



Training:

***Interprofessional simulation
for the prevention of
microorganism transmission
in intensive care units***

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Interprofessional simulation training for the prevention of microorganism transmission in adult intensive care units

SCENARIO NAME:

Prevention of microorganism transmission in patients with emerging diseases (COVID-19) by interprofessional teams in adult intensive care units (ICUs).

LOCATION FOR BRIEFING

Debriefing room of a Simulation Centre at a college.

LOCATION FOR SIMULATION:

Intensive care unit bed at a college.

TIME:

Pre-briefing (Prior knowledge of standard precautions and specific precautions for microorganisms)

Group briefing - 10 minutes (in the debriefing room)

Individual briefing - 5 minutes (at the intensive care unit bedside)

Scenario - 15 minutes (at the intensive care unit bed and nursing station)

Debriefing - 30 minutes (in the Debriefing room)



TOTAL: 60 MINUTES

MODALITY

Interprofessional Clinical Simulation

PRIOR SKILLS REQUIRED FOR PARTICIPATION

Knowledge of infection prevention and control measures, with an emphasis on the application of Standard and Specific Precautions in ICU practice;

Understanding of disease transmission routes (aerosols, droplets, and contact);

Clinical and care management of COVID-19 in adult ICUs, including general care, diagnosis, and treatment;

Assessment and care of stage I pressure injuries;

Ability to work in a team and establish interprofessional communication in daily practice.

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LEARNING OBJECTIVES

General objective:

To strengthen the adoption of precautions for the transmission of microorganisms in patients with emerging diseases in the ICU through effective communication and teamwork.

Specific objectives:

- Demonstrate the precautions (standard and specific) necessary to prevent the transmission of microorganisms in patients with COVID-19 in adult ICUs;
- Promote effective communication and teamwork to ensure full adherence by healthcare professionals to precautions to prevent the transmission of microorganisms;
- Analyse interprofessional interaction and communication and its relationship with the correct application of infection prevention and control measures;

EXPECTED RESULT

At the end of the simulated scenario, professionals are expected to be able to:

- Recognise the potential of teamwork as a tool to support infection prevention and control;
- Apply standard and specific precautions (based on the mode of transmission) as a team in adult ICUs.

DESIGN

ASSESSMENT METHODS

Application of the instrument “Knowledge, attitude and practice of healthcare professionals regarding precautions” (before and after the scenario) - Annex 1

Free translation into Portuguese of the instrument by Abalkhail A, et al. Knowledge, Attitude and Practice of Standard Infection Control Precautions among Health-Care Workers in a University Hospital in Qassim, Saudi Arabia: A Cross-Sectional Survey. *Int J Environ Res Public Health*. 2021;18(22):11831. doi: 10.3390/ijerph182211831.

Application of the “Interprofessional Competence Scale” (before and after the scenario) - Appendix 2

Free translation into Portuguese of the open access instrument The Interprofessional Collaborative Competency Attainment Scale/ICCA (2018).

TEAM BRIEFING

Encourage participants to introduce themselves (name, profession);

Give participants a few minutes to get to know each other (if they have never worked together before).

Inform them that this will be a safe place to make mistakes;

Inform them about the topic of the training session: prevention of microorganism transmission in patients with COVID-19 in the adult ICU;

Briefly describe the stages of the session (briefing, scenario execution, and debriefing);

Recognise the scenario: “This scenario represents the patient’s bed/room and the nursing station in an adult ICU. It is important that you recognise all the details of both environments in order to provide shared clinical care. Please explore the environments and materials available and then ask questions, if necessary, after I have read the clinical case.”

Brief clinical case: “You (nurse and doctor) have taken over the morning shift and are responsible for patient E.S., admitted to the adult ICU yesterday at 8 p.m. A The patient is under precautions based on the mode of transmission: aerosol precautions for COVID-19 and empirical contact precautions, while awaiting the results of the anal region surveillance culture. The night shift nurse identified a lesion on the right heel and, at the shift change, requested that you (nurse) perform a n assessment to determine the course of action. During this time, your colleague (doctor) will be at the nursing station reviewing another patient's medical records

INDIVIDUAL BRIEFING

Nurse (scenario participant): controlled error in attire (no procedure gloves)

Doctor (scenario participant): controlled error in attire (no face protection or protective eyewear)

HUMAN RESOURCES FOR CONDUCTING THE SCENARIO

1 doctor: scenario participant - is at the nursing station and must intervene when hearing the alarm or being called by the nurse

1 nurse: scenario participant - assesses the skin lesion on the heel and identifies hypotension, and must call the doctor

1 simulation instructor: controls monitor parameters, observes interaction between scenario participants, coordinates debriefing, and guides the follow-up of scenario stages in case the simulation session deviates from its objective

1 simulation observer: detects errors, successes, and omissions in the prevention of microorganisms during the execution of participant care and collaborates in the debriefing (Appendix 3)

DETAILED CLINICAL CASE FOR THE SIMULATION INSTRUCTOR

Patient identification: ES, 45 years old, female, 60 kg

History and reason for admission: admitted to the adult ICU 12 hours ago (yesterday at 8 p.m.); diagnosis of acute respiratory failure due to COVID-19; orotracheal intubation indicated on admission due to severe respiratory distress and drop in oxygen saturation

Current clinical condition: intubated and on mechanical ventilation; sedated with midazolam maleate and fentanyl citrate, maintaining Ramsay 5; Catheters - double lumen central venous catheter in use for sedation and serum therapy + nasogastric catheter (awaiting radiological confirmation to start diet) + indwelling urinary catheter (output: 300 ml of concentrated yellow urine); Vital signs: normotensive, normocardic, preserved peripheral perfusion (capillary refill time: 2 seconds), afebrile since admission; Physiological functions: bowel movements present and pasty stools (one episode in the last 6 hours)

Relevant previous events: first episode of hypotension reversed with 500ml of SF 0.9%; Medical prescription: call doctor for reassessment in case of new episode of hypotension; insertion of central venous catheter and urinary catheter occurred without complications

Isolation: aerosol precaution (COVID-19); empirical contact precaution (awaiting results of anal surveillance culture)

Nursing problem identified during the night shift: lesion on the right calcaneus consistent with localised hyperaemia (suggestive of pressure injury); the night shift nurse requested an assessment of the lesion by the morning shift team to determine the course of action

Simulated critical event: during the nurse's assessment of the skin lesion, a new episode of hypotension occurs; the monitor triggers the alarm; the doctor, who is at the nursing station analysing another medical record, must go to the bed immediately after hearing the alarm or being called by the nurse to assess the clinical instability

STAGES OF SCENARIO DEVELOPMENT

Phase	Trigger (what moves the scenario forward; situations, actions, downtime)	Parameters (patient's voice, vital signs)	Expected roles for each type of participant	Expected behaviours for each type of participant
0	Nurse enters in the bedroom of the patient	Skin injury on right heel of the simulator (stage 1: compromise of the epidermis)	Observe the injury skin	Begin description skin lesion
1	Episode of hypotension	Monitor alarms: BP 60x40 mmHg HR 120 bpm	Nurse calls the doctor if he does not spontaneously to the bedroom of the patient	Doctor enters the bedroom of the patient with bedding incorrect (glasses instead of protective face shield); other PPE correct
2	Doctor enters the bedside/patient room with vestments incorrectly (glasses instead of protective face shield); other correct PPE	Monitor alarms: BP 60x40 mmHg FC 120 bpm	Nurse notices the error in colleague's PPE	Nurse guides colleague to use correctly glasses protective glasses or face shield

3	Doctor requests (verbal order) that the nurse prepare the medication station (options: serum bolus or insnoradrenaline)	Monitor alarms: BP 60x40 mmHg HR 120 bpm	Nurse leaves the room to patient's room and go to the nursing	Nurse prepares medication in the medication station; then bed/ bedroom of the patient with incorrect (without procedure gloves); other correct PPE
4	Nurse returns to the bed/room of the patient, touches the bed, the infusion pump and/or the patient's catheter without gloves procedure; other correct PPE	Monitor alarms: BP 60x40 mmHg HR 120 bpm	Doctor notices the error in colleague's PPE	Doctor alerts colleague to use gloves procedure during the process stabilisation patient
5	After installation serum or drug vasoactive, the patient presents stable clinical stability; end of scenario	After installation of the serum or vasoactive drug tive: BP 100x60 mmHg HR 100 bpm	NSA	NSA

STRATEGY IN CASE OF DEVIATION FROM THE PROPOSED

Alert participants to the patient's vital signs in order to highlight Phase 1 of the scenario (episode of hypotension)

CHARACTERISATION OF THE NURSING STATION

Patient records (nursing progress, nursing notes, medical progress, medical prescriptions, laboratory tests, fluid balance) Other resources*: counter for preparing medications, medication storage area, wall clock, stainless steel sink, disposal containers waste (common, infectious, sharps), infusion pump, specific precautions sign (aerosols and contact) at the entrance to the ICU room/bed

* physical structure typical of an adult ICU nursing station according to country legislation

CHARACTERISATION OF THE SIMULATOR AND THE ICU ROOM/BED

Adult critical patient/simulator monitoring parameters

blood pressure: initial 100x60 mmHg when the nurse enters the ICU room/bed; the simulation instructor will reduce the simulator's blood pressure values to 60x40 mmHg to trigger the alarm (within 5 minutes of the start of the scenario)
Respiratory rate: initial and final 15 breaths per minute
Heart rate: initial 120 bpm and final 100 bpm
Temperature: 36,5 °C
O2 saturation: 97%

Spontaneous breathing in adult critical patient/ventilated simulator*:

problem: most patients receiving mechanical ventilatory support have spontaneous respiratory capacity, but many simulators do not have an inspiration feature or have insufficient inspiratory function. This limits the role of ventilator simulation with intensive care experience
objectives: modify the ventilation circuit to connect the simulator/ventilator interaction in clinical simulation training using mechanical ventilators

Steps to solve the problem:

- a) disconnect the "patient" ventilation circuit;
- b) Insert the ventilation "T" joint between the ventilator's "patient" port and the "Y" ventilation circuit.
- c) Connect the test lung to the ventilation circuit through the T-joint.
- d) turn on the simulator, intubate the patient (with a closed-circuit respiratory system), turn on the ventilator, and connect these devices to the Y ventilation circuit;
- e) activate the negative flow trigger, which allows the test lung to initiate each spontaneous/assisted breath with the ventilator and simulator simultaneously;
- f) Ensure that the operation of the simulator does not violate the manufacturer's recommendations.
- g) Ensure that simulator and lung operation are well coordinated to replicate patient-ventilator interaction.

*Free translation of HomeGrown Solution: Simulating Spontaneous Breathing in Ventilated Patients: <https://www.nln.org/education/education/sirc/sirc/sirc-homegrown-solutions/sirc-hgs-equipment/simulator-ventilator-interaction-bridging-solution-c56ccd5c-7836-6c70-9642-ff00005f042>

Materials related to adult ICU rooms/beds:

- multiparametric monitor with normal parameters (simulation of alarms for hypotension when the simulation instructor activates the clinical trigger - hypotension)
- hospital bed with rails
- set of bedding (sheet, waterproof sheet, mattress cover)
- pillow
- blanket
- cushions
- bedside table/side table
- waste bin for contaminated material
- organic waste bin
- two IV stands
- two infusion pumps
- gas outlet (oxygen, compressed air and vacuum)
- N95 respirator
- waterproof apron
- box of size M procedure gloves
- aerosol precaution identification
- contact precaution identification
- stethoscope
- bed identification
- monitoring cables (ECG + SAT + T + PAI)
- circuits for mechanical ventilation
- mechanical ventilator
- manual lung resuscitator (ambu)
- suction bottle
- oxygen pressure gauge
- compressed air pressure gauge
- suction circuit
- suction cannula no. 12
- humidifier bottle
- alcohol gel container

Materials related to adult critical patients/simulators:

- patient identification bracelet
- fall risk bracelet
- nightgown
- endotracheal tube n, 7.0
- endotracheal tube clamp
- closed tracheal suction system
- nasoenteral catheter in left nostril No. 16
- double-lumen central venous catheter in right subclavian vein
- open system collection bottle
- No. 12 indwelling urinary catheter (bag should contain 300 ml of concentrated yellow fluid)

- mould of localised hyperaemia in the right calcaneus, representing the onset of pressure injury (stage 1)
- continuous sedation infusion pump with equipment simulating midazolam maleate and fentanyl citrate via central venous catheter (labels visible)
- continuous infusion pump for saline solution with 500 ml of 0.9% SF (visible label)
- cuffometer
- micropore 10 x 4.5
- 30 to 45° decubitus
- high-fidelity adult simulator
- simulated connection to mechanical ventilator

INTERPROFESSIONAL DEBRIEFING

The interprofessional debriefing is structured based on the Promoting Excellence and Reflective Learning in Simulation (PEARLS) strategy and adapted to the context of Infection Prevention and Control.

Clarification about the debriefing session: It will take up to 30 minutes and consist of four phases. First, I will ask how you are feeling as a result of this case; then, I will ask you to describe the case. After that, we will explore actions that were performed well and actions that you would do differently. We will conclude by summarising some points so that you can take them away as lessons for future application in clinical practice.

PREPARING THE GROUND

Objective: To create a safe environment for learning.

Task: Establish the objective of the debriefing.

Approach: Congratulations on participating in the scenario. I intend to finish the debriefing session in 30 minutes. The objective of this stage is to share experiences from the scenario to improve interprofessional work and enhance patient care.

REACTION

Objective: To explore feelings.

Task: Ask for initial reactions and emotions.

Approach: - How did you feel after the scenario?
- What was your initial reaction to the case?

DESCRIPTION

Objective: Clarify the facts that occurred in the scenario.

Task: Develop a common understanding of the case.

Approach: - Could you please give a quick summary of the evolution of the clinical case?

ANALYSIS

Objective: Explore the various areas of performance.

Task: Request an evaluation of teamwork.

Approach: - How did you prepare to handle the case? What was each of your roles in the scenario? How did each of you clarify your roles and tasks as a team? Did the structure of the nursing station and adult ICU bed interfere with your infection prevention actions at any point? Did you notice any mistakes made by your colleagues that could have increased the transmission of microorganisms?

APPLICATION

Objective: Identify lessons learned.

Task: Participant-centred.

Approach: - Do you consider that this training contributed to developing collaboration and the organisation of shared work between the different professionals on the team who were in the scenario? What lessons do you take away for clinical practice? Have you discovered new topics for improvement that had not occurred to you before?

APPENDICES

APPENDIX 1

Assessment of healthcare professionals' knowledge, attitude and practice regarding precautions (before and after the scenario)

DATE COMPLETED: __/__/__

Free translation into Portuguese of the instrument by Abalkhail A, et al. Knowledge, Attitude and Practice of Standard Infection Control Precautions among Health-Care Workers in a University Hospital in Qassim, Saudi Arabia: A Cross-Sectional Survey. Int J Environ Res Public Health. 2021;18(22):11831. doi: 10.3390/ijerph182211831.

Mark with an X the "true" or "false" answer option that you consider appropriate

QUESTIONS	CORRECT	WRONG
1 - Are standard precautions used to care for all patients, regardless of their diagnosis and perceived infection status?		
2 - Is microorganism-specific precautions one of the elements of standard precautions?		
3 - Is hand washing after contact with the patient's environment one of the elements of standard precautions?		
4 - Hand hygiene with alcohol-based solution is a technique used after removing gloves?		
5 - Is hand hygiene mandatory before and after patient care?		
6 - Should hands be washed with soap and water before and after handling potentially infectious materials, regardless of whether gloves are worn?		
7 - Is personal protective equipment important in infection control because it acts as a barrier between potentially infectious materials and the mucous membranes of healthcare professionals (skin, mouth, nose and eyes)?		
8 - Should gloves always be worn when handling potentially infectious materials?		
9 - Should gloves be changed during patient care if you move your hands from the 'contaminated body site' to the 'clean body site'?		
10 - Can surgical masks protect the nose and mouth when procedures and activities are likely to generate splashes or sprays of blood and body fluids?		

11 - Is the purpose of wearing an apron to protect clothing from blood and bodily fluid splashes?		
12 - Do we need to remove all personal protective equipment before leaving the patient care environment?		
13 - Can telephones and door handles be sources of infection?		
14 - Should all clothing belonging to a patient with an infection be disposed of in hospital waste, even when free of visible blood or bodily fluids?		
15 - Is waste separation important to prevent the spread of infections?		
16 - Should used ampoules be disposed of in hospital waste?		
17 - Is recapping needles an appropriate procedure?		
18 - If you suffer an accident involving sharp objects, should you report it to your immediate superior?		
19 - Should sharp objects be disposed of in puncture-resistant containers?		
20 - Should patients with a cough wear a mask to reduce the spread of potentially infectious respiratory secretions to other people?		

APPENDIX 2

Interprofessional Collaborative Competency Scale (volunteer health professionals)

Translation into Portuguese of the open access instrument The Interprofessional Collaborative Competency Attainment Scale/ICCA (2018). Available at: <https://nexusipe.org/advancing/assessment-evaluation/interprofessional-collaborative-competencies-attainment-survey-iccas>

DATE OF COMPLETION: __/__/__

Using the following scale, rate your ability for each of the following statements:	1 = "Poor"; 2 = "Fair"; 3 = "Good"; 4 = "Very Good"; 5 = "Excellent"	
	Before participating in the learning activities, I was able to	After participating in the learning activities, I was able to
1 - Promote effective communication among members of an Interprofessional Team (IPT)		
2 - Actively listen to the ideas and concerns of IPT members		
3 - Express my ideas and concerns without being critical		
4 - Give constructive feedback to IPT members		
5 - Express my ideas and concerns clearly and concisely		
6 - Seek out IT members to resolve problems		
7 - Work effectively with EI members to improve care		
8 - Learn from and about EI members to improve care		
9 - Identify and describe my skills and attributes for the EI		
10 - Be accountable for my contributions to EI		

11 - Understand the capabilities and attributes of EI members		
12 - Recognise how the skills and knowledge of others complement and overlap with my own		
13 - Use an EI approach with the patient to assess their health situation		
14 - Use an EI approach with the patient to provide comprehensive care		
15 - Include the patient/family in decision-making		
16 - Listen carefully to the perspectives of EI members		
17 - Value the ideas of EI members		
18 - Address IE conflicts respectfully		
19 - Develop an effective care plan with EI members		
20 - Negotiating overlapping responsibilities in care in practice		
<p>21 - Compared to before the learning session, would you say that your ability to collaborate interprofessionally is... (select one option)</p> <hr/> <p>1 - Much better now; 2 - Slightly better now; 3 - About the same; 4 - Slightly worse now; 5 - Much worse now</p>		

APPENDIX 3

Simulation observer script

DATE OF COMPLETION: __/__/__

Actions	Nurse	Doctor
1 - Correct choice of all personal protective equipment?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
2 - Correct use of all personal protective equipment?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
3 - Correct removal of all personal protective equipment?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
4 - Do you sanitise your hands before touching the patient?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
5 - Do you sanitise your hands after touching the patient?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
6 - Do you notice your colleague's error in parameterisation (non verbal language)?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties
7 - Do you communicate your colleague's parameterisation error (non-verbal language)?	Yes () No () Comments/Difficulties	Yes () No () Comments/Difficulties

APPENDIX 4

Medical Record

Name: E. S.

Date of birth: 28/03/1979

Medical record: 56523

Date of admission: 23/01/2024

Unit: Adult ICU

NURSING EVOLUTION

23/01/24 – 8 p.m.: Admitted to the adult ICU from the Adult Emergency Room (DM and SAH are undergoing regular treatment). Arrived conscious, alert, with O2 support via mask with oxygen reservoir and expiratory and inspiratory valve system, in respiratory failure, tachypnoea (RR 30 bpm, saturation 79%). Placed in respiratory isolation due to positive COVID-19 RT-PCR with onset of flu-like symptoms 7 days ago. Orotracheal intubation was chosen, cannula 7, sedated with Midazolam Maleate and Fentanyl in bolus for the procedure. Double-lumen CVC was inserted in the right subclavian vein; both procedures without complications. Chest X-ray performed, tube placement confirmed, and central venous catheter use approved. Midazolam Maleate and Fentanyl CIP were installed in CVC, RASS were performed -5. Haemodynamic stability (vital signs on control sheet). Pulmonary assessment: murmurs present without adventitious sounds, saturating 95% with FiO2 50% in MV. Nasoenteral tube inserted in the left nostril, awaiting X-ray. Indwelling urinary catheter inserted in 12, light yellow diuresis. Presence of hyperaemia in the right calcaneus.

24/01/24 – 6 a.m.: All items on the medical prescription performed. 7 a.m.: Shift over without complications. (Full name of nurse NONONO Professional council number NONONO).

Notes: DM = Diabetes Mellitus; SAH = Systemic Arterial Hypertension; CVC = central venous catheter; VSCD = right subclavian vein; BIC = continuous infusion pump; RASS -5 = Richmond Agitation-Sedation Scale, where -5 indicates deep sedation, with no response to verbal or physical stimuli; FiO(2) = inspired oxygen fraction; MV = mechanical ventilation; SNE = nasoenteral tube; SVD = indwelling urinary catheter

MEDICAL ADMISSION

23/01/24 – 8 p.m.:

- Progressive history of current illness: Patient on D7 with flu-like symptoms (fever, cough,odynophagia, dyspnoea) admitted tonight for severe hypoxaemia and respiratory distress. RT-PCR test for COVID-19 +
- Personal history: SAH, non-insulin-dependent DM.
- On examination: GM

Neurological: GCS 15, cooperative, no deficits, isocoric photoreactive pupils

Cardiovascular: BRNF 2T, s/s, stable without DVA

NURSING PRESCRIPTION

Name: E. S. **Data of Birth:** 28/03/1979 **Allergies:** Dipirona

Medical record: 56523 **Data of Admission:** 23/01/2024 **Age:** 45 **Weight:** 60kg

Unit: Adult ICU **Ward/bed:** 05 **Nurse:** NONONO

Professional Council Number: NONONO **Date:** 23/01/24

ITEM	NURSING PRESCRIPTION	SCHEDULE
1	Maintain an elevated position of 30 to 45°	M T N
2	Change position every 2 hours	M T N
3	Keep heels elevated on a cushion	M T N
4	Bathe in bed	M
5	Perform oral hygiene with 0.12% chlorhexidine	M T N
6	Aspirate TOT and VAS Y/N	Y/N
7	Maintain fasting until further notice	M T N

Name: E. S. **Date of Birth:** 28/03/1979 **Age:** 45

Medical record: 56523 **Date of Admission:** 23/01/2024 **Unit:** Adult ICU

Diagnostic hypothesis: SARS-CoV2 COVID-19 **Date of collection:** 23/01/24

Time of collection: 8 p.m.

COMPLETE BLOOD COUNT

ERYTHROGRAM

Parameter	Result	Reference value
Erythrocytes	2.70 million/mm ³	4.20 a 6.10
Haemoglobin	7.4g/dL	12.0 a 18.0
Hematocrit	23.7%	37.0 a 52.0
MCV	88.0 µm ³	80.0 a 99.0
HCM	27.4 pg	27.0 a 31.0
CHCM	31.1 g/dL	32.0 a 36.0
RDW	12.2%	11.5 a 15.5

LEUKOGRAM

Parameter	%	Thousand/mm ³	Reference value
Leukocytes		14.7	4.40 to 10.5
Blast cells		0.00	-
Promyelocyte	0.0	0.00	-
Myelocyte	0.0	0.00	-
Metamyelocyte	0.0	0.00	-
Cane	0.0	0.00	-
Segmented	70.0	13.20	48.0 to 71,5%
Eosinophil	0.0	0.00	0.0 to 5.0%
Basophil	0.0	0.00	0.0 to 3.0%
Lymphocyte	3.0	0.55	19.0 to 50.0%
Atypical lymphocytes	0.0	0.00	-
Monocyte	8.0	1.46	2.0 to 12.0%
Plasmocyte	0.0	0.00	-
Platelets		365 000/mm ³	130 to 400 thousand/ mm ³

COAGULATION PROFILE

Prothrombin time	Value	Reference value
PT	11.0 sec	
PT standar	11.5 sec	
AP	100%	
RNI	1.00	Up to 1.20
TPPA	24.6 sec	
Standar TPPA	29.1 sec	
RATIO	0.85	Up to 1.25

BIOCHEMISTRY

Test	Value	Reference Value
Calcium	7.9 mg/dL	8.6 – 10.3 mg/dL
Magnesium	2.1 mg/dL	1.9 – 2.7 mg/dL
C-reactive protein	42,1 mg/L	Mild inflammation: 10-50 mg/L Moderate inflammation: 50-100 mg/L Severe inflammation: superior a 100mg/L
Potassium	4.0 mol/L	3.5 to 5.1 mol/L
Sodium	147.0 mmol/L	136 – 145 mmol/L
Urea	86.1 mg/dL	17.0 to 43 mg/dL
Creatinine	1.52 mg/dL	Men: 0.70 – 1.30 mg/dL Women: 0.60 – 1.20 mg/dL
TGP/ALT	59.1U/L	Less than 52 U/L
TGO	39 U/L	Less than 40U/L

ARTERIAL BLOOD GAS ANALYSIS

Result	Reference value
pH = 7,21	ph =7,35 – 7,45
pO ₂ = 61mmHG	pO ₂ = 80 – 100 mmHg
pCO ₂ = 60mmHG	pCO ₂ = 35 – 45 mmHg
HCO ₃ ⁻ = 15mmol/L	HCO ₃ ⁻ = 22 – 27 mmol/L
BE = -4	BE = 0 +/- 2mEq/l
SatO ₂ = 95%	SatO ₂ = 94-100%

