

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

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➤ I. DESCRIPTION OF THE NIKKI THE NURSING MANIKIN WITH AUSCULTATION

1. General Description of the Manikin and its Uses

Nikki the Nursing Manikin with Auscultation has been developed as a teaching model, especially for training nurses. There is a wide range of exercises possible including both first aid and emergency situations, and standard nursing practices which can be additionally enriched by adding auscultation training when using the NursingScope stethoscope.

The manikin is delivered with the NursingScope electronic stethoscope and a CSL Panther tablet which operates on Windows 10. The name of the software pre-installed on the tablet is "SimScope". Nikki comes ready to plug-and-play and doesn't need to be set up prior to use. Once the NursingScope stethoscope is placed on one of the locations, it will play its default sound. If you would like to change the auscultation sounds, please set up the router and the laptop – for the tips how to do that, follow the steps from "III. LAPTOP SET-UP" section of this manual (page 8).

The manikin is constructed to simulate as nearly as possible the normal positions and movements of the human body. It has been developed with the help of nursing teachers. The manikin is made of a very resistant plastic and carefully selected, highly resistant nonrusting metallic unions used both for the joints and for the moveable links in the trunk and between the trunk and head. This allows the manikin to be easily cleaned and highly resistant to any damage. The model is constructed to make movements conform very closely to those of the human patient. The manikin will sit in a bed without special supports. All limbs can be moved in ways that conform to the normal movements of the human. The head and jaws also move naturally.

Because of careful selection of durable material for the manufacture of the manikin it is nearly impossible to damage it even with the most adverse treatment.

The hands and feet of the manikin are constructed of soft plastic with the fingers and toes separated so that cleaning techniques can be practiced in a natural way. The scalp is also of soft plastic but covers a harder plastic skull to better simulate the natural condition.

Nikki the Nursing Manikin with Auscultation has internal organs, therefore basic care procedures and a wide range of additional treatment procedures can be practiced as well.

The Nikki manikin measures about 174 cm (68.5") and has a weight of ca. 14 kgs (31 lbs).

The trunk of the manikin is made in two parts which can be separated:
a) an upper part which contains the heart, lungs, and stomach
b) a lower part with the external and internal sex organs as well as the organs of the abdomen and pelvis including the intestine, and the bladder.

The parts of the trunk are jointed at the waist by a moveable union that should not be loosened unless apart of the trunk must be replaced. The paired upper and lower extremities are attached to the trunk by easily handled unions and can be detached easily. The arm and forearm and the thigh and lower leg are connected by similar joints.

The head is fixed to the trunk in a similar way. Both the lower and upper jaws provided with partial dentures that can be removed and replaced. Every manikin has an exchangeable male and female genital insert and injection pads in the arms, thighs, and in the buttocks.

The rectum, part of the intestine, the urethra and bladder, the esophagus, and the stomach are linked by specially designed unions that release when turned clockwise. These unions are very secure and they are easily put together. The internal organs have the following capacities:

1. Intestine about 1.200 ml
2. Bladder 220 ml
3. Stomach 360 ml
4. Lungs 1.800 ml

Each manikin has a serial number inside on the upper section of the back and should be referred to when ordering extra parts or in case of problems.

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2. Assembly

For shipment, Nikki the Nursing Manikin with Auscultation is disassembled and packed in a strong corrugated box, it is easily assembled if the instructions below are followed carefully. The necessary tools can be found on the inside of the abdominal wall. All parts of the manikin should be unpacked and arranged as shown on the picture below.

The female insert is in place in the manikin. The two piece trunk of Nikki the Nursing Manikin with Auscultation contains the internal organs. These should be removed first to simplify the attachment of the limbs.



2a. Removal of the Inner Organs and the Genital Insert

Place the trunk on its back. Take off the chest cover and then remove the heart, stomach, and lungs. Remove the abdominal cover exposing the bladder, part of the intestines and the internal genital organs. The bladder is connected to the urethra by a union that can be loosened by turning it to the left. Then push aside the uterus and ovaries and unfasten the union connecting the lower bowel and rectum by turning counterclockwise.

After removing this part of the intestine, the fasteners of the female genital insert must be released. Push aside the vagina and rectum to expose a plastic band that is stretched over a screw head in the middle of the sacral bone. This union is released by removing the strap from the screw head. A shorter strap connects the genital insert to the pubic bone and part of the trunk. After releasing the second strap the genital insert, the urethra, vagina, uterus, ovaries, and rectum may be removed.

2b. Assembly

All bolts and nuts are in place on the model. As the model is assembled, the bolts should be removed and then replaced as assembly is completed to avoid any errors.

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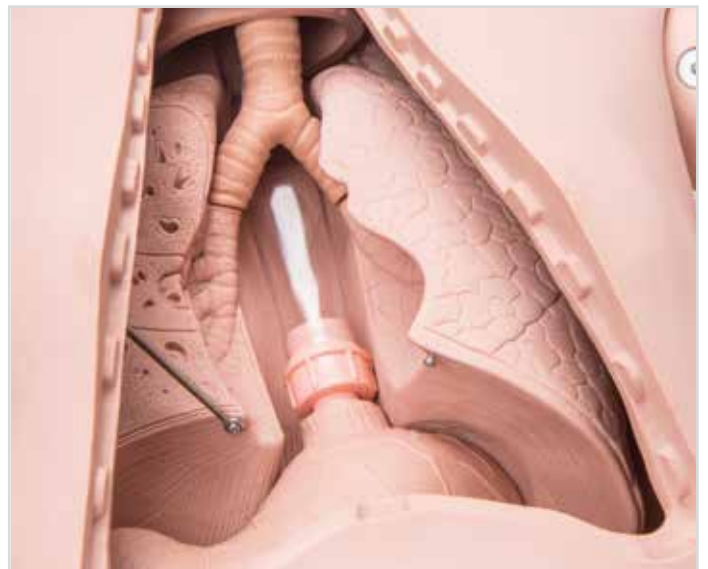
2c. Attachment of the lower limbs

Place the two lower limbs ready and remove the nuts from the bolts on the joint balls. Then lead the thigh with the removable bolt through the drilled hole in the socket of the torso and screw the nut tight.



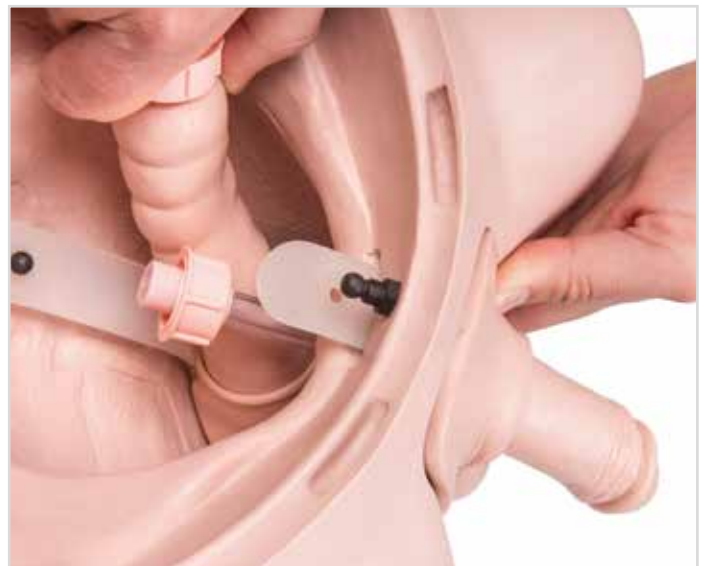
2d. Installation of the Organs in the Thoracic and Abdominal Cavities

The lungs are inserted first. Grasp the trachea and the esophagus which protrude into the thoracic cavity with one hand and raise them up. With the other hand push the compressed lungs into the thorax so that the esophagus and trachea lie above the lungs. Then spray the principal bronchus (a transparent plastic tube) with a lubricant and push it into the opening in the lung until the entire length of the transparent tube is inside of the lung. Then place the stomach in its proper position and using the bolt provided, fasten it securely to the esophagus. Insert the heart and finally put the soft breast cover in place.



2e. Installation of the Genital Insert

Each of the genital inserts is provided with a short plastic strap above and a longer one below with which the insert can be fastened in place. Place the genital insert at the opening in the pelvis and push it in place. Move the shorter plastic strap through the slot at the pubis until the top of the genital organs fit properly. Fasten the strap to the screw head above the slot inside the body cavity. Then push the lower part of the genital insert from the outside into the opening until it fits in place. Finally, pull the longer plastic strap up inside the model and fasten it to the screw head in the middle of the sacral bone in the abdominal cavity.



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2f. Installation of the Internal Organs

Put the lower intestine in place inserting its bolt into the rectum (fixed to the genital insert). Put the bolt in place and tighten. Insert the bladder by sewing it into the urethra.

2g. Installation of the Abdominal Cover

The abdominal cover (with an ostomy site) may now be put in place. The ostomy site (which has no connection to the intestine) must be fastened to the inside of the abdominal cover. The nursing manikin is now ready for use.



3. Maintenance

Nikki the Nursing Manikin with Auscultation is designed to facilitate cleaning and maintenance procedures. Regular cleaning and care will prolong the useful life of it.

All parts of the manikin are made of plastic so all surfaces may be cleaned with water and if necessary a mild soap solution. After using soap, the model should be rinsed thoroughly with clean water. Always take care that all parts are wiped dry and then are left to dry in the air. Then the manikin may be reassembled. As the manikin is reassembled it is suggested that all articulations and areas where plastic surfaces rub against one another, be sprayed with the included lubricating spray. Moderate spraying with the same spray is suggested to maintain the inner surfaces of the nose and throat.

Treat the built in valves with vaseline at regular intervals. When the bladder is removed one can see a valve made of a synthetic cloth; this should be impregnated with vaseline. The valves at the anus and rectum should

also be impregnated with vaseline periodically. Occasional bits of piaster on the surface of the model can be removed with gasoline for cleaning purposes. Marks on the manikin should be made with a pencil. The inks of ball point pens and fiber point pens cannot be removed. Only water should be used for exercises with the manikin. Other fluids may damage the plastic. Avoid the application of any other materials. After every exercise all remnants of liquids must be removed. For drainage, openings have been provided in the head (lower side), the lungs, the intestines, and the bladder so that these organs may be thoroughly drained. The stomach can be emptied through the relatively large aperture at the esophageal end. Using the lubricating spray on the bolts at the articulations occasionally provides proper lubrication. Special procedures for the maintenance of specific parts of the manikin will be found with the appropriate exercises.

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➤ II. AUSCULTATION OVERVIEW

1. Sites Overview

Nikki the Nursing Manikin with Auscultation with the Cardionics sound library for auscultation training offers 11 anterior and 4 posterior sites:

- Location 1 – Aortic
- Location 2 – Pulmonic
- Location 3 – Tricuspid
- Location 4 – Mitral
- Location 5 – Right Lung, Lower Anterior
- Location 6 – Right Lung, Upper Anterior
- Location 7 – Left Lung, Lower Anterior
- Location 8 – Left Lung, Upper Anterior
- Location 13 – Bowel

2. Sound Library Overview

The manikin comes with a library of 42 auscultation sounds. The sounds can be seamlessly changed on the controller tablet for each of the locations by utilizing NursingScope's wireless functionality. That way the instructor has the ability to adapt the scenario on the spot, so that it fits any nursing curriculum or training program.

Heart – 21 sounds:

1. Aortic Regurgitation
2. Aortic Stenosis
3. Atrial Septal Defect
4. Austin Flint
5. Bradycardia
6. Diastolic murmur
7. Friction Rub
8. Tricuspid Regurgitation
9. Pulmonary Stenosis
10. Diastolic Murmur related to Mitral Stenosis
11. Mitral Valve Prolapse
12. Normal Heart Sound
13. Mitral Stenosis and Regurgitation
14. PDA (Patent Ductus Arteriosus)
15. Pulmonary Stenosis
16. S3 Gallop
17. S4 Gallop
18. Systolic click
19. Aortic Stenosis Mild
20. Tachycardia
21. VSD (Ventricular Septal Defect)

Lung – 15 sounds:

1. Bronchovesicular
2. Cavernous
3. Coarse Crackle
4. Egophony
5. Fine Crackle
6. Mono Wheeze
7. Normal Lungs Sound
8. Normal Vesicular
9. Pectoriloquy
10. Pleural Rub
11. Pneumonia
12. Pulmonary Edema
13. Rhonchi Crackle
14. Stridor
15. Wheeze

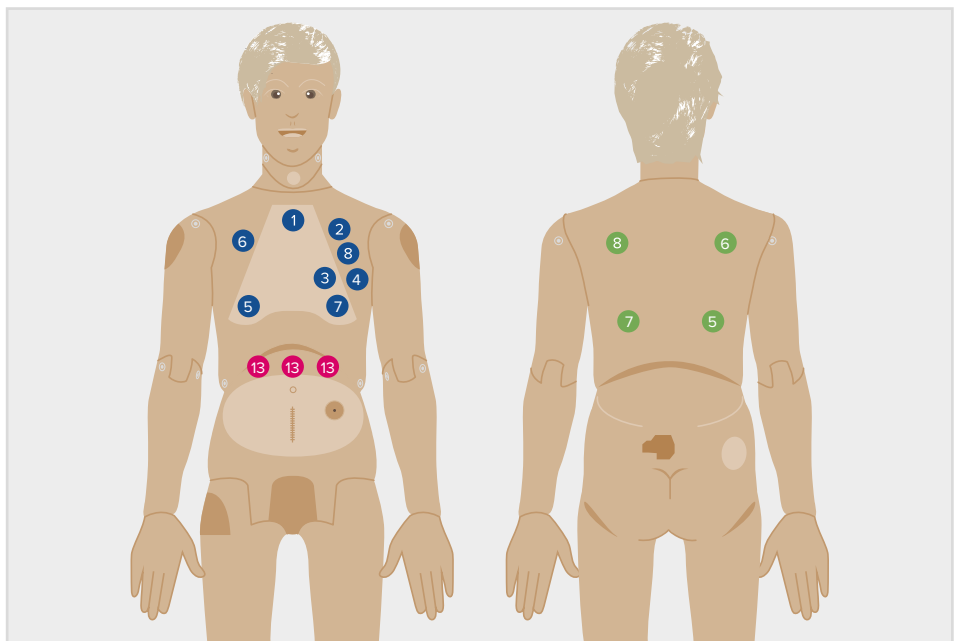
Bowel – 6 sounds:

1. Aneurysm
2. Borborygmus I
3. Borborygmus II
4. Hyperactive Bowel
5. Hypoactive Bowel
6. Normal Bowel Sound

Heart sounds can be heard from locations 1, 2, 3 and 4 (Aortic, Pulmonic, Tricuspid and Mitral).

Lung sounds can be heard from locations 5, 6, 7 and 8 (Right Lung – Lower Anterior, Right Lung – Upper Anterior, Left Lung – Lower Anterior, Left Lung – Upper Anterior).

Bowel sounds can be heard from location 13.



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> III. LAPTOP SET-UP

Nikki can be used for training before setting up the router and the laptop. It will play the default auscultation sounds. If you would like to change the auscultation sounds, please follow the below steps to set up the router and the laptop.

Your Nikki the Nursing Manikin with Auscultation is delivered with a CSL Panther laptop. The software on which the NursingScope operates is called "SimScope" and has been pre-installed on the device for your convenience. However, in order for your training system to operate most efficiently, there are a few important points which have to be set-up prior to using Nikki for the first time.

1. Starting the router

In order to make sure your NIKKI functions optimally, please always start the router first, and then start your NursingScope.

1a. The system has been delivered with a TRENDnet wireless router, which has to be turned on prior to the use. Simply open the package, take out the device and choose between three interchangeable adapter plugs (USA, Europe and Great Britain):



1b. Before plugging the router into the electricity outlet, please make sure that the little tab is swiped to the left, indicating "router":



1c. Equally so, please make sure that the router is turned on which you can verify on the other side of the device:



1d. Once the router is plugged into the electricity outlet, it will blink red. This means everything is working correctly and should not be a reason for concern:



1e. It might happen that when turning on the laptop you will be asked for the name and password to the router. These are indicated directly on the device (name of the network: SimScope, password: Cardionics)



2. Sign in to Windows 10

Once you turn on the tablet, you will be asked to enter the login details. Please enter the following data:

Name: NIKKI

Password: 12345

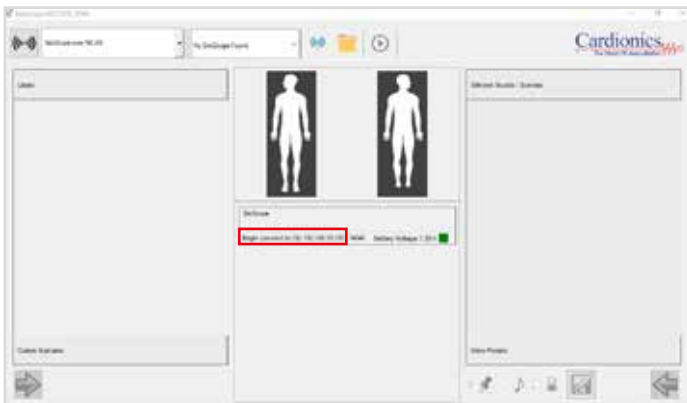
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3. Starting the “SimScope” software

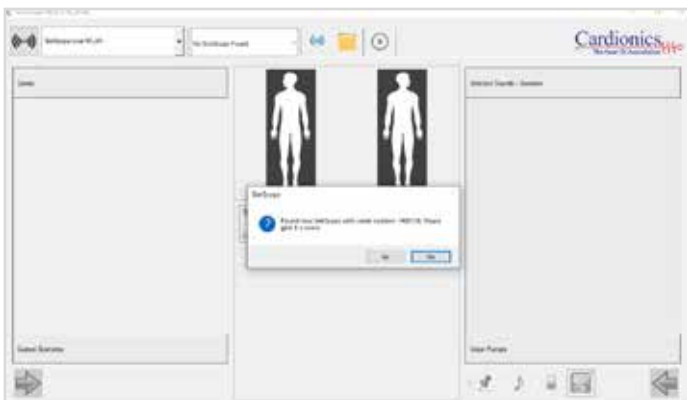
3a. SimScope” software allows the user to change the auscultation sounds as well as manipulate the settings of the NursingScope. To access the “SimScope” software on the laptop, please double click on the “SimScope” icon located on the desktop:



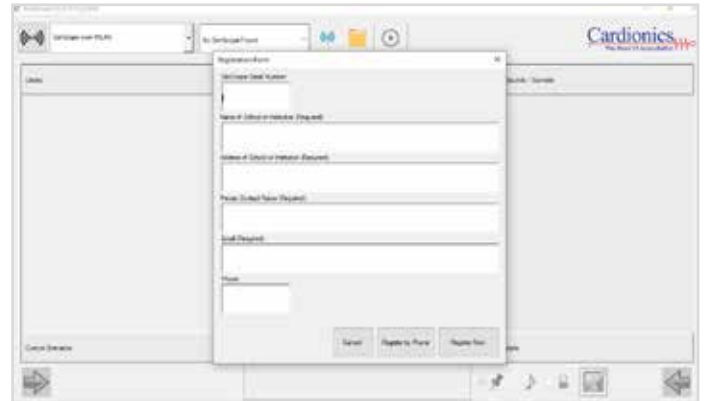
3b. This will bring up the following menu. When you start the software for the first time, the “SimScope” will need a few minutes before it's connected.



3c. Once the connection is established, the message window will change from “Begin connect to...” to “Connected”. At that point you will be asked to give your Scope a new name. It is recommended to do that, because if user does not assign a name, then the program uses the serial number for the dropdown box and does not add it to the PC parameters table. A name makes it easier for a user to identify a Scope quickly out of many. Also, by not adding to the PC parameter table the Scope takes longer to communicate over Wi-Fi since the parameters were not stored or



3d. At this point, you will be asked to register the software. Please fill out the registration form. For computers connected to the internet, the process of registering is instant. If unable to connect to the internet, click register by phone and follow the instructions. “cached.”



4. Changing the auscultation sounds in the software

Nikki the Nursing Manikin with Auscultation has been delivered with a default set of auscultation sounds. However, they can be changed anytime in the “SimScope” software. To do that, please follow these easy steps.

4a. Double click the “SimScope” software located on the desktop. The system might need a minute before the connection is established. Once it's ready, you will see the NursingScope's library on the left. Sounds in black writing are the activated ones. In order to change it, please click on any of the sounds in grey, then press the arrow located below. Once you are done making your sound selection, please click on the disc button – that will save the settings until next time you change it.



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➤ IV. WORKING WITH NursingScope

1. Overview


The NursingScope resembles a sleek electronic stethoscope with binaural ear tips for listening, chest piece for placing on a patient, and middle enclosure housing the electronics and replaceable AAA battery (we recommend a Energizer Ultimate Lithium battery for the optimal performance). The software allows the user to assign sounds from the NursingScope library to sites. There are 21 heart sounds, 16 lung sounds and 6 bowel sounds to choose from. The NursingScope chest piece is then placed on an anatomically correct location and the default sound assigned to that site is played. The sounds can be selected and changed on the spot in the menu available on the included tablet. Nikki the Nursing Manikin with Auscultation offers 10 anterior and 4 posterior sites, with high quality sounds. For controls, there are two volume buttons located on NursingScope's chest piece labeled "plus" and "minus".

2. Safety Precautions

The following symbols are applicable to the device.

 Attention: Read and understand all warnings and cautions before use.

IPX0 No degree of protection against ingress of water.

 This product may contain natural rubber latex.

 Caution:

- Before each use check the NursingScope ear tips for secure fit. Do not use if missing or loose.
- Use only AAA alkaline batteries for the NursingScope and for Wi-Fi models use the Energizer Ultimate Lithium™ battery. Properly dispose of, or recycle, spent batteries.
- No serviceable parts. Do not attempt to repair or service the NursingScope. Return to 3B Scientific for all repairs. Contact Customer Service for instructions before returning.

3. Turning On and Off

To turn the NursingScope on press any volume key located on the chest piece. Upon power up a voice prompt plays, "System activation. Mode one." The NursingScope will remain on 90 seconds after the last key press or sound playback. At shutdown a voice prompt plays, "System powering down." We recommend extending the NursingScope's activity period to 3 minutes – please refer to page 11 of this manual to see how to do that.

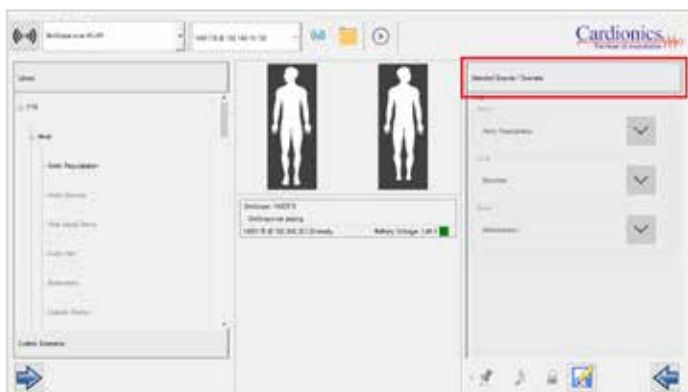
4. Volume Adjustment of the NursingScope

The volume can be adjusted up or down while listening to a sound. Pressing a "+" or "-" button located on the Scope once will make a small incremental adjustment while holding the key down will make rapid adjustments.

5. Volume Adjustment of Individual Auscultation Sounds

The volume for each sound can be adjusted in the Selected Sounds/ Scenario panel.

Click the down chevron symbol next to the sound title to display the volume panel. Click the "play" button for the desired sound. While listening drag the volume control to the desired level. After adjusting remember to click the save to retain the new setting.



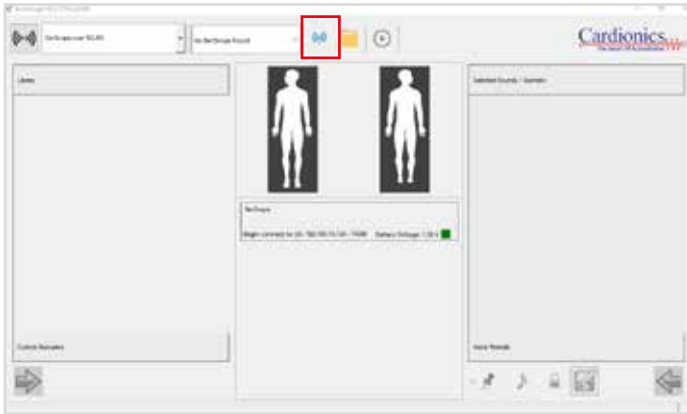
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6. NursingScope's Activity Period

By default, your NursingScope will switch itself off after 90 seconds, but the timer resets each time:

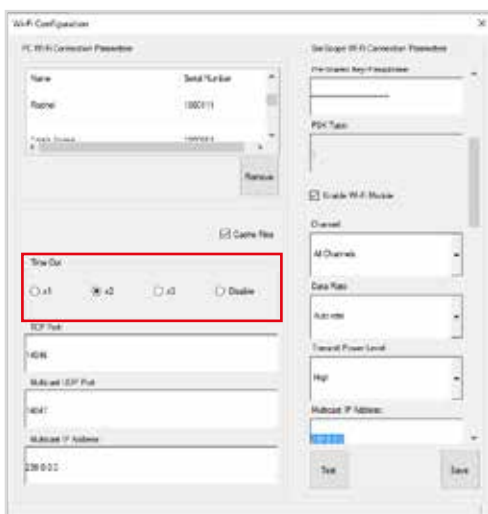
- the user engages a new site
- a new sound is played
- the "+" or "-" located on the Scope is pressed

However, you can change that in the settings to make sure your Scope stays active for a longer period of time. Simply go to the main menu and click on the Wi-Fi settings:



This will bring out the following menu, with a "time out" option:

- x1** – choosing this option will mean that the NursingScope stays active for 90 seconds
- x2** – choosing this option will mean that the NursingScope stays active for 3 minutes
- x3** – choosing this option will mean that the NursingScope stays active for 4.5 minutes
- Disable** – choosing this option will disable NursingScope from turning itself off automatically



ATTENTION: If you choose "Disable", it means you have to manually turn off NursingScope by clicking on either "+" or "-" located on the Scope for approx. 5 seconds. Failing to do that will likely mean that the NursingScope runs out of battery, which will have to be exchanged.

7. Battery

The NursingScope uses a AAA battery that can be accessed from the back of the main enclosure by sliding the battery door outward. We recommend a high drain type battery to provide a maximum operating time. For example, Energizer Ultimate Lithium™ will power the NursingScope for up to four hours.

As the battery approaches end of life the NursingScope will play a voice prompt saying "low battery" at power up. The NursingScope may continue to operate on low battery for a while, but unexpected shut downs will eventually occur without warning. Battery life varies greatly between brands and types, so for the best performance we recommend the Energizer Ultimate Lithium™ mentioned above.

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➤ V. USES OF THE TRAINING MANIKIN

The major exercises possible with Nikki the Nursing Manikin with Auscultation presented.

A. Basic Patient Care

For the seriously ill or helpless patient, nurses must perform daily body care. Nikki may be used to practice procedures for fast and thorough body care. In addition, procedures which make it easier for the nurse to lift, carry, and put the patient to bed may be practiced. In addition to that, they can also learn how to distinguish between normal and abnormal heart and respiratory sounds.

1. Lifting, Carrying and Moving the Patient

To avoid physical strain when moving patients, nurses should learn the proper techniques of patient handling. Such techniques can be practiced with Nikki.

All procedures for moving a patient and lifting him out of the bed can be practiced. Also, procedures for carrying a patient and moving him into different positions can be learned. Assisting the patient in getting up from a chair or sitting up in bed can be practiced since the manikin will hold the sitting position without any support.

2. Bed Care of the Patient

All techniques which involve helping the patient into bed, helping him change position, as well as helping the patient dress and undress can be practiced.

3. Moving the Patient

All techniques for moving the patient may be demonstrated with Nikki.

4. Bathing the Patient (Genital Care of Male and Female)

All of the procedures for bathing the bed-ridden patient can be practiced. The exchangeable male and female genital inserts make it possible to practice genital care for both men and women.

5. Hair

The hair can be combed and washed. The hair can also be dried with a hair dryer. Use the lowest heat level and ensure that you do not hold the dryer in the same place for too long.

6. Care and Cleaning of the Mouth

Cleaning the mouth and teeth can be demonstrated. It is also possible to demonstrate the care of dentures since the manikin has removable partial upper and lower dentures.

7. Care and Cleaning of the Eyes

Procedures for cleaning the eyes can be demonstrated, because the eyes are inserted into sockets and the eyelids are made of soft plastic.

8. Care and Cleaning of the Ears

Nikki has carefully simulated external ears; the ear canal is about 2 cm long and is closed on the inner end. This allows normal washing of the ear canal with water.

9. Care and Cleaning of the Nose

A connection between the pharynx and the nasal cavity with the nostril openings makes it possible to follow normal cleaning procedures closely.

10. Auscultation of Heart, Lung and Bowel Sounds

Nikki's auscultation features can make an excellent addition to any scenario-based simulation, to improve competency in patient care and advanced nursing skills.

General Maintenance

After each of the above procedures (especially when water is used) the manikin must be cleaned with mild soap solution and then rinsed with clean water. All parts must be wiped dry and then are left to dry in the air. Used parts should be taken apart completely to assure that all parts are dry (see hints for assembly). Before reassembling, all parts that may rub together should be sprayed with a lubricating spray.

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B. Medical Care

1. Preventive Techniques

Practice with Nikki the Nursing Manikin with Auscultation will prepare the nursing student thoroughly for carrying out a wide range of preventive techniques.

1a. Prevention of Bedsores (Decubitus)

With bedridden patients the weight of the body on the tissues of the back and legs can eventually lead to the production of skin ulcers (decubitus). Measures taken to prevent decubitus can be demonstrated Nikki. Moving the patient to several different positions (prone, supine, on the side, etc.) can be demonstrated. The best methods for moving and turning the patient can also be shown.

Skin care exercises such as washing, drying etc. may only be performed with water. Medical powder is replaced by talcum powder.

The clinically-proven pressure-ulcer stages are depicted according to their grade to enable learning and practice of clinical wound care.

Grade 2 pressure-ulcer in the sacrum area (Os sacrum) Partial skin loss is recognisable: the upper skin (epidermis) displays damage which extends into the dermis (corium).

The surface pressure injury depicted can manifest itself through the development of blisters and skin abrasions.



Grade 2

A **grade 3** pressure-ulcer is depicted in the heel area - an arch in the rear foot area the contour of which is formed by the heel bone (calcaneus). A complete skin layer is lost and the subcutaneous tissue is damaged up to necrosis. This is recognisable by black colouration in the wound area.



Grade 3

A pronounced **grade 4** pressure-ulcer is presented on the greater trochanter (trochanter major): all skin layers and muscle fascia have been destroyed. The muscles and bone areas below this layer are also affected. This damage could become necrotic. Supporting structures such as tendons, ligaments or joint structures can also be affected.



Grade 4

1b. Prevention of Muscles Cramps

Various preventive measures can be demonstrated. The hip and knee joints can be extended 180 degrees; this can be alternated with flexion over a knee roll. In the supine position the shoulder joint can be moved into 30 and 90 degree abduction. It is also possible to show full extension and 90 degree flexion of the elbow joint. For treating a leg spasm the internal and external rotation of the foot can be demonstrated. In addition treatment for a severe foot contraction can be shown.

1c. Prevention of Pneumonia

Pneumonia is a dangerous complication that can be prevented. As already mentioned, turning the patient and giving him a rub down can be demonstrated with the training manikin. Only clear water (no alcohol or similar fluids) should be used for a rub down.

1d. Prevention of Blood Clots (Thromboses)

The legs are especially susceptible to blood clots. One may practice putting on anti-thrombosis stockings or wrapping the legs with elastic bandages on Nikki the Nursing Manikin with Auscultation..

1e. Prevention of Thrush and Parotitis

The most important techniques for mouth care can be practiced with the manikin. For all such procedures, only water should be used, never any medications. Nikki has removable dentures in both the upper and lower jaws so that proper care of such prostheses can be demonstrated.

2. Physiotherapy

When demonstrating the techniques of heat therapy the manikin should not be exposed to temperatures above 25°C (77°F). There are, however, no limits to dry cold applications.

Maintenance

After using water for any of the above exercises Nikki should be cleaned and dried completely (see I. 3.)

2a. Inhalation Therapy

Inhalation therapy and the use of various instruments such as aerosols, vaporizers, and humidifiers may be demonstrated. Proper positioning of the patient, the proper installation of the instruments, and the correct application of face masks and mouth pieces may all be demonstrated with the training model. Use of the various instruments should be demonstrated without turning them on.

2b. Inhalation of Oxygen

Nikki can be used to show the several methods of administering oxygen. For example, one may learn techniques for the use of an oxygen mask, a nasal catheter, or an oxygen tent or chamber.

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3. Resuscitation

The training manikin provides an excellent means for practicing several resuscitation techniques.

3a. Mouth to Nose

Preparation of the patient for mouth to nose resuscitation can be practiced on the manikin (positioning the patient, clearing the air passages, and removal of the dental prothesis). The technique of mouth to nose resuscitation can also be shown, even showing the expansion of the lungs if the technique is properly executed. For this exercise the stomach must be connected to the esophagus and the drain aperture of the lung must be closed. After practicing resuscitation techniques the model should be cleaned with a skin disinfectant.

3b. Mouth to Mouth

For mouth to mouth respiration the techniques are the same as above. Insertion of a tube for respiration can also be demonstrated.

3c. Use of a Ventilation Bag

All techniques necessary for artificial respiration with a ventilation bag can be practiced on the training manikin.

3d. Other Methods

Care of a tracheostomy may also be demonstrated. It is also possible to demonstrate the placement of a tracheal catheter as well as suction evacuation of the trachea. Before beginning these exercises, all probes, catheters and cannulae should be lightly sprayed with a lubricating spray.

4. Diabetic Foot Syndrome (DFS)

The after-effects of a diabetes mellitus can result in defects and pressure points in the area of the foot; the fore foot, ball area and the large and small toe can also be affected.

A gangrenous alteration on the big toe of the right foot has already spread from the back of the foot to the metatarsal. A mal perforans (trophic ulcer) is visible on the sole of the foot (plantar). This is a neuropathic ulcer which also numbers amongst the typical clinical symptoms of diabetic foot syndrome.



5. Bandages

The manikin may be used to teach a wide range of bandaging techniques on all parts of the body. The Patient Care Manikin is equipped with an amputation stump insertion for the right thigh to be used to teach bandaging techniques for the amputee. Substances such as gypsum or zinc glue should not be used with the model. Remains of piaster can easily be removed with gasoline for cleaning purposes.

A surgical staple seam is depicted on the abdominal wall. This can be used to close a wound after abdominal surgery.



The injection pads on the upper arm and thigh can be replaced with inserts depicting wounds. A laceration (vulnus lacerum) depicted on the upper arm insert can be caused by the violent impact of a blunt instrument. The skin and the underlying soft tissue tears. A laceration typically shows torn and irregular edges. An abrasion depicted on the thigh insert (vulnus abrasum) can develop if the skin has suffered abrasion typically associated with a fall. A surface abrasion corresponds to an erosion; a deeper injury corresponds to an excoriation. The wounds depicted enable training and practice in wound treatment and management e.g. wound cleaning with irrigation and disinfecting, wound coverage (compression) and the application and change of bandages.



NIKKI THE NURSING MANIKIN WITH AUSCULTATION

6. Irrigation and Lavage

Exercises with the manikin to show body temperature irrigations (with or without medications) should be carried out using only water.

6a. Irrigation of the Eyes

The eyelids of the nursing manikin are elastic so that all manipulations involved with the irrigation of the eyes can be carried out. It is also possible to show how to apply ophthalmic ointments and how to put drops into the eyes. Only water should be used for these exercises.

6b. Irrigation of the Ears

The external auditory passage is closely simulated though it is closed at the inner end. Irrigation of the ear as well as the use of medications can be practiced. Again, only water should be used. The auditory passage must be dried thoroughly with cotton after these exercises.

6c. Gastric (Stomach) Lavage

For practicing a gastric lavage use a disposable plastic stomach tube (for example size CH 18). Before insertion, the tube should be sprayed with a lubricating spray to provide proper lubrication. The throat and mouth of the manikin can also be sprayed as needed. The stomach has a capacity of about 360 ml and is connected to the esophagus by means of a screw joint.

6d. Intestinal Irrigation

For this exercise one should use a disposable plastic tube (for example size CH 28). Before the intestinal tube is inserted it must be lubricated with vaseline so that it will pass easily through the plastic valves of the rectum. Lay Nikki on its side and use just enough liquid to fill the intestine (capacity is about 1,200 ml). With the proper amount of liquid the intestinal tube can be removed and replaced without losing the liquid. When liquid runs out of the anus and the intestinal tube has not been inserted, then the blue colored screw cap on the rectum must be opened to fill the valve with the Vaseline injection (ca. 2 ml). The total volume of the rectal valve is 5 ml.

6e. Irrigation of the Bladder

For irrigation of the bladder one should use a disposable plastic catheter (for example size CH 16). Before insertion the catheter must be lightly sprayed with a lubricating spray to guarantee good lubrication and to facilitate the passage of the catheter through the plastic valve at the entrance of the bladder. The bladder has a capacity of about 220 ml. For these exercises the filling aperture of the bladder should be closed. Please note that the soft catheters made of rubber are not appropriate for these exercises since they are too flexible and do not pass easily through the plastic valve of the bladder. Medical lubrications and anesthetics should not be used with the model because they dry the plastic and will eventually affect the operation of the manikin. When doing this exercise, either the male or the female inserts can be used (see 2b. for assembling procedures). The valve in the bladder, which is just inside the point of attachment, must be treated both before and after every exercise with the lubricating spray or with vaseline.

6f. Irrigation of the Vagina

A plastic tube (about 15 cm long) attached to the female genital insert represents the vagina of the manikin. It connects to the uterus at its inner

end. The vagina does not have valves so it is possible that some fluid may leak into the attached fallopian tubes. The remaining water in the vagina must be removed through the screw cap of the genital insert after every exercise.

Maintenance

After these exercises, clean and dry the manikin and all of its parts before reassembling it. Remove all traces of liquid from the organs used. The opening used for filling the bladder and intestine can be used for drainage. The last remains of liquid can be removed from the organs by shaking it out.

7. Enemas

Enemas can be performed on the training manikin. A plastic valve represents the anal sphincter on the manikin. This valve prevents the leakage of liquid when the intestinal tube is inserted or after its removal from the anus. The intestine is attached to the inner end of the rectum (capacity 1,200 ml). Use 1,200 ml of water for all exercises. This is recommended so that there will be no backflow of liquid when Nikki is lying on its side. The disposable synthetic intestinal-tubes in the size CH/FG28, which have to be greased with vaseline before filling, should be used for Enemas. After the exercise unscrew the intestine from the rectum and release any remaining liquid. When all parts are completely dry they may be replaced in the manikin. Many types of intestinal irrigations may be demonstrated with Nikki. The administration of retention enemas is possible. Only water (without any added medications) should be used in the exercise.

8. Catheterization

Nikki has exchangeable male and female genital inserts. Urethral catheterization can be practiced for both sexes. The procedure for the insertion of the genital organs is discussed in section 2.

Assembly

Before starting the demonstration, water can be put into the bladder with a syringe through the filling aperture (capacity about 220 ml). For catheterization, the filling aperture should not be closed. When the catheter is properly placed in the manikin and the liquid does not flow out of the bladder, one can start the flow with slight pressure on the bladder. To do this, close the filling aperture with the finger and press on the bladder. Moving the manikin to the sitting position may also start the flow of water.

8a. Catheterization of Men

Catheterization of the male can be practiced after the male organs have been put in place.

8b. Catheterization of Women

Catheterization of the female can be practiced after the female genital insert is installed.

Maintenance

After these exercises, clean and dry the genital inserts and the bladder thoroughly before replacing them in the manikin.

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

9. Injections and Infusions

Nikki the Nursing Manikin with Auscultation is designed for both injections and infusions to be practiced. Injections pads on the thighs, upper arms, and buttocks provide sites for these exercises. Only water or distilled water should be used.

9a. Hypodermic Injections

The technique for hypodermic injection can be practiced on the injection pads inserted in the upper arms and thighs. Proper care of the injection site can be demonstrated.

9b. Intramuscular Injections

The technique for intramuscular injections can be practiced using the two pads provided on the buttocks.

9c. Hypodermic Infusions

The technique of hypodermic infusions can be shown. Be sure that the capacity of the injection pads is not exceeded. (The liquid may be pressed out of the pads from time to time).

Maintenance

The injection pads consist of a plastic sheath which covers an absorbent pad. The pads may be removed for cleaning or for removing injected fluids. The absorbent pads are removed through a slit on the lower surface of the plastic sheath. (The shape of the foam rubber insert indicates its proper position in the plastic cover). After these exercises, all injection pads must be cleaned thoroughly. Remove the pads from the plastic cover and dry them separately. Before reinserting them into the covers, a little talcum powder may be used for lubrication. Since injection procedures will eventually wear out the pads they should be replaced. Such replacement pads are available.

10. Ostomy

The abdominal cover of Nikki the Nursing Manikin with Auscultation is provided with an ostomy site. A small plastic intestinal extension (about 8 cm long) can be fastened to the inside of the abdominal cover. It is closed at its inner end and thus has no connection to the intestine itself. All techniques concerning the maintenance of the artificial intestinal opening can be practiced on the manikin.

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