

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

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NIKKI THE NURSING MANIKIN WITH AUSCULTATION

➤ I. DESCRIPTION OF NIKKI THE NURSING MANIKIN WITH AUSCULTATION

1. Structure and Basic Functions

Nikki the Nursing Manikin with Auscultation is a medical training simulator specifically designed for nursing education with a wide range of practice options that include first aid and emergency situations. The external structure and movement of the nursing manikin is modeled on the human body. The nursing manikin was developed for practical, hands-on use. Designed for easy care and with durability, the simulator is made of high quality plastic and metal joint connections for movable torso and head connections. The movement possibilities and postures closely correspond to those of a human patient. The nursing manikin can rest in a seated position – even in bed – without having to be supported. The head, lower jaw and all body components can be moved and adjusted with natural movements. The manikin's sturdy design limits the risk of breakage from accidental or minor improper handling. The hands and feet of the nursing manikin are made of a soft, flexible synthetic material, with fingers and toes individually formed. The scalp is also made of a soft, flexible plastic material, but contains a hard plastic skull, so the soft and hard parts of the head largely correspond to the natural model.

The manikin is delivered with the NursingScope electronic stethoscope and a compact laptop 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, please follow the corresponding section of this manual.

The Nikki manikin measures about 174 cm (68.5") and has a weight of ca. 14 kgs (31 lbs). The torso of the Nikki consists of two sections screwed together with a hinge and should only be unscrewed if repair is needed:

- a) The upper section contains the lungs, heart and stomach in addition to the trachea and esophagus, and
- b) the lower section comes with the intestines, bladder and internal genital organs. Nikki comes with interchangeable external genital organs.

The arms and legs are attached to the torso with easy-to-use push-in screw joints that can be easily detached. The head is also detachable from the torso with the upper and lower jaws containing a removable partial prosthesis.

Each manikin comes with one interchangeable female and one interchangeable male sex insert. Injection pads are located on the upper arms, upper thighs and buttocks. In addition, two inserts with wound display are supplied, which can be placed on the upper arm and thigh. The connections between the rectum and the intestine, the urethra and the bladder, and the esophagus and the stomach are made by means of specially developed push-in closures with right-handed union nuts which tighten easily.

The internal organs have the following approximate capacity:

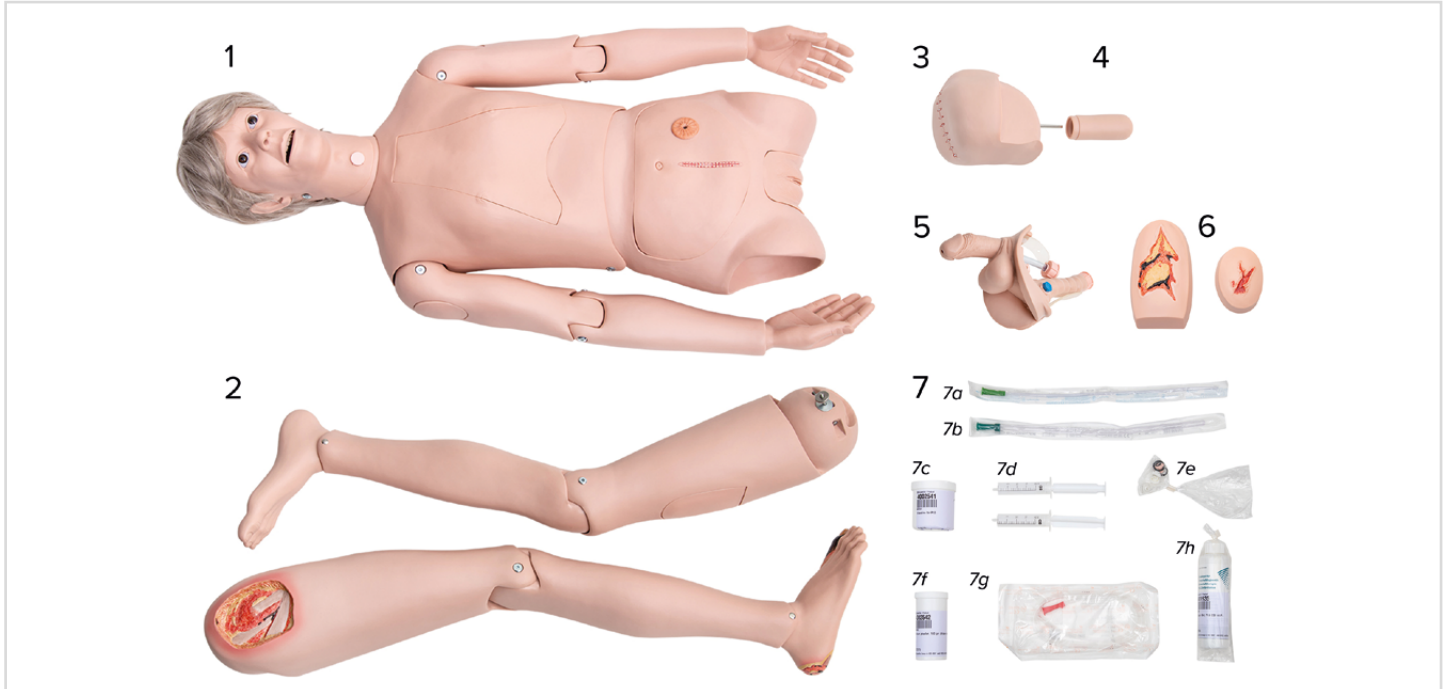
1. Intestine part: 1200 ml (40.58 fl oz)
2. Bladder: 220 ml (7.44 fl oz)
3. Stomach: 350 ml (11.84 fl oz)
4. Lungs: 1800 ml (60.87 fl oz)

Each Nikki manikin has a serial number on the inside of the back in the upper part of the torso. Please always quote the serial number when ordering spare parts.

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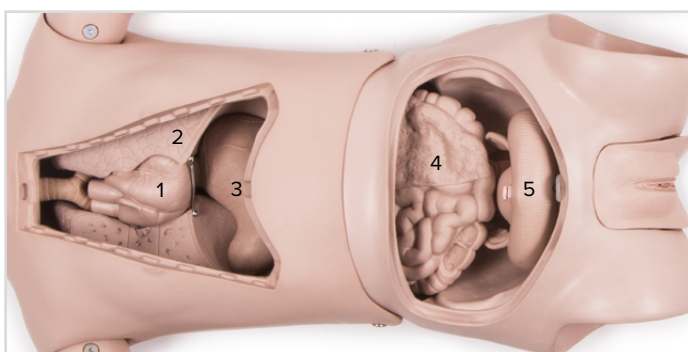
2. Scope of Delivery

For shipping reasons, Nikki the Nursing Manikin is delivered partially disassembled in a cardboard box. NursingScope and its components is delivered in a black carrying case and does not require assembly, neither does the laptop. The following table lists all parts supplied with Nikki.



1. Upper body with arms, head, trachea and esophagus, and the following parts already inserted:
 - 1a. Denture
 - 1b. Four injection pads, one each on the upper arm, one on the hip and one on the buttocks
 - 1c. Chest cover
 - 1d. Abdominal cover including two Allen keys for mounting on the inside of the abdomen
 - 1e. Female reproductive organs*
 - 1f. Internal organs:
 - Heart
 - Lungs
 - Stomach
 - Intestine insert
 - Bladder
2. Left and right leg with
 - 2a. Injection pads, one on each thigh
3. Right leg stump
4. Small endostoma intestine
5. Male sexual organs*
6. Wound inserts, one each for upper arm and thigh

7. Working set:
 - 7a. Disposable catheter (Nelaton catheter CH14)
 - 7b. Intestinal tube (rectal catheter CH28)
 - 7c. Vaseline
 - 7d. Two 20 ml disposable syringes with Vaseline
 - 7e. Spare gaskets and screws
 - 7f. Talcum powder
 - 7g. Gastric tube (duodenal tube CH18)
 - 7h. Contact gel 250 ml
8. NursingScope Auscultation Training Stethoscope from Cardionics
9. NursingScope software (delivered on a laptop)
10. Router



Internal organs of Nikki:

1. Heart
2. Lungs
3. Stomach
4. Intestine insert
5. Bladder

Fig. 3

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

3. Assembly

A few preparatory steps are necessary for Nikki to be fully operational. Please note the sequence resulting from the numbering.

I. Unpacking

- First remove all individual parts from the shipping carton and lay them down as shown on page 4
- Make sure the torso is lying on the back
- Then remove the chest and abdominal wall

II. Removal of internal organs

a) Chest area

- First remove the heart
- Then unscrew the stomach from the esophagus by turning the cap nut counterclockwise and remove it as well, see Fig. 4.
- Squeeze the lung and pull it out at the wider end of the chest opening, see arrow in Fig. 5.
- Pull the lung away from the trachea so that the plastic tubes are pulled out of the lung.

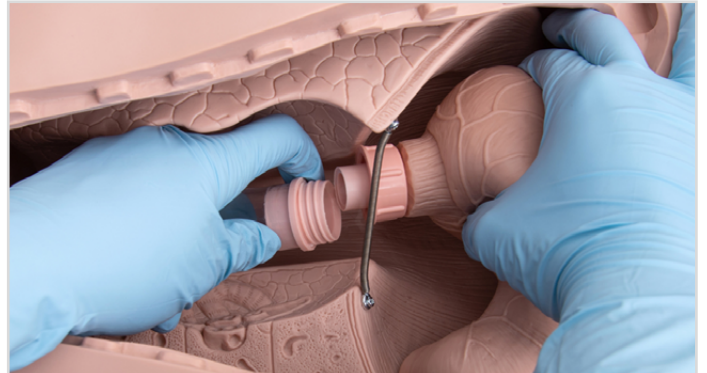


Fig. 4

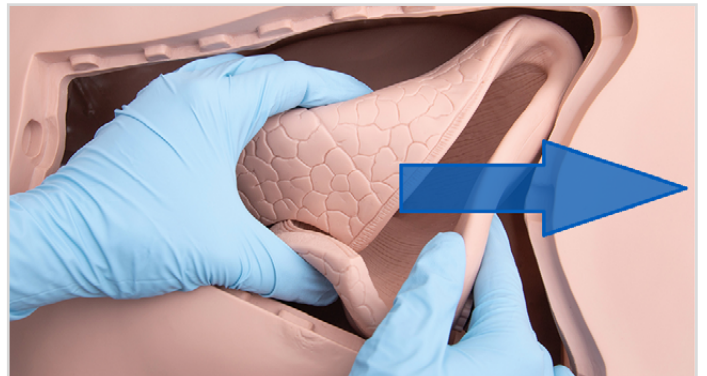


Fig. 5

b) Pelvic area

- As a first step, loosen the union nut connecting the bladder to the urethra by turning it counterclockwise and remove the bladder, see Fig. 6
- Then push the uterus with the ovaries upwards to the side, see Fig. 7
- In the meantime, loosen the union nut between the casing insert and the rectum by turning it counterclockwise and remove the casing insert, see Fig. 7

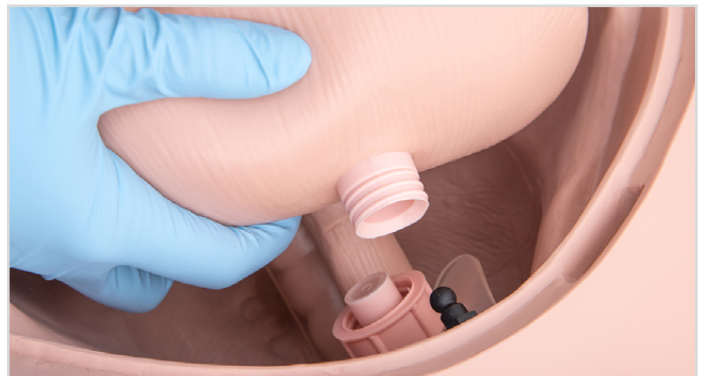


Fig. 6



Fig. 7

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III. Removal of the sex insert

- Pull the two fastening straps of the female sex insert over the black buttons
- Pull sex insert outward, see Fig. 8
- Bring the uterus with the ovaries and the rectum to the outside through the sex insertion opening

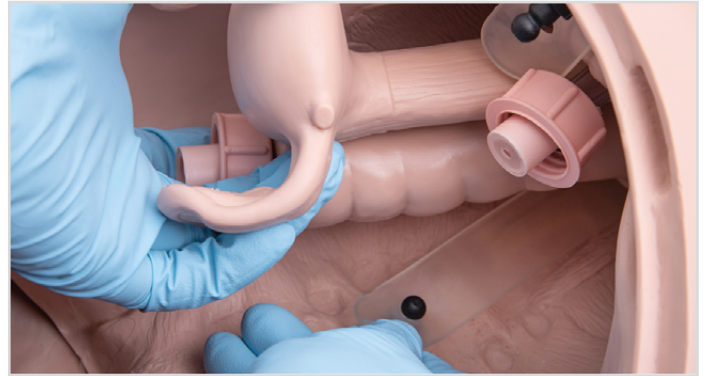


Fig. 8

IV. Attaching the lower extremities

- First get ready the two lower extremities
- Then remove the knurled nut from the grub screw, see Fig. 9.
- The washer located on the grub screw is not removed, see Fig. 9
- Guide the upper leg with the movable grub screw through the hole, see Fig. 9 (indicated).
- Finally, tighten the knurled nut on the inside

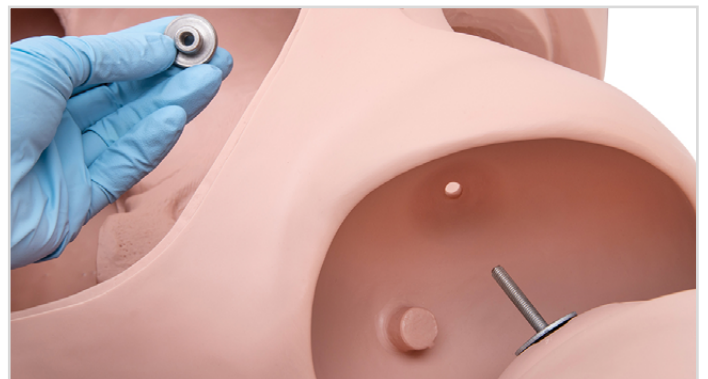


Fig. 9

V. Installation of the internal organs in the chest cavity

- Hold the esophagus and trachea out of the chest cavity with one hand and insert the compressed lung into the chest cavity with the other hand, see Fig. 10
- Then lubricate the two thin plastic tubes with the contact lubrication provided and insert them into the openings provided in the lungs until their entire length is inside the lungs, see Fig. 11
- Then guide the stomach in its anatomically correct position to the transparent esophagus and tighten it by turning the cap nut clockwise, see Fig. 4 on page 5.
- Insert the heart, see Fig. 3 on page 4.
- Finally, close the upper part of the torso with the chest cover



Fig. 10



Fig. 11

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VI. Installation of the sex inserts

- Insert the sex insert from the outside into the large opening of the lower torso section, see Fig. 12.
- Put the upper fastening band through the slit on the pubic bone at the same time
- After the sex insert has been inserted to fit, pull both fastening straps, each with its hole, over the intended button



Fig. 12

VII. Installation of the internal organs in the pelvic cavity

- First, guide the intestinal insert with its threaded piece to the end of the rectum of the sex insert and screw it in place, see Fig. 13
- Then insert the bladder with the bladder tip pointing upwards and connect it to the urethra by turning the union nut clockwise, see Fig. 14.

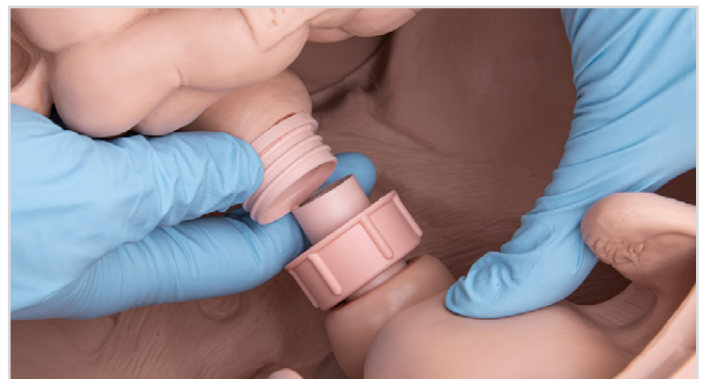


Fig. 13

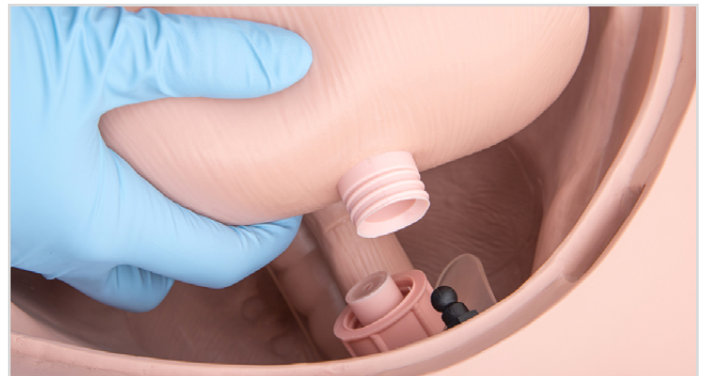


Fig. 14

VIII. Insertion of the abdominal wall

- Attach the supplied small end stoma arm piece to the inside of the abdominal wall
- There is no connection from the end ostomy bowel piece to the bowel insert and rectum
- Finally insert the abdominal wall

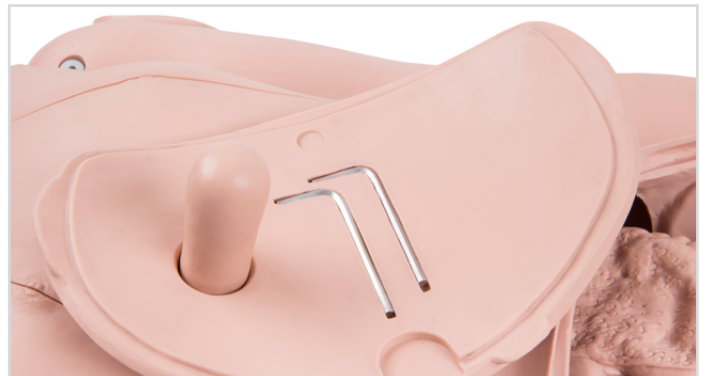


Fig. 15

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4. Training Components

After successful assembly, the nursing manikin can be adapted to the training depending on the training purpose.

A. Injection pads and wound inserts

The injection pads on the upper arm and thigh can be replaced by wound inserts, which can be used, for example, to practice wound care, which will be discussed in more detail in the section on practice options. For easier removal or insertion, it is recommended to press the pads together from the sides as shown in Figure 16.



Fig. 16

B. Blunt insert

The leg stump can be used only on the right leg. To do this, the calf must first be unscrewed at the knee joint, as shown in Fig. 17:

- Insert Allen key* on both opposite screws.
- Turn one of the screws to the left while holding the other screw to prevent it from turning as well. The leg stump (as shown in Fig. 18) can then be inserted at the knee joint:
- Insert the metal rod into the hole provided for this purpose until seated into the joint.
- No screw connection is necessary for mounting.



Fig. 17

C. Gender inserts

Nikki has a female and a male sex insert which can be exchanged. See steps 2 and 5 in the Assembly chapter.



Fig. 18

D. Denture

Nikki has a denture, see Fig. 19, which consists of an upper and a lower partial denture. The partial dentures can be easily removed and reinserted, e.g. for practicing denture care. See page 9, 6. oral care.



Fig. 19

*Note: Both supplied Allen keys can be used. They are located on the inside of the abdominal wall, see Fig. 15 on page 7.

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II. AUSCULTATION OVERVIEW

1. Sites Overview

Nikki the Nursing Manikin with Auscultation with the Cardionics sound library 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 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

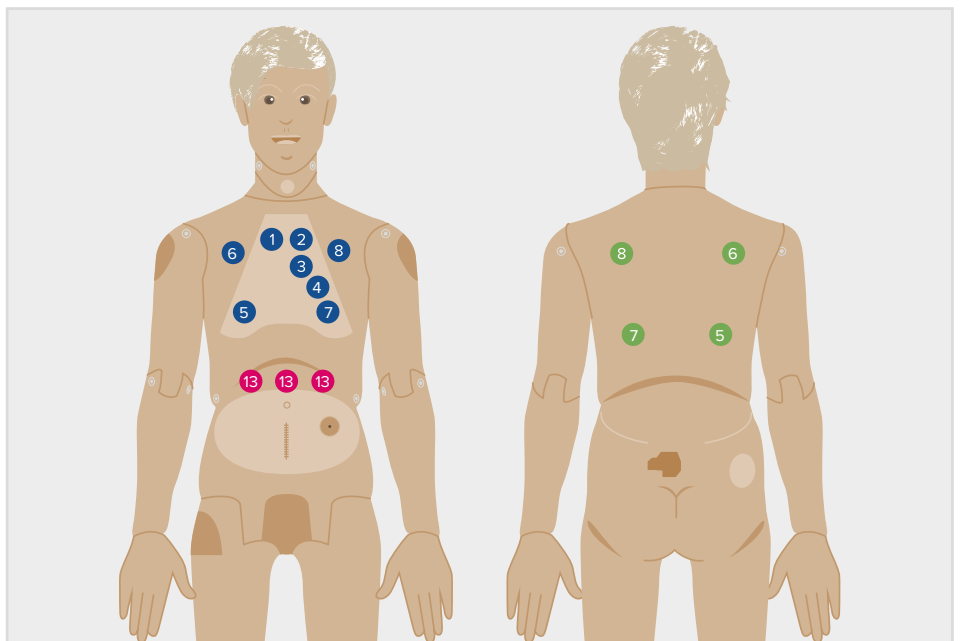
Bowel – 6 sounds:

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. 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 active for 4.5 minutes after the last key press or sound playback. At shutdown a voice prompt plays, "System powering down." Please bear in mind that NursinScope does not have an off switch and relies on the shutdown timer to turn itself off. The only way to force the SimScope to power down early is to temporarily take the battery in and out.

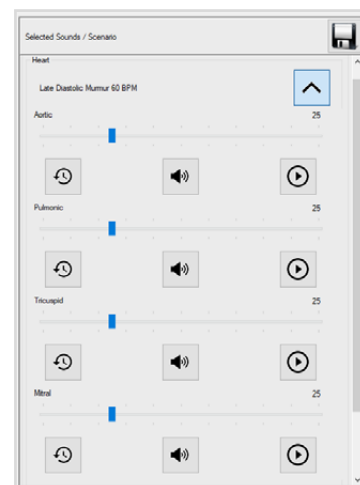
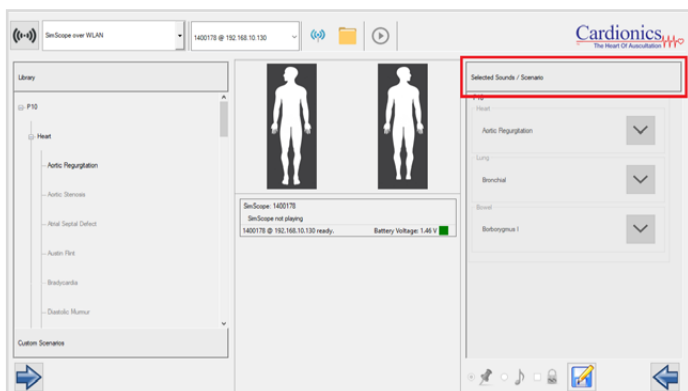
4. Volume Adjustment of the NursingScope

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.



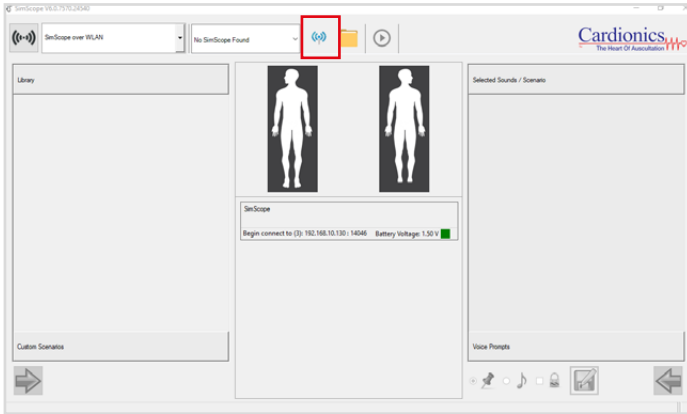
NIKKI THE NURSING MANIKIN WITH AUSCULTATION

6. NursingScope's Activity Period

By default, your NursingScope will switch itself off after 4,5 minutes, but the timer resets each time:

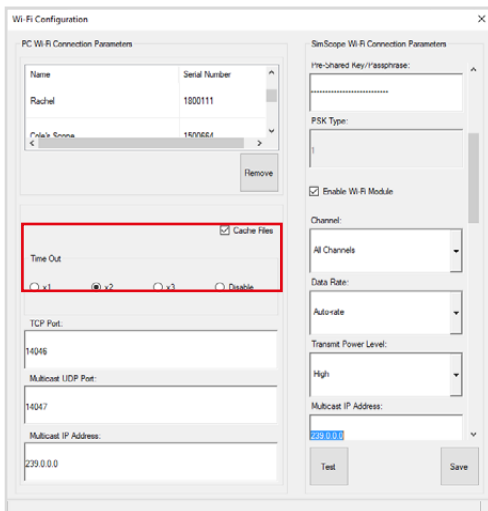
- the user engages a new site
- a new sound is played
- the "+" or "-" located on the Scope is pressed

However, you can change that in the settings to make sure your Scope stays active for a desired period of time. Simply go 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 (default setting of the NursingScope)
- Disable** – choosing this option will prevent NursingScope from powering down. The only way to force the Scope to power down is to temporarily take the battery in and out.



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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IV. AUSCULTATING NIKKI

When auscultating Nikki for the first time, you can start with the manikin's default auscultation sounds or change the auscultation library to fit your scenario. The below steps provide instructions for both options.

1. Start by using Nikki and the NursingScope with their default sounds.

Nikki can be used out of the box, with minimal set-up. If you don't need to change the default auscultation sounds right away, please follow these steps:

- Turn on the NursingScope by pressing either the plus or minus sign located on the chest piece.
- A voice prompt plays "System activation. Mode one. WiFi initialization failed".
- Now the NursingScope is ready to use, you may begin auscultating Nikki.



2. Start by changing the default sounds in the library.

If you wish to change the default heart, lung and bowel sounds, please proceed with the following steps.

- Laptop set-up
 - Turn on the Acer laptop.
 - Click on the symbol representing the Wi-Fi connection in the bottom-right taskbar on the desktop and connect to your local Wi-Fi network.
 - Double click on the SimScope symbol located on the desktop.
 - You will be asked to fill out the registration form, please fill in all data.



2a.

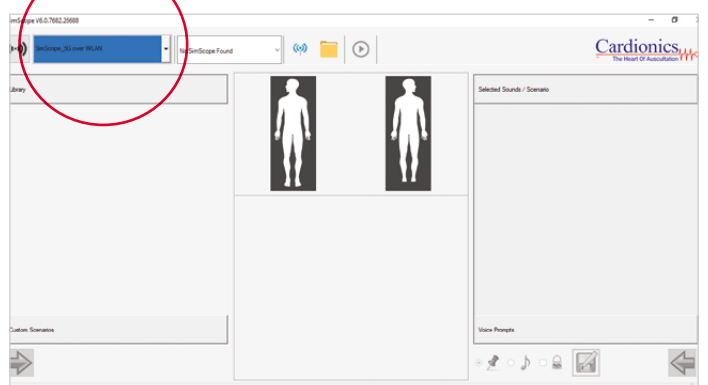
- Router set-up
 - Turn on the TP Link router by connecting it to the Acer laptop with the supplied USB cable, or simply plug it into an electricity outlet. Let it run for 1-2 minutes.
 - Now instead of using your local connection, please connect to the TP Link router network. In order to do that, go back to the Wi-Fi symbol in the bottom-right task bar on the Acer desktop and connect to the following network:

Network Name: SimScope_5G, Password: Cardionics

- NursingScope set-up
 - Turn on the NursingScope by pressing either the plus or minus sign located on the chest piece.
 - A voice prompt plays "System activation. Mode one. Wifi connected".
 - Please make sure that "SimScope_5G" network name is displayed in the drop down list in the upper left corner of the software (marked in the picture to the right).
 - Please bear in mind that there is no on/off button on the NursingScope. It will turn itself off automatically once the session time is over. The session time can be changed in the Wi-Fi settings in the software.
 - Edit the default auscultation settings by picking the sounds from the library located on the left hand side and clicking an arrow at the bottom. Don't forget to click "save" button, which looks like a little disc.
 - Now the NursingScope is ready to use with the newly assigned sounds, you may begin auscultating.



2b.



2c.

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

> V. TROUBLESHOOTING TIPS

If the NursingScope is not connecting try the following:

1. NursingScope – session time

Make sure the NursingScope is not powering down in the meantime, its default session time is set to 4.5 minutes. To make sure it's active, put it on and press either the plus or minus sign located on the chest piece. You should hear a voice prompt saying "System activation. Mode one".

2. NursingScope – battery

If you've pressed the plus or minus sign and you don't hear anything, the battery has to be exchanged. Attention: Battery life varies greatly between brands and types, therefore please use only AAA alkaline batteries. We recommend the Energizer Ultimate Lithium, which will power the NursingScope for up to four hours.

3. Router

Check whether the router is properly connected and working, it should display a yellow light.

4. Network connection

Check whether the router network "SimScope_5G" is selected in the list of your available network connections (bottom-right taskbar on the desktop).

If you are still unable to connect your NursingScope please contact your sales representative for further assistance.

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

› VI. TRAINING OPPORTUNITIES

The most important training opportunities with the nursing manikin are addressed below. Before performing an exercise, please be sure to observe the notes numbered by the superscript numbers and explained on page 13.

Basic Care

For many seriously ill patients and those in need of assistance, daily personal hygiene must be performed by nursing staff. In order to create the prerequisites for quick and thorough personal hygiene, Nikki offers many possibilities. In addition, numerous auscultation training aspects can be performed using the Nikki manikin.

1. Lifting, carrying, repositioning and types of storage

Since lifting, carrying and repositioning patients should be done as gently as possible, this often places physical strain on the nursing staff. It is important to practice special hand grips and this can easily be done due to the nearly natural mobility of the nursing manikin. All hand grips for moving a patient, lifting out of bed, carrying and repositioning a patient can be learned. The nursing manikin can be set upright and sat down without any additional support. It is then possible to practice helping a patient to get up from a chair or to stand up in bed. Furthermore, it is possible to demonstrate some special positioning of sick patients.

2. Beds and rebedding

All related activities as well as dressing and undressing can be learned on the manikin.

3. Mobilization

All mobilization measures can be demonstrated on the nursing manikin.

4. Washings (whole body washings with intimate care)

In the case of bedridden patients, the nursing staff must perform a full wash in bed. All the hand movements required for this and the entire work sequence can be practiced. The interchangeable male and female sex inserts allow practice for intimate care of both men and women.¹

5. Hair care

The hair can be combed and washed.¹ Drying the hair using a hair dryer can also be practiced.²

6. Oral care

Oral and dental care can be demonstrated on the care manikin. The removable partial dentures in the upper and lower jaw can be used to learn denture care.¹

7. Eye care

Since the nursing manikin has inset eyes and relatively soft eyelids, eye care can be performed in a lifelike manner.¹

8. Ear care

Natural replicated auricles with an approximate 2 cm long, inwardly closed ear canal allow for ear care and irrigation.¹

9. Nose care

There is a connection to the oral pharyngeal space through the nasal entrances, so nursing measures can be taken here.¹

10. Auscultation of Heart, Lung and Bowel

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

NIKKI THE NURSING MANIKIN WITH AUSCULTATION

Many exercises within the scope of treatment care can be performed with Nikki.

1. Prophylactic measures

The nursing manikin offers the possibility to prepare the nursing staff intensively for prophylactic measures and their implementation.

1a. Bedsores (decubitus)

When patients are lying down, the entire body weight rests on the tissues of the back and legs, with protruding parts of the body being particularly exposed to pressure are at risk. To prevent bedsores, the nursing manikin can be used to practice various ways of positioning the patient, such as the prone, supine or side position, as well as repositioning and the correct use of aids.^{1,3}

For the purpose of learning and practicing wound care to be performed in the context of nursing, the decubitus stages proven in clinical practice were presented according to their degrees:

Decubitus **grade 2** in the region of the sacrum (Os sacrum). A partial loss of the skin can be recognized here: the epidermis shows damage that extends into the corium. The superficial pressure damage can manifest itself clinically by the formation of blisters and skin abrasions.



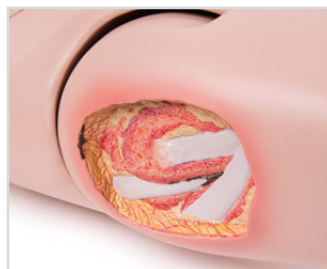
Grade 2

In the area of the heel – a protrusion in the rear part of the foot, the contour of which is formed by the calcaneus – **a grade 3 presents itself**: a loss of all skin layers with damage to the subcutaneous tissue up to necrosis is recognizable here, which can be seen by black discoloration in the wound area.



Grade 3

At the greater trochanter, there is a pronounced **grade 4** decubitus ulcer: destruction of all skin layers and also of the muscle fascia. In addition, underlying muscles and bony parts are affected, which can become damaged and necrotic. Supporting structures such as tendons, ligaments or joint components may also be affected.



Grade 4

1b. Contracture prophylaxis

A wide variety of measures can be learned, such as:

- Positioning the hip and knee joints in 180-degree extension, alternating with slight flexion through a knee roll.
- Positioning the shoulder joint alternately in 30 to 90 degrees of abduction.
- The extension position or 90 degree flexion of the elbow joint.
- The application of a blanket roll with internal and external rotation of the foot.
- Measures to prevent pointed foot contraction.

1c. Pneumonia prophylaxis

The development of pneumonia is an additional and feared complication that must be prevented by all means. The repositioning necessary for this as well as rubdowns of the patient can be practiced.¹

1d. Thrombosis prophylaxis

Since the legs are particularly at risk of thrombosis, learning how to put on antithrombosis stockings and how to wrap the legs can be taught.

1e. Thrush and parotitis prophylaxis

The most important hand movements in oral care can be practiced.¹

2. Physiotherapy

It should be noted here that during thermal therapy, the nursing manikin is never exposed to temperatures higher than 25° C (77° F). No restrictions are necessary for dry cold applications. Moist wraps and packs should not exceed 25°C (77° F). Mustard oil, mustard flour, alcohol, mineral mud or similar should not be used. If practicing with cataplasms, it is recommended to use flaxseed meal, as it does not adversely affect the 3B nursing manikin leads.

2a. Inhalations with different devices

Inhalation therapy involves the use of various devices such as bronchitis kettles, aerosol and inhalation apparatus. The positioning of the patient, the correct positioning of the devices and the correct application of face masks and mouthpieces can be practiced.⁴

2b. Oxygen supply

The nursing manikin is suitable for practicing various ways of administering oxygen, such as applying an oxygen mask, a nasal catheter, oxygen goggles, etc.

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3. Resuscitation (Breath Donation)

The nursing manikin offers very good practice opportunities for the various methods of administering breaths.⁵

3a. Mouth-to-nose

The entire technique of mouth-to-nose ventilation can be practiced with the nursing manikin. This also includes the preparatory measures for mouth-to-nose ventilation such as correct positioning, clearing the airway of vomit and removing dentures.^{5,6}

3b. Mouth-to-mouth

All necessary measures of mouth-to-mouth ventilation including the preparatory measures (see 3a. Mouth-to-nose) can be learned and practiced with the nursing manikin. In addition, ventilation with the aid of a tube is also possible.^{5,6}

3c. Self-inflating bag or Ambu bag and other devices

All hand movements for artificial respiration with the resuscitation bag can be practiced.

3d. Other methods

Using the tracheal opening of the nursing manikin, the application of tracheal cannulae and their care, the placement of a tracheal catheter and tracheal suctioning can be practiced.^{5,7}

4. Diabetic Foot Syndrome (DFS)

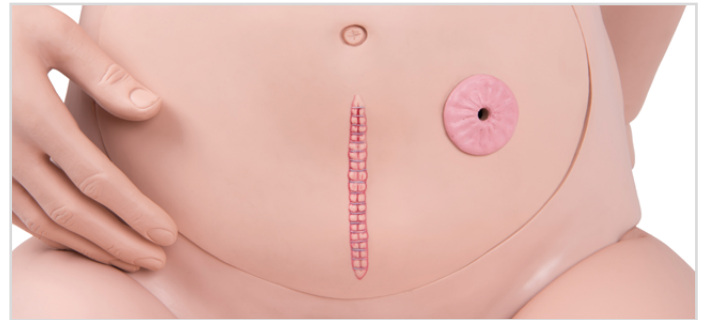
As a result of diabetes mellitus, defects and pressure points can occur in the area of the foot, whereby the forefoot, ball area, big toe and little toe can be affected. On the right foot, the big toe shows gangrenous changes, which have already extended to the metatarsal area on the dorsum of the foot. On the sole of the foot (plantar), a so-called mal perforans can be seen. This is a neuropathic ulcer, which is also one of the typical clinical symptoms of diabetic foot syndrome.



5. Associations

Applying a bandage requires a certain amount of skill, for which the training manikin offers numerous possibilities. The professional application of different bandages can be practiced on all parts of the body.⁸ The dressing techniques on the stump of the leg can also be practiced. For this purpose, the supplied stump insert must be inserted into the knee joint beforehand (see page 8, chapter „B. Stump insert“).

A surgical staple suture is shown on the abdominal wall, which can be used for wound closure after abdominal surgical procedures. The injection pads on the upper arm and thigh can be exchanged for



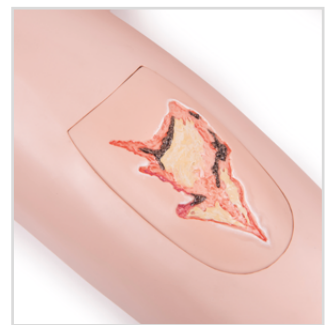
inserts with wound displays (see page 9, chapter „A. Injection Pads or Wound Inserts“).

- The upper arm insert shows a laceration (vulnus lacerum), which can be caused by force with blunt objects. The skin and the underlying soft tissue are torn open. Typically, a laceration shows torn and irregular wound edges.
- The thigh insert shows an abrasion (vulnus abrasum), which can occur when the skin is abraded by frictional forces, e.g. as a result of a fall. An abrasion that is only superficial corresponds to erosion, while a deeper abrasion corresponds to excoriation.

Wound care and management measures can be learned and trained on all the wounds shown, such as wound cleansing by rinsing with disinfecting solutions¹, wound covering (compresses), and applying and changing dressings.⁸



Upper arm insert with laceration



Femoral insert with abrasion

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6. Flushes

Body-warm liquids with or without medicinal additives are used for rinses.¹

6a. Eye wash

Eye irrigation can be practiced with the eyes. It is also possible to practice the necessary hand movements for inserting ointments or drops into the eye.¹

6b. Ear irrigation

The external auditory canal is replicated but closed at the end. Therefore, ear irrigation as well as the insertion of medication can be practiced.¹ After these exercises, the ear canal must be dabbed dry with absorbent cotton.

6c. Gastric lavage

For gastric lavage, it is best to use the supplied gastric probe (CH18 duodenal probe). Before inserting the probe, lubricate it with the supplied contact gel to achieve good lubrication.⁹ The stomach has a capacity of approx. 360 ml (12.17 fl oz) and is connected to the esophagus by means of a screw cap.^{1 10}

6d. Bowel irrigation

The bowel tube supplied (CH28 rectal catheter) is recommended for this purpose. It should be greased with Vaseline before insertion so it can slide easily through the plastic valve of the rectum. When irrigating Nikki, enough liquid¹ must be used to completely fill the bowel piece (capacity approx. 1,200 ml (40.58 fl oz)). Only then can sufficient liquid flow back through the inserted tube. When the casing piece is full, the casing tube can be pulled off and reinserted without liquid escaping.^{11 10}

6e. Bladder irrigation

It is best to use an irrigation catheter (size approx. CH16) for bladder irrigation.¹² The catheter must first be thinly coated with the contact gel supplied to ensure perfect lubrication and to facilitate the passage of the catheter through the plastic valve of the bladder. The bladder has a capacity of approx. 220 ml (7.44 fl oz). The filling opening on the bladder must be closed during these exercises. Bladder irrigation can be performed with both the female and male sex insert. The valve in the bladder should be treated with contact gel or Vaseline before and after each use.^{1 10}

6f. Vaginal irrigation

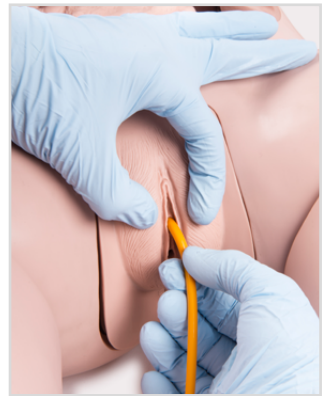
An approx. 15 cm (5.9 in) long plastic tube, which connects the female genital insert to the uterus, represents the vagina in Nikki.^{13 10}

7. Enemas

Enemas can be practiced very well with the nursing manikin. A lamellar valve acts as a sphincter, preventing fluid from leaking when the rectal tube is inserted or after it has been removed from the anus. At the end of the rectum is a piece of intestine with a capacity of approx. 1,200 ml (40.58 fl oz). The same amount of liquid should be used for all exercises, as not all of the liquid filled in runs back out when Nikki is lying on its side. (see also 6d. Bowel irrigation, page 12). For enema treatments, the supplied disposable intestinal tube (CH28 rectal catheter) is recommended, which must be lubricated with Vaseline before insertion. For enema treatment, the cleansing enema, the high enema and the swing enema can be practiced. It is also possible to administer disposable lyses.^{1 14}

8. Catheterization

Since the nursing manikin has interchangeable male and female sex inserts, all the necessary actions can be carried out for the catheterization for urine collection and can be practiced for both men and women. It is best to use the Nelaton CH14 catheter supplied for this purpose. Before the exercise, the bladder is filled with water using a syringe (capacity approx. 220 ml (7.44 fl oz)). The filling orifice must not be open during catheterization. If the fluid does not flow out of the bladder when the catheter is correctly positioned, you can start the flow of fluid by raising Nikki or applying slight pressure to the bladder. When doing so, close the drainage opening with your finger.^{1 15}



9. Injections and infusions

Equipped with injection cushions on the thighs, the upper arms and buttocks, Nikki is ideally suited for practicing injections and infusions.¹



9a. Subcutaneous injections

On the injection pads in the upper arms and thighs, you practice the technique of subcutaneous injection as well as the pre- and post-treatment of the application sites.

9b. Intramuscular injections

For practicing intramuscular injections, there are two injection pads on the buttocks, one for ventrogluteal and the other for intragluteal injection.

10. Enterostomy

The abdominal wall is provided with an anus praeter opening. On the inside, there is an approx. 8 cm (3.15 in) long piece of plastic intestine which is closed at its end and has no connection to the actual intestine (see also page 7, Fig. 15). All measures associated with the care of the artificial bowel opening can be practiced on the manikin.

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Notes:

- ¹ Please use only water for training and remove all liquid residues after each exercise. (For more information, see „7. Care,“ General Notes, page 14.)
- ² Caution: When doing so, please select the lowest heat level of the hair dryer and be careful not to stay too long and too close to one spot.
- ³ When practicing, please replace medical powder with the talcum powder provided.
- ⁴ Caution: All training may only be performed with the apparatus switched off.
- ⁵ Note: The lungs inflate when handled correctly. Therefore, please ensure that the stomach is connected to the esophagus and the drainage opening of the lungs is closed before the exercise.
- ⁶ After the breath donation, the Nikki can be disinfected with a skin disinfectant.
- ⁷ All required probes, catheters and cannulas are thinly gelled with the supplied contact gel before practicing.
- ⁸ Plaster, zinc glue or similar should be avoided. Sticking plaster residues are removed with petroleum ether.
- ⁹ The throat and mouth area of Nikki should also be gelled from time to time. (For more information, see „7. Care“, General notes, page 14.)
- ¹⁰ After the exercises for „6. Flushing“, Nikki and all its parts must be cleaned and dried before reassembly. Liquid residues must be removed from the organs, whereby the filling openings can be used for draining (intestinal piece and bladder). Any last remnants of liquid can be removed by knocking them out.
- ¹¹ If fluid runs out of the anus when the intestinal tube is not inserted, open the blue screw cap and refill the rectal valve with Vaseline (approx. 2 ml) using the disposable syringe provided. The total volume of the valve is 5 ml.
- ¹² The soft rubber indwelling catheters are not well suited for the exercises because they are sometimes difficult to insert.
- ¹³ Since the vagina is not equipped with valves or drainage openings, liquid may leak out next to the inserted mother tube. After each exercise, the water remaining in the vagina must be removed through the screw cap on the sex insert.
- ¹⁴ After the exercise, the intestinal piece is unscrewed from the rectum and freed from liquid residues. Only after all parts have dried thoroughly may they be reinstalled.
- ¹⁵ After the exercises, the sex inserts and the bladder must be cleaned and dried thoroughly before they are reinserted in Nikki (see also „6e. Bladder rinsing“, page 12.).
- ¹⁶ Only water may be used for injections and infusions. The injection pads consist of a plastic cover and an absorbent foam pad inserted into this cover. They can be removed from the recesses in the manikin body for the purpose of cleaning or squeezing. The foam pads are removed through the slit at the bottom of the plastic sleeve. After the exercises, all injection pads must be intensively cleaned and dried before reinsertion. Powdering the plastic sleeves with talcum powder facilitates reinsertion. As the injection pads wear out, they must be replaced from time to time. They can be ordered as spare parts. 3bscientific.com
- ¹⁷ Infusion care note: When practicing, please note that the injection pads only have a limited absorption volume for liquid (possibly squeeze out in between).

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Regular care

To support years of safe operation and a clean appearance of Nikki, it must be subjected to regular maintenance. Due to its special design, this is very easy. Since all manikin parts and internal exercise organs are made of plastic, the surfaces can be cleaned regularly with water and, if necessary, with a weak soap solution. After treatment with soap solution, the manikin must be intensively wiped with clear water and wiped dry. In any case, make sure that the dry wiped doll parts dry well in the air afterwards. Only a completely dry manikin may be reassembled. Before reassembling the individual parts, apply a very thin layer of lubricant or the contact gel supplied with Nikki to the joints and joint surfaces where the plastic could rub against each other. Moderate application of the lubricant/contact gel is also recommended for the nasal and pharyngeal area in order to achieve better lubrication, and occasional application of lubricant to the threaded pins used on the joints ensures good lubrication and should therefore also be performed regularly. The valves installed in the bladder should be cleaned at regular intervals with petroleum jelly. When the bladder is unscrewed, a valve consisting of plastic flaps becomes

visible, which can be rubbed with Vaseline using the little finger. To care for the valve at the anus and rectum, insert an intestinal tube smeared with Vaseline from time to time.

General care instructions

Any adhesive plaster residue on the plastic surface is removed with benzine. Any markings on the nursing manikin may only be made with a pencil. Colors from ballpoint pens, fiber pens or similar cannot be removed or are very difficult to remove.

If working with liquids, only pure water may be used. Medication, solutions or tinctures must be avoided. Liquid residues must be removed after each exercise.

For this purpose, openings with screw caps were installed in the head (underside), neck, lungs, intestinal part and bladder. The stomach is emptied through the opening to the esophagus. Further special instructions for nursing can be found in the description of the corresponding exercises.

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