamol (Ventolin HFA) and fluticasone (Flovent HFA) administration. However, to improve compliance with treatment, the interval between the two medications may be reduced to 1 minute, since the main effect of salbutamol (Ventolin HFA) occurs within one minute of administration.

Noémie’s mother says to you: “My daughter is much better. But is it very important that I give her the Flovent for as long as prescribed?”

Question 5

What information will you give Noémie’s mother to help her understand why it is important to continue the treatment as prescribed.

Expected answers

- The mechanism of action of inhaled corticosteroids is slow and gradual or
- Even if there are no symptoms, there is still inflammation in the respiratory tract. It is therefore important to respect the recommended length of treatment or
- Corticosteroids are a treatment of choice for reducing symptoms of asthma and for asthma control, as well as for improving lung function, provided they are administered as prescribed or
- Corticosteroid therapy must be completed to reduce any residual inflammation and thereby prevent further upper respiratory tract infections (URTIs, e.g., cold) from causing a more severe episode of bronchoconstriction.
Rationale and additional information

Corticosteroids reduce inflammation in the respiratory tract. Inhaled corticosteroids, including fluticasone (Flovent HFA), are used as a curative treatment for acute asthma and in the prophylaxis of subsequent attacks in chronic asthma. For example, this medication is prescribed on a regular basis for asthmatic children who attend daycare, since this environment is highly conducive to contracting upper respiratory tract infections (URTIs). During its first year in daycare, a child may contract up to one URTI per month. Most asthma attacks in young children are triggered by URTIs.

Inhaled corticosteroids must be administered regularly for the entire duration of the prescribed treatment since their beneficial effects become apparent in the long term, that is, a few days, a few weeks or even a few months after treatment is started. Inhaled corticosteroids can usually be discontinued without tapering at the end of the prescribed treatment. Tapering is not necessary since the systemic effects are minimal. However, a gradual reduction of the dose of fluticasone (Flovent HFA) (e.g., 1 puff bid followed by 1 puff qd for a few days or a few weeks) may sometimes be indicated, not on account of the risks of developing signs of withdrawal, but to assess its effects on the child’s respiratory condition.

Unlike inhaled corticosteroids, oral prednisolone (Pediapred) is rarely used for more than 5 days in an acute asthma attack. It can therefore also be discontinued without tapering.

In chronic asthma, when high doses of corticosteroids are necessary over an extended period, tapering may be essential to allow the adrenal glands to gradually start secreting plasma cortisol again.
It is also important to teach the client not to interrupt treatment, for exogenous corticosteroid (methylprednisolone or Solu-Medrol) administration suppresses endogenous ACTH production and thus the secretion of endogenous cortisol by the adrenal glands. Corticosteroids must be discontinued gradually and in decreasing doses to allow the body to progressively start secreting endogenous cortisol naturally again. Discontinuing this medication abruptly can lead to adrenal failure.

A few days later, Mr. Landry is still finding it hard to participate in his ostomy care. He says that he finds the smell disgusting.

**Question 4**

Give Mr. Landry three (3) recommendations to prevent offensive odours.

**Expected answers**

- Change the appliance every 5 to 7 days or as needed if it leaks or if it smells.
- Empty the bag when it is one-third full.
- Use a bag with a filter.
- Avoid foods that are likely to produce a foul smell or gas as they decompose.
- Add a product to the bag that will reduce odours (e.g., M9).

**Rationale and additional information**

The ostomy appliance must be leakproof otherwise it may give off a foul odour. A poorly adjusted or overfull bag may cause the appliance or bag to come off, releasing odours. It is therefore recommended that the ostomy bag be emptied when it is one-third full or if it contains gas. Using a bag with a filter can also reduce odours.

The appliance is usually kept in place for 5 to 7 days. However, it may come off if the client sweats a lot. In this case, the bag must be changed more often. It should also be changed immediately if it starts to leak.
**Situation 5**

Certain foods such as spinach, parsley, buttermilk, yogurt and cranberry juice will help combat odours, while other foods, especially those from the cabbage and onion families, fish, eggs, garlic, asparagus, broccoli, very spicy dishes, legumes, leeks, corn, carbonated beverages, beer and sparkling wine, increase odours and flatulence. This information is very useful for a client with an ostomy. To reduce odours, the doctor may also prescribe bismuth subcarbonate tablets, to be taken 3 or 4 times daily, or certain medications that improve stool consistency, such as diphenoxylate (Lomotil). Products (such as M9) can also be used to reduce odours. It is also preferable to use only products recommended by the manufacturer to ensure the properties of the bag are maintained.

Despite your many attempts to convince Mr. Landry, he still refuses to participate in his ostomy care and says that he feels overwhelmed by events.

**Question 5**

Given this finding, enter one (1) nursing directive in the TNP to promote Mr. Landry’s self-care.

**Expected answer**

<table>
<thead>
<tr>
<th>ASSESSMENT FINDINGS</th>
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<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>2008-10-20</td>
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<table>
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<tr>
<th>CLINICAL FOLLOW-UP</th>
</tr>
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<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>2008-10-20</td>
</tr>
</tbody>
</table>

Signature of nurse: [Your name]  Initials: [Your initials]
Situation 7

Question 3

Give one (1) reason to Mr. Beaupré to convince him to get up.

Expected answer

- Mobilization will help expel the intestinal gas and relieve his discomfort.

Rationale and additional information

In addition to multiple benefits for the various body systems, early mobilization of the client in the postoperative period helps tone the gastrointestinal tract, promoting the elimination of gas and preventing abdominal distention.

Flatulence frequently causes abdominal heaviness, pain and cramping. Gas from the gastrointestinal tract is usually expelled via the mouth (eructation) or anus (flatus). Severe flatulence may cause abdominal distention and acute pain. The insertion of a rectal tube is generally an effective method of relieving pain associated with this problem. However, with most intestinal surgeries such as hemicolectomy, the insertion of a rectal tube is not recommended since it may cause lesions at the surgical site. In the event of pain related to flatulence, the administration of analgesics is indicated.

Mr. Beaupré is receiving an NaCl 0.45% infusion with dextrose 5%, 1000 ml + 20 mEq KCl at 30 ml/h. At 9:00, you must administer a 1st dose of ceftriaxone 750 mg IV in 30 minutes. You have a 1000 mg vial that you must dilute with 9.8 ml of sterile water without a bacteriostatic agent. Once the solution has been diluted, the vial contains a total volume of 10 ml. Before administering the medication, you must also dilute it with 100 ml of infusion fluid. The drip factor of the tubing is 15 drops per millilitre.

Question 4

a) What volume will you draw from the vial to obtain the prescribed dose?

b) What flow rate (drops per minute) will you set the infusion at to respect the administration time?

Expected answers

a) Volume: 7.5 ml.

b) Flow rate: 54 drops/minute.
Rationale and additional information

a) The formula to calculate the volume to be drawn is as follows:

\[
\frac{\text{Dose prescribed (mg)}}{\text{Dose available (mg)}} \times \text{quantity available (ml)} = \text{quantity to be administered (ml)}
\]

\[
\frac{750 \text{ mg} \times 10 \text{ ml}}{1000 \text{ mg}} = 7.5 \text{ ml}
\]

b) The formula to calculate the flow rate for the infusion is as follows:

\[
\text{Flow rate (drops/min.)} = \frac{\text{Volume to be infused (ml)}}{\text{Infusion time (min.)}} \times \frac{\text{Drip factor (drops/ml)}}{}
\]

\[
\text{Flow rate} = \frac{108 \text{ ml} \times 15 \text{ drops}}{30 \text{ min.}} = \text{ml}
\]

Every institution has its own rules and equipment for administering medication: Buretrol, minibags, microinfusers, etc. Administration of the medication must be adapted to the available equipment.

Before starting the infusion, you check it against the medical prescription, medication, dose, route and time of administration, as well as against the medication record. You must also check the client’s identity.

Question 5

Identify two (2) additional checks you must carry out before you start to administer the medication.

Expected answers

- Check for allergy to ceftriaxone.
- Research the medication or check if the medication is compatible with the infusion or check if the medication is compatible with the KCl.
- Check the needle insertion site (e.g., signs of infiltration or phlebitis).
References

Canadian Pharmacists Association (2012). *Compendium of pharmaceuticals and specialties*, Ottawa, CPhA.


Context
You are a nurse in a seniors’ residence. One week ago, Mrs. Tremblay, age 70, was admitted for locomotor problems and loss of autonomy.

You obtain the following information from the file:
Medical history:
• heart failure for approximately ten years
• atrial fibrillation
• beta-blocker intolerance
• vital signs on admission: BP 112/80, P 58/min., reg., R 16/min., reg., normal depth

Mrs. Tremblay’s usual medication:
• digoxin (Toloxin) 0.125 mg 1 tab qd at suppertime
• ramipril (Altace) 5 mg bid 1 tab (8:00; 22:00)
• furosemide (Lasix) 40 mg 1 tab qd (8:00)
• pravastatin (Pravachol) 40 mg 1 tab hs
• ASA (Aspirin) 81 mg 1 tab qd (8:00)

The above medication was prescribed again when Mrs. Tremblay arrived at the residence.

It is 17:00 and you are about to give Mrs. Tremblay the Toloxin. Her vital signs are: BP 110/72, P 60/min., reg., R 18/min., reg., normal depth.

Question 1
a) Will you give Mrs. Tremblay the Toloxin?  ○ Yes   ○ No
b) Identify one (1) factor that you will base your decision on.

Expected answers
a) Yes.
b) The vital signs are stable; they are the same as those taken when the client was admitted or a heart rate of 60/min. is acceptable if the client’s clinical condition is stable.

Rationale and additional information
Digoxin (Toloxin) is prescribed for the treatment of heart failure and certain heart rhythm disorders. It is used for 3 specific purposes: to strengthen the heart, to regulate heart rate and to slow heart rate. Digoxin (Toloxin) increases the strength of the heart’s contractions, causing it to pump more efficiently, thereby relieving the signs and symptoms of heart failure, including edema of the ankles, feet
and hands, shortness of breath and fatigue. It also helps control heart rate in cases of atrial fibrillation or to restore sinus rhythm (normal rhythm).

The vital signs must be taken before administering the digoxin (Toloxin) because this medication slows heart rate. This medication may be given to Mrs. Tremblay, as her heart rate is 60 beats a minute and her vital signs are stable.

If the heart rate is between 50 and 59 beats a minute, the decision to administer digoxin is made after assessing the client’s clinical condition and a medical prescription is required. In general, the medication will be administered even if the heart rate is 50 or more beats a minute provided the client is used to taking this medication and her vital signs are stable.

It may be difficult to detect the pulse of heart failure clients when differential pressure (difference between systolic and diastolic pressure) is low. In this case, the heart rate should be assessed manually or at the apex, for one minute. The use of an electronic device that might make measurement errors should be avoided.

Two weeks after her admission to the residence, Mrs. Tremblay says that she has been feeling a little more breathless than usual for the last few days. She has difficulty accomplishing certain activities of daily living (ADL). You take her vital signs immediately: BP 95/55, P 112/min., reg., R 22/min., reg., normal depth, SpO2 95%.

Question 2
During your clinical examination of Mrs. Tremblay, identify two (2) other signs that would indicate a deterioration of her heart condition.

Expected answers
- Edema of the lower limbs (Inspection).
- Distended jugular veins (Inspection).
- Presence of crepitus at the lung bases (Auscultation).
- Weight gain of more than 1 kg in 24 hours or 2 to 2.5 kg in the past week.
- Slow capillary refill: > 2 or 3 s.
- Hepatomegaly.
- Pink or frothy expectoration.
- Orthopnea.
- Psychomotor agitation.
Rationale and additional information

Mrs. Tremblay's heart condition has deteriorated to such an extent that she has difficulty accomplishing her ADL. A clinical examination is carried out to check for objective signs of heart failure. Objective signs are observable manifestations such as:

- A change in vital signs: tachycardia and hypotension.
- Signs of venous congestion:
  - jugular distension;
  - hepatojugular reflux;
  - tender hepatomegaly, lower margin;
  - edema in the lower extremities;
  - weight gain of more than 1 kg in 24 hours or 2 to 2.5 kg in the past week.
- Signs of pulmonary congestion: crepitus at the base of both lungs or more or less extensive crepitus over the pulmonary fields, which is indicative of pulmonary edema or fluid in the alveoli. This congestion causes the client to develop a cough with frothy secretions, which may be pink-tinged if capillaries rupture.
- Slow capillary refill (> 2 or 3 s) is a sign of low cardiac output which leads to compensatory peripheral hypoperfusion manifested by peripheral vasoconstriction (change in vascular signs: cold, pale skin).

Given Mrs. Tremblay's signs, the dose of furosemide (Lasix) was increased to 80 mg qd 2 days ago. This morning, Mrs. Tremblay presents with fatigue, anorexia, dizziness, muscle weakness and altered colour perception.

You read her laboratory results:
Na: 135 mmol/L (normal: 135–145 mmol/L)
K: 3.4 mmol/L (normal: 3.5–5.0 mmol/L)
Cl: 99 mmol/L (normal: 100–106 mmol/L)
Digoxinemia: 2.6 mmol/L (normal: 1.0–2.6 mmol/L)

Question 3

a) Will you give her the digoxin (Toloxin)?  
   ○ Yes  ○ No

b) Explain your decision.

Expected answers

a) No.
b) Mrs. Tremblay is showing clinical signs of digitalis toxicity.
Rationale and additional information

Digoxin (Toloxin) must be used with particular care owing to its potential toxicity. Mrs. Tremblay is showing signs and symptoms of digitalis toxicity, an adverse effect of digoxin therapy. The client’s hypokalemia increases the risk of digoxin (Toloxin) toxicity. Digoxin (Toloxin) toxicity causes various non-specific signs and symptoms. The most common are nausea, vomiting, fatigue, muscle weakness, altered colour perception, anorexia, dizziness and psychological disorders. Digitalis toxicity is often associated with serum concentrations greater than 2 mmol/L. Despite therapeutic serum levels, digitalis toxicity may occur when myocardial sensitivity is heightened by electrolyte disorders (hypokalemia, hypomagnesemia, hypercalcemia and acid-base imbalance), hypothyroidism, advanced age, advanced heart disease, myocardial ischemia and hypoxemia. In Mrs. Tremblay’s situation, the hypokalemia induced by the higher dose of furosemide has rendered the myocardium sensitive to digoxin (Toloxin).

Mrs. Tremblay’s relatively benign signs and symptoms of digitalis toxicity may be a precursor to potentially fatal arrhythmias. Once digitalis toxicity has been diagnosed, the treatment indicated will depend on the degree of risk to which the client is exposed. The treatment could, for example, consist in temporarily discontinuing the digoxin, electrolyte supplements, a cardiac stimulator, an antidote, etc.

One week later, Mrs. Tremblay has recovered well. She is playing cards in the community room. Suddenly, she puts a hand to her chest and collapses in her chair. She doesn’t respond to her name or to pain. You see that she is unconscious and is not breathing. You place her on her back on a hard surface, call 911 and ask for an automated external defibrillator.

Question 4

Placing them in chronological order, identify three (3) other priority interventions you must carry out, given the absence of a pulse, while awaiting emergency services.

Expected answers

• Start chest compressions.
• Open the airway.
• Start rescue breathing.
How to answer the questions in the written part

Situation 10

Rationale and additional information

A person may suddenly lose consciousness due to a heart problem (e.g., ventricular fibrillation), a cerebral problem (stroke) or vagal shock. In all three cases, the vital functions may be impaired. The following is a recap of the initial steps of Basic Life Support (BLS):

- Assess the victim's level of consciousness and check if he is breathing normally or abnormally (agonal breathing). The rescuer takes at least 5 seconds to check breathing, but no more than 10 seconds. In the situation presented, the client's level of consciousness and breathing have already been assessed.

- Activate the emergency response system (911 or cardiopulmonary resuscitation team) and try to get an automated external defibrillator (AED). To complete the initial steps of BLS, the nurse calls for help. When she does so, she tells the rescuers that it is important to have an automated external defibrillator (AED) available, for this type of device is frequently not available in a private seniors home.

- Check the victim's carotid pulse. The rescuer takes at least 5 seconds to check the pulse, but no more than 10 seconds. If there is difficulty detecting a pulse, cardiopulmonary resuscitation (CPR) must be started. The acronym CAB is a mnemonic aid that can be used to recall the chronological order of the steps of resuscitation:
  - C: Chest compressions
  - A: Airway (open or clear)
  - B: Breathing

In 2010, the Guidelines for cardiopulmonary resuscitation and emergency cardiovascular care (AHA, 2010) were revised. Hence the acronym for the resuscitation sequence has been changed from ABC to CAB.

The letter “C” refers to the administration of chest compressions at a rate of at least 100 compressions per minute and a compression depth of at least 5 cm (in adults) at each compression. It is also important to allow full chest recoil after each compression to optimize blood flow.

The letter “A” refers to opening the airway using the head-tilt chin-lift manoeuvre. In an unconscious person, the tongue is the main cause of airway obstruction.

The letter “B” refers to breathing. The rescuer must deliver two breaths for 1 second each to produce visible chest rise. Hyperventilation should be avoided. The use of a bag-mask device is not recommended during single-rescuer CPR.

The CAB sequence starts with chest compressions at a ratio of 30 compressions to 2 ventilations (30:2) in adults. If the unconscious person has been intubated, ventilation is provided at a rate of 8 to 10 breaths per minute while chest compressions are continued without interruption.
Situation 10

If an AED is available, it should be used as rapidly as possible. It is estimated that survival rates in cases of ventricular fibrillation decrease significantly if defibrillation is not performed within the first 3 to 5 minutes of cardiopulmonary arrest. However, it is vital to minimize the interval (maximum 10 seconds) between the last chest compression and shock delivery to optimize the effectiveness of the manoeuvres.

The nurse is responsible for regularly updating her knowledge and skills to allow her to intervene effectively when cardiopulmonary resuscitation is required.

Further reading

• heart failure: functional class, signs and symptoms, medication;
• complications associated with digoxin use;
• complications associated with cerebral hypoxia;
• cardiopulmonary resuscitation (CPR) steps, Heart and Stroke Foundation of Canada.

References


Ministère de la Santé et des Services sociaux (2003). Programme provincial de formation en MPOC et en insuffisance cardiaque: module 10: physiopathologie, manifestations cliniques et évaluation de l’insuffisance cardiaque, Quebec City, MSSS.


Situation 13

Context

Mrs. Carrier, age 70, has been hospitalized for a secondary bronchial infection. It is her second hospitalization in the last two months. She is recovering well. She has moderate to severe chronic obstructive pulmonary disease (COPD). At the report, you are told that she was given her 7:00 medication and that she slept well.

The medical orders in the file are as follows:

- tiotropium (Spiriva), 18 mcg/cap, 1 cap by inhaler qd (7:00)
- fluticasone and salmeterol (Advair Diskus) 250/50 mcg, 1 inhalation bid (7:00; 22:00)
- salbutamol (Ventolin HFA) 100 mcg 2 puffs q 4 h (PRN)
- prednisolone (Pediapred) 50 mg PO qd (8:00)
- moxifloxacin (Avelox) 400 mg 1 tab PO qd (8:00)
- O₂ 1 to 3 L/min. via nasal prongs to maintain SpO₂ ≥ 92%
- capillary blood gases qd at 7:30

It is 8:10, you go into Mrs. Carrier’s room: she has just come out of the bathroom. She is sitting on a chair, leaning forward. Her vital signs are: BP 158/74, P 82/min., reg., R 32/min., reg. and shallow, SpO₂ 88%. She is receiving O₂ via nasal prongs at 2 L/min. You stay at her bedside to reassure her.

Question 1

Identify two (2) other priority interventions you must carry out immediately to relieve Mrs. Carrier’s dyspnea.

Expected answers

- Instruct her to use the pursed-lips breathing technique.
- Administer a short-acting bronchodilator (salbutamol or Ventolin HFA).
- Increase oxygen to 3 L/min.

Rationale and additional information

In the presence of dyspnea, the pursed-lips breathing technique is recommended. In a person with COPD, the bronchioles open on inhalation and collapse on exhalation. The air remains trapped in the alveoli and, in the long term, their elasticity is reduced. Breathing out through pursed lips prevents the bronchioles from collapsing. Exhalation is prolonged and the pressure in the airways increases, reducing the amount of air held in the lungs. This breathing technique is effective in ensuring better
oxygenation for the client. Other techniques, such as controlled coughing, exhaling in short breaths and diaphragmatic breathing, can be practiced in between attacks to improve the COPD client’s respiratory condition, but are not used during an attack.

Normally, hypercapnia (high blood CO₂ levels) stimulates the brain to increase respiratory ventilation to expel the excess CO₂. During an exacerbation of the disease (COPD), the person develops hypercapnia and breathing is stimulated by the decreased oxygen concentration. Administering too much oxygen reduces this stimulus, which can aggravate the hypercapnia, leading to coma and even death. Oxygen must therefore be administered with caution and in low concentrations to a person with COPD.

When dyspnea occurs, it is important that the person remain in a sitting position, for this allows better lung expansion and adequate ventilation. In bed, the Fowler’s (semi-upright sitting position, 45° to 60°) and high Fowler’s (upright sitting position, 60° to 90°) positions are recommended for the same reasons. In the present context, the client is already sitting. Therefore, the nurse does not have to suggest that she avoid exertion and physical activity, although this recommendation would have been relevant if she had been walking.

Administration of a short-acting bronchodilator, salbutamol (Ventolin HFA), may prove necessary if the pursed-lips breathing technique and sitting position are insufficient. However, tiotropium (Spiriva) or salmeterol (Advair) administration is not indicated, since these medications do not take effect immediately.

Question 2

What additional signs and symptoms must you verify to confirm the deterioration in Mrs. Carrier’s respiratory condition? Identify four (4).

Expected answers

• Use of accessory muscles of respiration to breathe.
• Presence of diaphoresis.
• Presence of peripheral cyanosis: lips and nails.
• Cold, pale limbs.
• Inability to speak in complete sentences.
• Altered mental status.
• Presence of abnormal breath sounds (e.g., stridor, wheezing, whistling, rhonchi, crackles, rales and crepitus) or unilateral absence of breath sounds.
Situation 14

Ms. Tanguay tells you that she had the same symptoms yesterday at the same time, in the middle of the afternoon, even though she ate well at lunchtime.

Question 3

Give one (1) explanation for Ms. Tanguay’s symptoms.

Expected answers

• Both types of insulin (Humulin N administered at 8:00 and Humalog administered at 12:15) peak in the mid-afternoon or
• The client did not have her snack at the time of peak action of both types of insulin or
• The client did physiotherapy exercises (which reduce circulating blood sugar) at the time of peak action of both types of insulin or
• The dose of insulin administered in the morning is too high given the energy expenditure during the physiotherapy session.

Rationale and additional information

The onset of action of the Humulin N insulin administered at 8:00 occurs between 9:00 and 10:00, or 1 to 2 hours after injection and lasts for up to 24 hours after it is administered. The peak action of the Humulin N insulin occurs between 12:00 and 20:00, or 4 to 12 hours after it is administered. The onset of action of the Humalog insulin administered at 12:15 occurs 15 to 30 minutes after it is administered, while its peak action occurs between 13:00 and 14:45, or 45 minutes to 2.5 hours after injection.

Furthermore, physical exercise (physiotherapy) increases energy expenditure at the time of peak action of the insulins, resulting in a hypoglycemic reaction.

In order to resolve the problem of hypoglycemia caused by physical exercise, the nurse should ask the client what type of foods she ate for lunch. Following a diet that contains more protein and starch as well as having a suitable snack before doing exercise are appropriate preventive measures. If, despite these changes, the problem persists, the nurse will have to discuss the possibility of adjusting the insulin dosage with the medical team.
Further reading

- distinction between type 1 and type 2 diabetes;
- signs of hypoglycemia and hyperglycemia;
- diagnostic tests: blood glucose and glycated (glycosylated) hemoglobin, glucose tolerance test, how to use a glucometer;
- therapeutic aspect of diabetes:
  - medications (mechanisms of action, duration of action and peak action of oral hypoglycemics and the different insulins);
  - diet (required meals and snacks, effects of soluble dietary fibre on diabetes and cholesterol, glycemic index of foods);
  - physical activity;
- adjusting insulin doses according to diet and physical activity;
- choice of injection sites according to activities and site rotation;
- complications associated with diabetes (retinopathy, neuropathy, vascular insufficiency, kidney failure, etc.).

References


Diabète Québec and the Ministère de la Santé et des Services sociaux (2003). Guide d’alimentation pour la personne diabétique, Quebec City, MSSS.


Context

Mrs. Sanschagrin, age 45, has been hospitalized for right ankle cellulitis. She was given her first dose of antibiotics intravenously in the emergency room this morning.

During the initial interview, you obtain the following data about Mrs. Sanschagrin:

• followed for bipolar disorder
• treated with lithium: she has a blood test for the medication every month

Medication at home:

• lithium carbonate (Lithane) 300 mg PO tid (mood stabilizer)
• lorazepam (Ativan) 1 mg hs PO PRN if insomnia (anxiolytic)

For the past week, the client says she has had the following signs and symptoms: diarrhea (3 to 4 stools per day), nausea and vomiting, speech difficulties, muscle weakness and blurred vision.

Question 1

What additional priority item of information must you obtain to complete the initial assessment of Mrs. Sanschagrin?

Expected answer

• Any answer that refers to lithium carbonate (Lithane) blood levels and shows that the candidate recognizes the signs and symptoms of lithium toxicity.

Rationale and additional information

Pharmacological treatment with lithium carbonate (Lithane) is central to the management of bipolar disease. This medication contains salts that have preventive and curative properties for episodes of mania and depression.

Given Mrs. Sanschagrin’s signs and symptoms, lithium toxicity must be considered as the probable cause of the problems. Lithium carbonate (Lithane) blood levels must be checked regularly to prevent toxicity. The margin between therapeutic (0.6 to 1.5 mmol/L) and toxic (> 1.5 mmol/L) plasma concentrations is very narrow, hence the importance of rigorous monitoring.

During her assessment of a client with bipolar disorder, the nurse is attentive to the risks associated with lithium therapy. She determines the clinical follow-up required by monitoring for side effects, such as gastrointestinal (nausea and vomiting), CNS (hand tremor, vertigo and drowsiness), cardiac
INSTRUCTIONS FOR OBSERVERS (IO)

1. **Hygiene Care**
   1.3.2 If the candidate mentions cleaning or starts to clean the nostrils, tell her to consider it done.
   1.4.2 As soon as the candidate starts to moisten or rinse the mucous membranes with the mouthwash or starts to brush the teeth, tell her that she does not have to continue.

2. **Verification prior to administering the tube feeding**
   2.5 When the candidate prepares to auscultate the abdomen with the stethoscope, ask her to tell you what she is checking. If she says she is checking for peristalsis, tell her sounds are present.
   2.6 When the candidate says that she must sit the client in the chair, tell her not to do so.

3. **Calculation of the hourly flow rate of the feeding pump**
   3.1 A volume of 360 ml must be administered to the client in 50 min. by feeding pump. To obtain the mark “done,” the candidate must calculate the flow rate:
   \[
   \frac{360 \text{ ml} \times 60 \text{ min.}}{50 \text{ min.}} = 432 \text{ ml/h}
   \]
   **Note**: The candidate may use a piece of paper and a pencil to calculate the flow rate, but she must give you the result orally.

4. **Communication skills and sensory stimulation**
   4.3 The candidate must describe at least 2 of the following interventions:
   - Mouth care
   - Nose care
   - Assessment of peristalsis
   - Assessment of tube position
INSTRUCTIONS FOR THE CANDIDATE (suite)

Medical orders on admission

- prednisolone (Pediapred) 50 mg PO qd at 8:00 (corticosteroid)
- salbutamol (Ventolin HFA) 400 mcg 1-2 puffs q 4 h PRN (max. 4 doses)
- fluticasone (Flovent HFA) 125 mcg 2 puffs morning and evening
- Humulin N insulin: 12 units SC 8:00
- Humulin R insulin qid ac according to the following scale:
  - 2 units if blood glucose > 8–10 mmol/L
  - 4 units if blood glucose > 10.1–12 mmol/L
  - 6 units if blood glucose > 12.1–13.9 mmol/L
  - 8 units if blood glucose > 14.0–22.0 mmol/L

Administer Insulin R 1/2 dose hs

- Capillary blood glucose qid: ac + hs

Notify attending physician if:
- blood glucose < 3.0 mmol/L
- blood glucose > 22.0 mmol/L

O₂ 2 to 4 L/min. PRN via nasal prongs for SpO₂ 90–95%

Diabetes record

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How to intervene in the clinical situations in the practical part
How to intervene in the clinical situations in the practical part

4

Situation 4

RATIONALE AND ADDITIONAL INFORMATION

The goal of this station is to assess your ability to recognize a problem of hyperglycemia in a person hospitalized for bronchospasm and to intervene appropriately. You must start to do a blood glucose test and say what type and quantity of insulin should be administered. Your psychomotor skills in preparing a subcutaneous injection will also be assessed.

Clinical situation

Asthma

Bronchospasm causes difficulty in breathing out as the airways are obstructed by edema and inflammation. In the present situation, a bronchodilator, such as salbutamol (Ventolin HFA), along with inhaled and oral corticosteroids, such as fluticasone (Flovent HFA) and prednisolone (Pediapred), help improve the circulation of air in the client’s airways. These medications are the first-line treatment for asthma symptoms. Although the specific mechanism of action of corticosteroids in the treatment of bronchospasm remains unclear, this class of medications is widely prescribed for its anti-inflammatory effect.

The disadvantage of using corticosteroids is that they raise blood glucose levels, as in Mr. Labonté’s case. This phenomenon is due to the fact that cortisol inhibits glucose uptake by many of the body’s cells. It acts as an insulin antagonist.

Type 2 diabetes

Type 2 diabetes occurs when the pancreas does not produce enough insulin or when the body does not use the insulin produced effectively. Excess weight, a sedentary lifestyle, physiological (e.g., bronchospasm, infarction, CVA, etc.) and psychological stress, as well as the use of certain medications, including corticosteroids, are factors that contribute to the development of type 2 diabetes.

The initial steps in treating diabetes are to adopt a healthy diet, engage in regular physical activity and lose weight. If lifestyle changes alone fail to restore blood glucose levels to normal glycated hemoglobin levels (HbA1c < 7%) within 2 to 3 months, the doctor introduces an antidiabetic medication.

Insulin can be administered temporarily during illness, pregnancy, a time of stress, a medical procedure or a surgical intervention. Insulin is necessary in Mr. Labonté’s case on account of his respiratory problem and current treatment with corticosteroids. The stabilization of his respiratory condition and a reduction in corticosteroid use should result in improved diabetes control and, consequently, the discontinuation of insulin therapy.
Operating room (OR) data
- Length of surgery: 2 h 15 min.
- Length of general anaesthesia: 2 h 35 min.
- 8:30: cefazoline, 1 g IV (during induction)
- Surgery well tolerated
- Blood loss: 550 ml

Excerpt from the recovery room nurse’s progress notes
2008-12-12
10:45: Right THR under general anesthesia
   Brought to the recovery room in a supine position
   Easy to rouse
   PCA (patient-controlled analgesia) in place: pain 0/10
   Right hip dressing clean
   Abduction cushion in place

11:20: Vital signs:
   BP: 110/68, P 88/min., reg., R 16/min., reg., normal depth, SpO₂ 98%
   Ringer’s lactate running at 100 ml/h, 150 ml remaining
   Intake in the operating room and recovery room: 2500 ml
   Output: urinary (Foley) catheter on straight drainage; clear yellow urine, 800 ml
   Hemovac has drained 50 ml of bright red blood
   Taken to unit
   Anti-embolism stockings in place

Anesthetist’s orders
2008-12-12
10:30: PCA with morphine 5 mg/ml, 30 ml cartridge:
   Bolus dose: 1.5 mg
   Dosing interval: 6 min.
   Maximum dose in 4 hours: 40 mg
   Diphehydramine 25 mg IV q 6 h PRN if pruritis
INSTRUCTIONS FOR THE CANDIDATE (suite)

Dimenhydrinate (Gravol) 50 mg IV PRN q 4-6 h, if nausea or vomiting.
If no effect after 30 min., give: metoclopramide 10 mg IV PRN q 6 h
Naloxone IV PRN as per collective prescription

Orthopedic surgeon’s orders

2008-12-12
10:45: Cefazoline 1 g IV q 8 h x 3 doses (antibiotic)
Enoxaparin (Lovenox) 30 mg SC bid x 14 days, start 24 to 36 hours after surgery
and continue for 3 weeks
Docusate (Colace) 1-2 tabs PO PRN
Dextrose 5% NaCl 0.45% 100 ml/h
Catheter on free drainage
Hemovac drain
Abduction cushion
Right lateral position allowed
Get up tomorrow
No weight-bearing on right side until further notice
Situation 5

**OBSERVATION CHECKLIST**

The candidate:  
✔ if done

1. **Clinical monitoring of the client**
   1.1 Checks the client’s identity by looking at the name on her bracelet.
   1.2 Asks the client if she is in pain and about her well-being or whether she is comfortable.
   1.3 Says that she is taking the vital signs: BP and P and R and SpO₂ (IO).
   1.4 Says that the vital signs and saturation are stable or within the normal range compared to the recovery room data (IO).
   1.5 Lists the programming parameters for the PCA pump and compares them with the anesthetist’s orders:
      1.5.1 Type of medication: morphine.
      1.5.2 Dosage for each injection: 1.5 mg.
      1.5.3 Interval between each injection: 6 minutes.
      1.5.4 Maximum dosage q 4 h: 40 mg or 27 doses of 1.5 mg.
   1.6 Says that she will make sure naloxone is available.
   1.7 Checks the intravenous infusion
      1.7.1 Says that a Ringer’s lactate infusion is running and that the prescribed flow rate is 100 ml/h (IO).
      1.7.2 Says that there is 150 ml left.
      1.7.3 Says that the Ringer’s lactate must be replaced with dextrose 5% + NaCl 0.45% (IO).
      1.7.4 Examines the catheter insertion site (IO).
      1.7.5 Bends the tubing to assess the catheter for patency.
   1.8 Says that the drain (Hemovac) is compressed and that the drainage fluid is bright red.
   1.9 Says that the quantity of fluid in the drain (Hemovac) must be checked.
   1.10 Says that she must check whether the dressing at the surgical site is clean (IO).
   1.11 Says that the urinary (Foley) catheter is patent and that the drainage bag contains 800 ml of clear yellow urine.
   1.12 Performs the neurovascular assessment in the right lower limb (IO).
   1.13 Compares the results of neurovascular assessment in the RLL with those in the LLL (IO).
   1.14 Checks that the cushion is positioned correctly so that the legs are abducted.
Situation 5

RATIONALE AND ADDITIONAL INFORMATION (cont.)

• the patient-controlled analgesia (PCA) parameters
• the client’s intake and output: blood perfusion and urinary catheter and wound drainage (Hemovac)
• the condition of the dressing
• the neurovascular assessment of the operated limb: nerve function and circulation
• that the client is correctly positioned in order to prevent dislocation of the prosthesis

In the immediate postoperative period, the nurse must monitor the vital signs to detect either a reaction secondary to the medication (narcotic analgesics or anesthetics) or hypovolemic shock. Patient-controlled analgesia (PCA) allows the client to relieve her pain independently. However, the method of administration and the fact that the analgesic is an opioid (morphine) and is injected intravenously are associated with certain risks. A nurse who receives a client in the immediate postoperative period who is using this type of analgesia must check the integrity of the system used, that the medication and the doses used match those on the medical prescription, the effectiveness of pain relief, the presence of side effects, the availability and proximity of the material required to treat complications.

Particular attention must be paid to the client’s respiratory function given the respiratory depressant effect of morphine. When opioids are administered, the rate, rhythm and depth of respiration, as well as $O_2$ saturation ($SpO_2$) are assessed in accordance with the institution’s protocol. However, it should be noted that $SpO_2$ alone is not a reliable measure of the client’s respiratory status. Hypercapnia or increased carbon dioxide levels in the blood, which is a sign of alveolar hypoventilation that can result from oversedation, can be present even if $SpO_2$ has not decreased. If necessary, to offset the effects of oversedation in the client, the nurse ensures a morphine antagonist (naloxone) is available.

The use of a sedation scale, a pain scale and intensive monitoring of vital signs, including $SpO_2$, are recommended to follow the evolution of the clinical condition of a client who is receiving opioid analgesics. Profound drowsiness, snoring, decreased respiratory rate or shallow breathing must be reported to the anesthetist immediately. Respiratory depression must be treated promptly: 1) by taking the PCA button out of the client’s hand; 2) by encouraging the client to breathe and wake up and 3) if necessary, by administering the prescribed morphine antagonist, naloxone. In addition, the nurse reports any behaviour to the anesthetist that indicates the client is not obtaining optimal relief, such as when the client activates the pump in vain to obtain additional doses of morphine.

The nurse must also exercise greater vigilance with an opioid-naïve client, that is, a client who has not developed a tolerance to opioid side effects or who has been exposed to opioids for less than a week. During the initial assessment, the nurse determines whether the client presents
Further reading

- monitoring the side effects of morphine;
- managing patient-controlled analgesia (PCA);
- sedation scale interpretation;
- morphine antagonist (naloxone) administration;
- signs and symptoms associated with hip replacement dislocation;
- transfer techniques: bed to chair, chair to bed;
- nursing interventions for surgical complications: pulmonary embolism, thrombophlebitis and hemorrhage;
- compatibility of intravenous medications: morphine, cefazoline and dimenhydrinate (Gravol);
- diagnostic tests in orthopedic surgery: magnetic resonance imaging, bone scanning, arthroscopy, etc.;
- recommendations for discharge: resuming activities, preventing hip replacement dislocation, preventing falls, diet, medication, signs and symptoms of complications and medical follow-up;
- use of anti-embolism stockings.

References


Canadian Pharmacists Association (2009). *Compendium of Pharmaceuticals and Specialities*, Ottawa, CphA.


**Situation 12**

### OBSERVATION CHECKLIST

#### The candidate: ✔ if done

1. **Client teaching**
   - 1.1 Tells the client the reason for the educational intervention (IO) .................................................................
   - 1.2 Checks what the client already knows about stump care .................................................................
   - 1.3 **Gives the client information about skin care for the stump:**
     - 1.3.1 Wash the stump daily in warm water and mild soap.................................................................
     - 1.3.2 Do not take baths.................................................................
     - 1.3.3 Rinse thoroughly and dry gently .................................................................
   - 1.4 **Checks the position of the stump:**
     - 1.4.1 Tells the client 3 ways to maintain extension or prevent flexion of the knee joint (IO) ...
     - 1.4.2 Gives 2 reasons to explain the importance of positioning the stump correctly (IO) ...
   - 1.5 Asesses what the client knows about the elastic bandage (IO).................................................................
   - 1.6 Asks the client if the explanations are clear or if he has any questions or what he remembers of the information he has been given .................................................................

2. **Pain relief**
   - 2.1 Assesses the effectiveness of the analgesia administered at 8:15 or his pain level right now (IO) .................................
   - 2.2 Explores the reasons for his irregular use of medication and his refusal to take medication .................................................................
   - 2.3 Reassures the client by telling him that the pain in the amputated limb is real or neuropathic or is not psychogenic .................................
   - 2.4 Uses the term “phantom limb pain” or “phantom pain” at least once to describe the client’s pain .................................
   - 2.5 Mentions one factor causing the phantom limb pain (IO) .................................................................
   - 2.6 Recommends that he take the prescribed analgesics regularly, i.e., acetaminophen 325 mg + codeine 30 mg (Atasol 30) 1-2 tabs PO q 4 h PRN and gabapentin (Neurontin) (tid) .................................................................
   - 2.7 Suggests one way to prevent constipation (IO) .................................................................
   - 2.8 Mentions one beneficial effect of the regular use of medication for managing pain or maintaining therapeutic blood levels (IO) .................................................................
INSTRUCTIONS FOR OBSERVERS (IO)

To obtain the mark “done,” the candidate must:

1. **Client teaching**
   1.1 Say that she has to complete the teaching on stump care or specify the 3 topics to be covered: skin care, positioning and elastic bandaging.

   1.4.1 Tell the client 3 ways to maintain extension or prevent flexion of the knee joint:
   - To maintain extension:
     - keep the leg extended when lying down
     - extend the stump on a horizontal board when sitting down
     - in bed, lie on the stomach for at least 30 minutes, 3 to 4 times a day
   - To prevent flexion:
     - do not put a pillow under the knee or thigh
     - do not allow the stump to dangle off the edge of the bed or chair

   1.4.2 Gives 2 of the following reasons to explain the importance of positioning the stump correctly:
   - to prevent stump edema
   - to prevent contractures
   - to help him adjust to wearing a prosthesis
   - to help reduce stump pain

1.5 If the candidate asks the client to repeat some of the information he remembers about the elastic bandage (purpose, how to change the bandage, etc.), give her the mark “done.”

2. **Pain relief**
   2.1 If the candidate checks the effectiveness of the analgesia administered previously or the client’s pain level right now, give her the mark “done.” She does not necessarily have to do a complete pain assessment using the PQRSTU acronym with the client.

   2.5 Mention one of the following factors causing the phantom limb pain:
   - unrelieved immediate postoperative pain or
   - pain memorized before the amputation (the duration and severity of pre-amputation pain).