



...going one step further



P10/1

P11/1

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The 3B-Nurse Training Doll

I. DESCRIPTION OF THE NURSE TRAINING DOLL

1. General Description of the Doll and its Uses

The Nurse Training Doll 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. The mannequin is constructed to simulate as nearly as possible the normal positions and movements of the human body. The doll has been developed with the help of nursing teachers. The mannequin 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 mannequin 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 doll 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 doll it is nearly impossible to damage it even with the most adverse treatment.

The hands and feet of the doll 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.

The doll is available in two forms:

1. The Patient Care Manikin Basic P11/1
2. The Patient Care Manikin PRO P10/1

The Patient Care Manikin Basic has no inner organs and is intended for basic care procedures. The Patient Care Manikin PRO has the usual internal organs so that in addition to the basic care procedures a wide range of additional treatment procedures can be practiced.

The doll measures about 174 cm (68.5"). The Patient Care Manikin PROs weighs about 15.5 kgs (34 lbs) and the Patient Care Manikin Basic weighs about 14 kgs (31 lbs).

The trunk of the doll is made in two parts which can be separated:

- a) an upper part which contains the heart, lungs, and stomach in the Patient Care Manikin PRO.
- b) a lower part with the external sex organs. The Patient Care Manikin PRO includes the organs of the abdomen and pelvis including the intestine, the bladder, and the internal sex organs.

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 doll has an exchangeable male and female genital insert. The doll has 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

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Each doll 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 with the doll.



2. Assembly

For shipment, the Nurse Training Doll is disassembled and packed in a strong corrugated box. The doll 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 doll should be unpacked and arranged as shown on the picture below:



The female insert is in place in the doll. The two piece trunk of the Patient Care Manikin PRO contains the internal organs. These should be removed first to simplify the attachment of the limbs.

2a. Removal of the Inner Organs (Patient Care Manikin PRO) 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 may be removed. In the case of the Patient Care Manikin PRO, the urethra, vagina, uterus, ovaries, and rectum may also 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

(This is done only with the Patient Care Manikin PRO)

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.

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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.



2f. Installation of the Internal Organs (Patient Care Manikin PRO)

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 screwing it into the urethra.



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2g. Installation of the Abdominal Cover

The abdominal cover (with an ostomy site) may now be put in place. In the case of the Patient Care Manikin PRO, the ostomy site (which has no connection to the intestine) must be fastened to the inside of the abdominal cover. The nursing doll is now ready for use.

3. Maintenance

The Nurse Training Doll is designed to facilitate cleaning and maintenance procedures. Regular cleaning and care will prolong the useful life of the doll.

All parts of the doll 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 doll may be reassembled. As the doll 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 doll should be made with a pencil. The inks of ball point pans and fiber point pens cannot be removed.

Only water should be used for exercises with the doll. 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 doll will be found with the appropriate exercises.

II. USES OF THE TRAINING DOLL

The major exercises possible with the nurse training doll are presented.

A. Basic Patient Care

For the seriously ill or helpless patient, nurses must perform daily body care. The nursing doll 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. The standard training doll (without internal organs) is sufficient for practicing all procedures that are concerned with basic patient care.

I. 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 the training doll.

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 doll will hold the sitting position without any support.

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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 with the training doll.

3. Moving the Patient

All techniques for moving the patient may be demonstrated with the training doll.

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 doll has removable partial upper and lower dentures.

7. Care and Cleaning of the Eyes

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

8. Care and Cleaning of the Ears

The doll 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.

General Maintenance

After each of the above procedures (especially when water is used) the doll 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. The parts of the doll which were used 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.

B. Medical care

1. Preventive Techniques

Practice with the nurse training doll 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 with the nursing doll. 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.

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



Grade 2

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 3

Grade 3 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 4

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.

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1b. Prevention 01 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 doll. Only clear water (no alcohol or similar fluids) should be used for a rub down.

d. 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 the training doll.

1e. Prevention of Thrush and Parotitis

The most important techniques for mouth care can be practiced with the nurse training doll. For all such procedures, only water should be used, never any medications. The training doll 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 doll should not be exposed to temperatures above 25°C (77°F). There are, however, no limits to dry cold applications. For intubation exercises one should use a linseed pap as a lubricant. This material can be removed easily and will not cause discoloration or damage to the doll.

Maintenance

After using water for any of the above exercises the doll 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

The training doll 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.

3. Resuscitation

The training doll 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 doll (positioning the patient, clearing the air passages, and removal of the dental prosthesis). The technique of mouth to nose

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resuscitation can be shown with the doll, 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 doll.

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 doll may be used to teach a wide range of bandaging techniques on all parts of the body. The Patient Care Manikin PRO 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.

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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.

6. Irrigations and Lavages

Exercises with the doll 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 doll 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 in the doll 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 doll 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.

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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 the doll 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 doll. When doing this exercise, either the male or the female inserts can be used (see CH 2. 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 doll. 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 doll 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 doll. A plastic valve represents the anal sphincter on the doll. 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 the doll is lying on its side (see 11. B. 5d.). 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 doll. Many types of intestinal irrigations may be demonstrated with the nurse training doll. The administration of retention enemas is possible. Only water (without any added medications) should be used in the exercise.

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8. Catheterization

The nurse training doll 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 doll 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 doll 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 doll.

9. Injections and Infusions

The nurse training doll is designed so that both injections and infusions may be practiced. Injection 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 on the doll.

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 the nurse training doll 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 doll.

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