

# Accurate measurement of weight and height 1: weighing patients

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**Abstract** This practical procedure, the first of a two-part series, explains the rationale for measuring patient weight and outlines the procedure using a variety of weighing equipment. Part 2 will describe the procedure for measuring height and explain how weight and height are used to calculate body mass index.

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## Box 1. Reasons for measuring body weight

Measuring a patient's body weight can be done to:

- Assess and monitor fluid and nutrition status as part of a nutrition screening tool
- Calculate drug doses
- Calculate nutrition and fluid support if required
- Monitor the effectiveness of nutritional support
- Help select pressure-relieving equipment that is appropriate for the patient

Source: Adapted from National Nurses Nutrition Group (2017)

Recording an accurate body weight is a fundamental part of nutrition screening. It may also be used to inform other aspects of care, such as fluid-balance management and drug-dose calculations. Box 1 outlines the indications for measuring a patient's weight.

## Malnutrition and screening

Malnutrition is a common problem and is found in all care settings. In adults it is estimated to affect around:

- 30% of patients on admission to hospital;
- 34% of patients in hospital wards;
- 35% of residents admitted to care homes in the previous six months;
- 35% of residents in care homes;
- 18% of adults on admission to mental health units (Elia, 2015).

Anyone admitted to a clinical setting who is acutely unwell could be considered at risk of undernutrition, but certain groups have additional risk factors including:

- Patients with long-term conditions such as chronic obstructive pulmonary disease, dementia and cancer;
- Patients who have been discharged from hospital recently;
- Older people (Stratton et al, 2018; Elia, 2015).

Body weight, along with height, should be recorded as part of nutrition screening:

- On admission to hospital/pre-assessment clinics;

- At outpatient appointments;
- On admission to care homes;
- In GP surgeries.

The National Institute for Health and Care Excellence (2006) recommends that body weight is recorded:

- For inpatients every week;
- On first contact in an outpatient setting;
- At home if weight is a cause for concern.

## Measuring weight

The procedure for weighing patients is often delegated to junior staff, so it is important that all staff have received training and understand the rationale for carrying out the procedure (National Nurses Nutrition Group, 2017). Consideration should be given to:

- Selecting appropriate equipment;
- Equipment calibration/maintenance;
- Accurately recording results;
- Interpretation of findings;
- Onward reporting of results if there is a change in weight recorded.

## Equipment

Weighing equipment is an essential monitoring and diagnostic tool; using equipment which is inaccurate or inappropriate can result in errors in diagnosis and treatment (NNNG, 2017). Guidance on appropriate weighing equipment is outlined in Box 2.

When selecting equipment it is important to consider the patient's clinical condition and mobility. Different types of scales are available including:

## Box 2. Guidance on weighing equipment

All weighing equipment used for medical application should be procured centrally. All equipment should be:

- Class III or higher and carry a green M label and CE mark
- Marked with a four-digit number indicating who is responsible for verifying the equipment – including manufacturers or the local standards trading officer
- Only used for medical applications
- Display weights in metric units

Organisations should have a policy for testing equipment annually and inaccurate equipment should be removed or repaired. Staff should receive training on how to use equipment and how to report faults or concerns about accuracy.

Sources: National Nurses Nutrition Group (2017), Department of Health (2010), Local Authorities Coordinators of Regulatory Services (2009), UK Weighing Federation (2009)

## Clinical Practice

### Practical procedures

- Standing scales;
- Chair scales;
- Wheelchair scales;
- Hoist scales;
- Bed scales.

Scales should only record in metric measurements (National Measurement and Regulation Office, 2015; Local Authorities Coordinators of Regulatory Services, 2009). As such, it is helpful to have a weight conversion chart available so patients can be given their weight in imperial measurements if requested.

#### Infection prevention precautions

Scales that are used by multiple patients present an infection risk and should be cleaned after each use according to local policy. Patients who have an infection may still need their weight to be measured; local infection prevention teams can offer advice on specific precautions that must be taken in these circumstances.

Non-sterile gloves are not required routinely for this procedure. Nurses need to assess individual patients for the risk of exposure to blood and body fluids (Royal College of Nursing, 2018) and to be aware of local policies for glove use.

#### The procedure

1. Review the patient's notes and identify the rationale for measuring the patient's weight – this will help you to interpret the results.
2. Discuss the procedure with the patient and obtain verbal informed consent.
3. Assess the patient's mobility and ability to stand unassisted, and select the appropriate weighing equipment.
4. Check the patient area is warm and free from drafts and, if necessary, screen the bed to maintain patient privacy and dignity.

5. Decontaminate your hands according to local policy. An apron should be worn if the patient needs physical assistance to get out of their bed/chair.

6. Check the weighing equipment has been cleaned and position it on a flat surface. Ensure any brakes are applied. The equipment should not touch the wall or any surrounding furniture, as this can lead to inaccurate readings (NNNG, 2017).

7. Ask the patient to remove heavy clothing. In the community, lightweight indoor clothing can be worn, while people in hospital can be weighed in their nightwear. If possible, shoes should be removed. Record in the patient's records any clothing and footwear they are wearing while being weighed (NNNG, 2017); this facilitates comparisons being made when future measurements are taken. If possible, when repeat weights are required in hospital, weigh the patient in similar clothing and at a similar time of day.

8. Urinary catheter bags, stoma appliances and any other drainage devices should be emptied before you take a measurement (Fig 1), as the additional weight of the contents will give a false reading.

### Box 3. Using weighing equipment

Always follow the manufacturer's instructions

#### Standing scales

- It may be necessary to adjust legs on scales to ensure they are level. Some scales have a spirit level to help with accuracy
- Ensure the patient's feet are positioned on the scales
- Check the patient is not supporting themselves with a walking aid or adjacent furniture or walls

#### Chair scales

- Ensure the patient is sitting upright with their back against the chair, and their feet off the floor and positioned on the scale's footrests
- Ask the patient to position their hands in their lap so they are not supporting themselves on the arms of the scales (Fig 4)

#### Wheelchair scales

- Weigh the empty wheelchair
- Weigh the wheelchair with the patient sitting in it, ensuring their feet are off the floor and on the footrests
- Calculate the patient's weight by subtracting the weight of the wheelchair from the combined weight of the wheelchair and patient

#### Hoist scales

- Ensure scales and hoist are compatible
- Check the sling is the correct size for the patient
- Offer the patient reassurance during the procedure, which may be uncomfortable for them
- Ensure no additional bedding, clothing or drainage devices are caught in the sling as this will affect the weight recorded

#### Bed scales

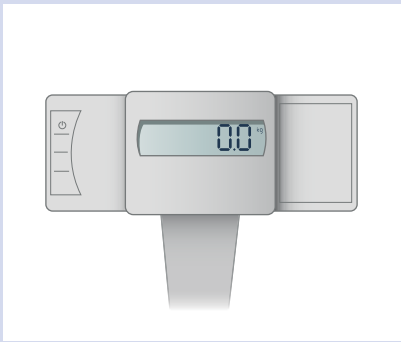
- There are several different types of bed scales – nurses should be familiar with manufacturers' instructions before using them
- Bed scales are primarily used in high-dependency areas where patients are unable to get out of bed

Fig 1. Empty drainage devices



Empty catheter bags and other drainage devices before measuring the patient's weight

Fig 2. Check equipment



Check weighing equipment is set to zero before starting the procedure

9. Check the weighing equipment is set to zero and reset if required before weighing the patient – this will help to ensure an accurate reading (Fig 2).

10. If required, help the patient on to the weighing equipment and ask them to remain as still as possible – with their feet off the floor if using a sitting scale.

11. Check the patient's clothing is not touching any fixed part of the scales so it does not get caught when sitting and standing. When using standing scales, ensure the patient is not supporting their body weight with walking aids, as this will lead to an inaccurate reading (NNNG, 2017) (Fig 3).

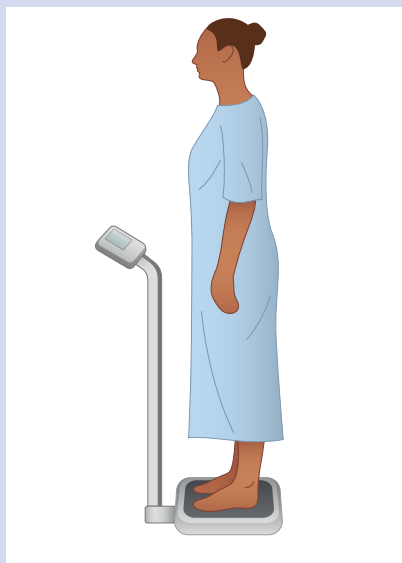
12. Record the patient's weight in the relevant medical records in kilograms and to the nearest 0.1kg. Include drug charts and nutrition screening tools.

13. Check the weight against previous recordings; if it has changed significantly, it is useful to repeat the procedure to check the reading is accurate (NNNG, 2017). Consider factors that could influence weight, such as symptoms of oedema and ascites, which can result in weight gain (NNNG, 2017). Using different weighing scales may also affect the weight recorded, and any factors that could affect weight should be recorded in the patient's notes.

### Professional responsibilities

This procedure should be undertaken only after approved training, supervised practice and competency assessment, and carried out in accordance with local policies and protocols.

Fig 3. Standing weighing scales



The patient should stand upright and not support their body weight by leaning against an adjacent wall or any nearby furniture

14. When you have obtained an accurate reading, help the patient into a comfortable position and to get dressed if required.

15. Explain your finding to the patient and any action you plan to take.

16. Clean the scales according to local policy.

17. Decontaminate your hands.

18. Report any abnormal findings to the appropriate member of the multidisciplinary team.

### Alternatives to weighing patients

Evans and Best (2014) noted that it is not always possible to weigh patients on admission to hospital due to their condition. In these situations, nurses can ask the patient about a recently recorded weight or check to see if it is noted in their hospital records. A visual assessment of the patient may also reveal signs of weight loss – such as rings that are loose on fingers – and relatives may be able to provide additional information.

The patient should be weighed as soon as they are stable. **NT**

● Part 2 of this series will describe the procedure for measuring a patient's height and calculating their body mass index.

Fig 4. Sitting scales



If the patient is to be weighed on sitting scales, they should fold their hands in their lap and keep their feet off the floor to avoid inaccurate readings

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CLINICAL SERIES

### Accurate measurement of weight and height

- Part 1:** Accurate measurement of weight and height 1: weighing patients April
- Part 2:** Accurate measurement of weight and height 2: recording height May