EDUCATIONAL BOOKLET

NURSES' ROLES IN ANTIMICROBIAL STEWARDSHIP PROGRAMMES

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Summary

Presentation

The **Brazilian Nurses Network Tackling the Antimicrobial Resistance (REBRAN)** was formally established at the XXVIII Brazilian Congress of Infection Control and Hospital Epidemiology on October 27th, 2022. REBRAN's proposal is to establish a group of nurses for technical cooperation on the topics of Antimicrobial Resistance (AMR) and Antimicrobial Stewardship Programs (ASPs), with emphasis on disseminating knowledge and engaging Nursing professionals on these topics.

Since its inception, REBRAN has developed several activities seeking to strengthen nurses' role at the national level in relation to their duties within ASPs, contributing to the impact of these professionals' actions on the prevention and control of AMR, which is considered a global health emergency.

Therefore, we have prepared this Booklet at REBRAN with the objective of strengthening nurses' role of in ASPs and in tackling AMR, addressing relevant topics regarding nurses' duties in these areas.

Targeted at nurses, Nursing staff, educators and managers, this publication addresses nurses' main actions within ASPs, directly or indirectly contributing to disseminating updated technical-scientific knowledge in favor of reducing antimicrobial resistance, highlighting nurses' role as key professionals in promoting rational antimicrobial use.

The authors

Nurses and Nursing staff duties in ASPs

The content of this booklet was organized into five strategic topics, addressing duties developed by nurses and the Nursing staff, related to Antimicrobial Stewardship Programs (ASPs).

01 PATIENT ASSESSMENT

02 COLLECTION OF BIOLOGIAS SAMPLES

03 ANTIMICROBIAL USE

04 EDUCATIONAL ACTIONS

05 INFECTION PREVENTION AND CONTROL

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1. Duties related to patient assessment in health services

The assessment of a patient admitted to a health service exerts a major impact on the professionals' decision-making process and on that patient's clinical outcome. Therefore, appropriately performed evaluation and anamnesis by nurses are essential for assertive decision-making regarding antimicrobial use. It is at this moment that nurses will be able to retrieve relevant information for rational antimicrobial use, whenever this type medication is necessary.

Nurses should identify the history regarding recent antimicrobial use, allergies to antimicrobials, recent hospitalizations and infections by multidrug-resistant pathogens. This information is essential for prescribers to define which antimicrobial will be used. Recent or current use of a given antimicrobial without clinical improvement may imply the need to resort to another antimicrobial class.

Reporting an allergy to a drug or to an entire class of drugs may imply choosing other therapeutic options. Recent hospitalizations or infections by multidrug-resistant bacteria will require prescribers to carefully evaluate the coverage spectrum of the antimicrobial selected. Checking vital signs and the patient's weight and comorbidities and identifying the medications the patient takes on a continuous regime are important pieces of information for antimicrobial stewardship.

Many antimicrobials have their doses calculated based on the patient's weight, especially in Pediatrics. Lack of this information hinders evaluation, prescription and monitoring of patients. Presence of comorbidities such as diabetes means that glucose solutions should be avoided whenever possible. Likewise, comorbidities such as heart failure may require a more careful evaluation regarding volume of this diluent.

Collecting a continued medication use history helps assess the need to reintroduce these medications during the period in which the patient is receiving care in the health service, preventing decompensation of comorbidities. This activity also allows identifying interactions between continued-use medications and the antimicrobial in use.

It is also important to highlight that the comprehensive and continuous care provided by Nursing professionals oftentimes results in the early identification of signs and symptoms that may indicate an infectious process, favoring early introduction of therapy when indicated.

Likewise, daily assessment is as important as the evaluation performed upon admission to the health service. Combined with assessment of culture results, a Clinical Nursing evaluation can help differentiate between colonization and infection cases, favoring joint decision-making with physicians and clinical pharmacists to discontinue unnecessary empirical therapy.

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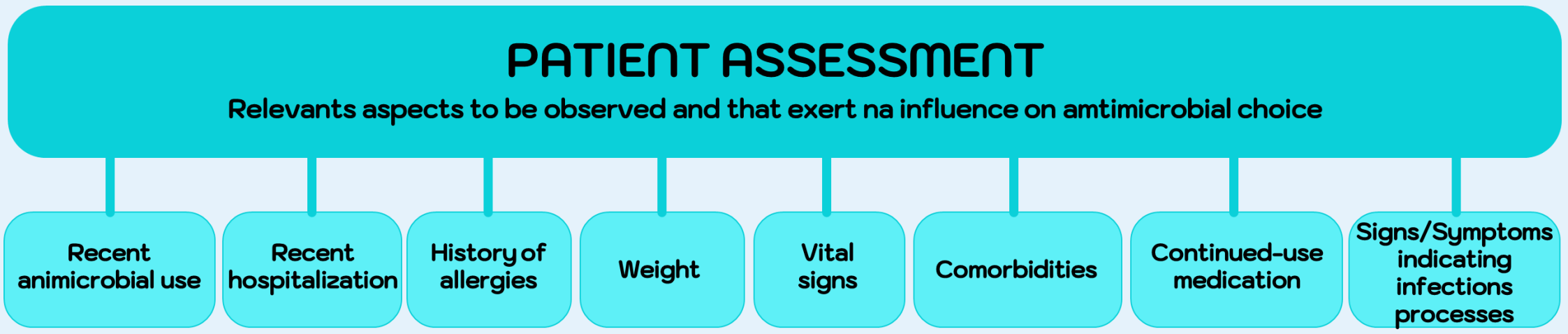


2. Actions related to biological sample collection

The collection of biological material for antimicrobial identification and sensitivity testing exerts a major impact on maintaining or changing the current empirical therapeutic regime.

Based on the results of biological cultures, therapy with an antimicrobial can be initiated, modified with escalation/de-escalation or even discontinued. From this moment on, therapy ceases to be empirical and begins to be guided by the results of cultures and sensitivity tests.

Therefore, adequate and timely collection of material for tests such as urine, blood and secretion cultures, among others, is essential for decision-making and for each patient's clinical outcome. Collection of these materials should be prioritized so that it is performed before empirical therapy initiation whenever possible.

Other laboratory tests that exert direct impacts on therapy include infectious screening markers such as C-reactive protein (CRP) and leukograms, as well as dosage of Procalcitonin, a biomarker that increases its levels in the presence of bacterial infections, the result of which may imply a reduction in the antimicrobial treatment time.

The vancomycin (vancocinemia) and amikacin level dosages are of major relevance in optimizing antimicrobial use. They should be performed at specific times and the results can guide actions such as increasing the dose, avoiding therapeutic failure if the level is below the therapeutic recommendation, maintaining the dose or even reducing it, avoiding toxicity, if the level is higher than the one considered safe.

Nurses play a central role in the entire process of collecting these materials, including guidance, preparation, collection, storage and transportation. In addition, they are in a strategic position to interface with the clinical analysis laboratory, the prescribers and the multidisciplinary team to provide specific guidance, clarify doubts, share information or request adjustments or additional information for the collection of clinical samples.

Considering nurses' strategic position in the care process, it is essential that these professionals know the proper procedures to obtain samples, have access to the results of these tests and know how to interpret them, so that they are able to discuss interventions with the multidisciplinary team, when pertinent.

COLLECTION OF BIOLOGICAL SAMPLES

Relevant aspects tah assist in maintaining, escalating/de-escalating, discontinuing or adjusting the therapy

Cultures
Guidance
Preparatin
Collection
Storage
Transport

Infectious screening tests
CRP
Leukograms
Procalcitonin

Antimicrobial monitoring tests:
Vancocinemia
Amikacin dosage
Others

3. Actions related to the use of antimicrobials

Nurses perform activities related to antimicrobial (ATM) use even before actually administering these drugs to the patients and prioritize prior collection of microbiological cultures without losing sight of the earliest possible therapy initiation time.

The medical prescription is first assessed, with special attention to the prescribed medication, dose, interval between doses, administration route, reconstitution, dilution, infusion time and expected treatment time. The need for specific infusion resources such as photoprotective or PVC-free materials is also assessed.

These aspects are evaluated considering factors inherent to each patient such as risk of allergy to a compound, risk of phlebitis or special patient conditions and comorbidities, among others.

The interface with the Clinical Pharmacy service and the prescribing physician is an important resource for nurses. Nurses may identify divergences, inconsistencies or any possibility of optimizing the antimicrobial therapy prescribed while evaluating each prescription, triggering interventions with the objective of adapting or improving the patient's therapeutic plan.

Furthermore, nurses are important managers of the patients' antimicrobial therapy, monitoring treatment time, clinical effect of the therapy (patients' response) and also possible adverse events, being able to act quickly in case of a serious event.

By daily assessing the need for maintenance for invasive devices, Nursing professionals are in a strategic position to initiate a discussion regarding transition to the oral route when a patient is on parenteral therapy with an early discharge possibility.

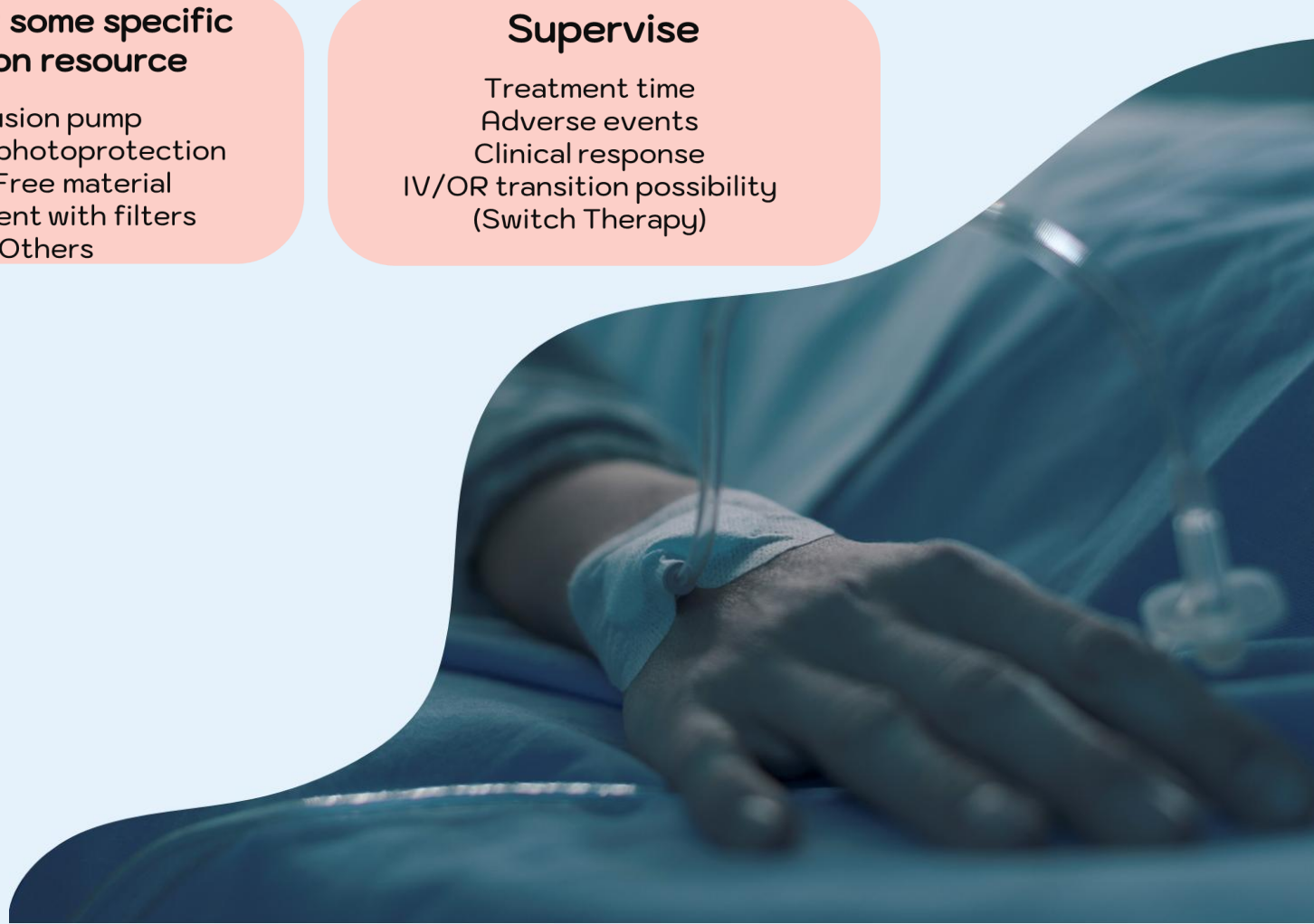
In cases where a patient is discharged using antimicrobials, the discharge guidance provided by nurses is the right time to provide guidelines in relation to antimicrobial prescriptions, reinforcing the importance of strictly following the treatment time proposed.

ANTIMICROBIAL USE
Relevat aspects

Prescription assessment
Medication
Dose
Administration route
Interval between doses
Reconstitution/Dilution
Infusion time

Need for some specific infusion resource
Infusion pump
Need for photoprotection
PVC-Free material
Equipment with filters
Others

Supervise
Treatment time
Adverse events
Clinical response
IV/OR transition possibility
(Switch Therapy)



4. Educational activities

Nurses are considered the central element in communication with the patients, the caregivers and other health professionals and in health education.

Educational activities are part of nurses' routine. Ongoing educational activities include the Nursing team as target audience and cover a variety of topics, such as standard and specific precautions, medication preparation and administration, risk assessment and patient safety, among others.

Likewise, patients, caregivers and family members alike benefit from the educational actions developed by these professionals, aiming at integrated care and at safe and humanized assistance, involving the patients, caregivers and/or family members in the care provided.

Structured educational actions aimed at rational antimicrobials use and at preventing infections can exert a major impact on AMR control; therefore, they are considered strategic, easy to implement and low-cost at the same time.

Educational Actions

Focus on

Team
Patients
Family members/Caregivers

Relevants topics

Standard and espcific precautions
Antimicrovial preparation
Antimicrobial administration
Risk assessment
Patiente safety

5. Actions related to infection prevention and control

Preventing and controlling infections is part of nurses' routine. These professionals are essential to ensure that the team adheres to standard and specific precautions, including the correct hand hygiene technique at all indicated times. In addition, they are also responsible for discontinuing precautions when they are no longer necessary.

At this moment, the importance and challenge faced by nurses are highlighted when demystifying the contamination risk when precautions are effectively implemented and followed, in order to guarantee humanized, comprehensive and safe care for patients under precautions.

INFECTION PREVENTION AND CONTROL

- Proper implementation of the standard and specific precautions
- Proper hand hygiene at the recommended moments
- Discontinuing the precautions at the adequate moment

Final Considerations

This booklet was created for you, nurses who want to work towards reducing AMR, and who are committed to rational antimicrobial use and patient safety!

Resistant pathogens represent a global challenge and, combined with shortage of new drugs for infectious diseases, they result in high mortality and costs worldwide. Despite this, we can still act, united, engaging other professionals and doing what we do best every day: provide care!

Therefore, we wish to thank each of you who join REBRAN, strengthening the network and the actions developed, so that we can face antimicrobial resistance together. Thank you!

Thank you!

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