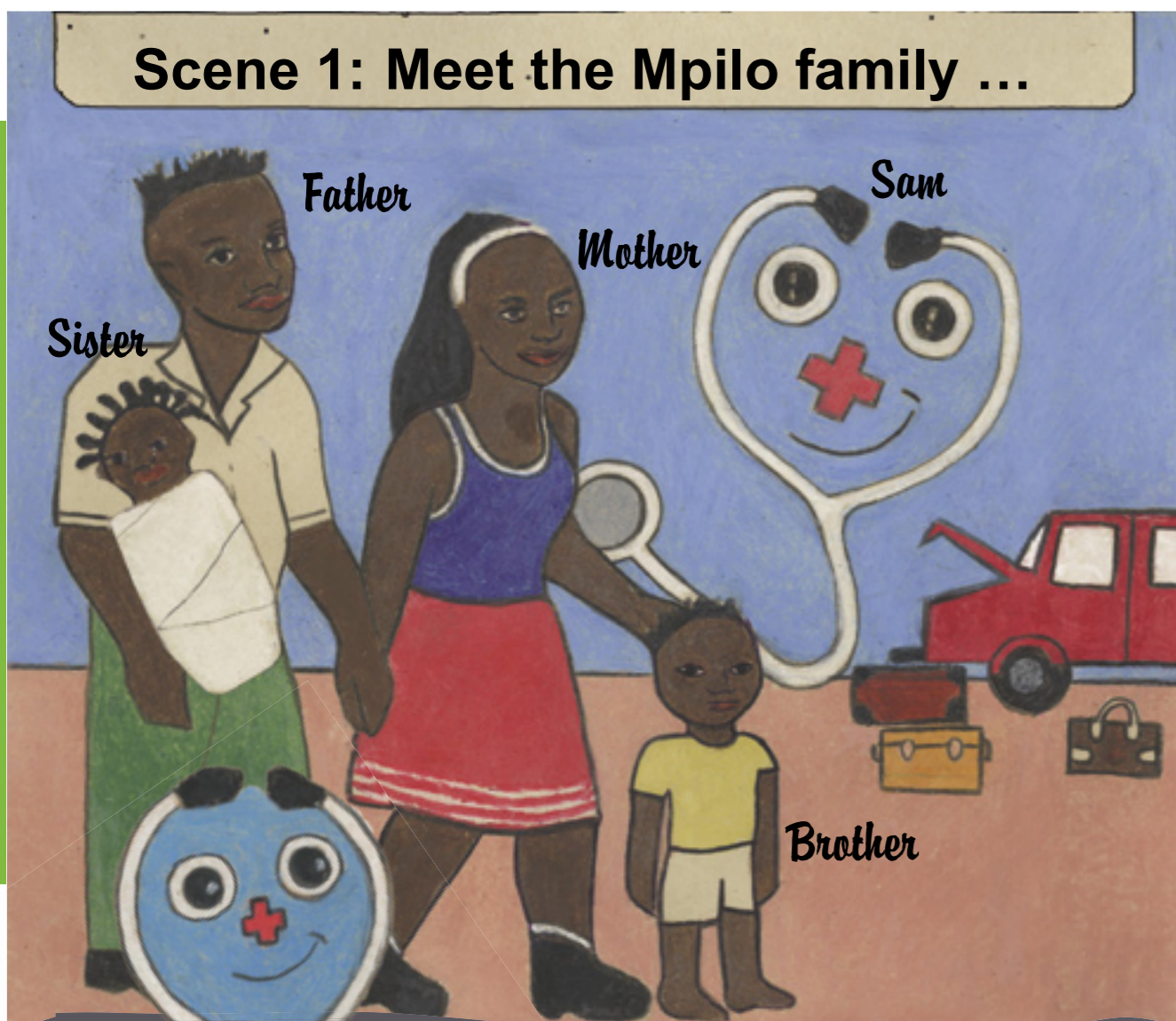


METROLOGY

MEASUREMENT IN HEALTH

World Metrology Day: 20 May 2006

Scene 1: Meet the Mpilo family ...



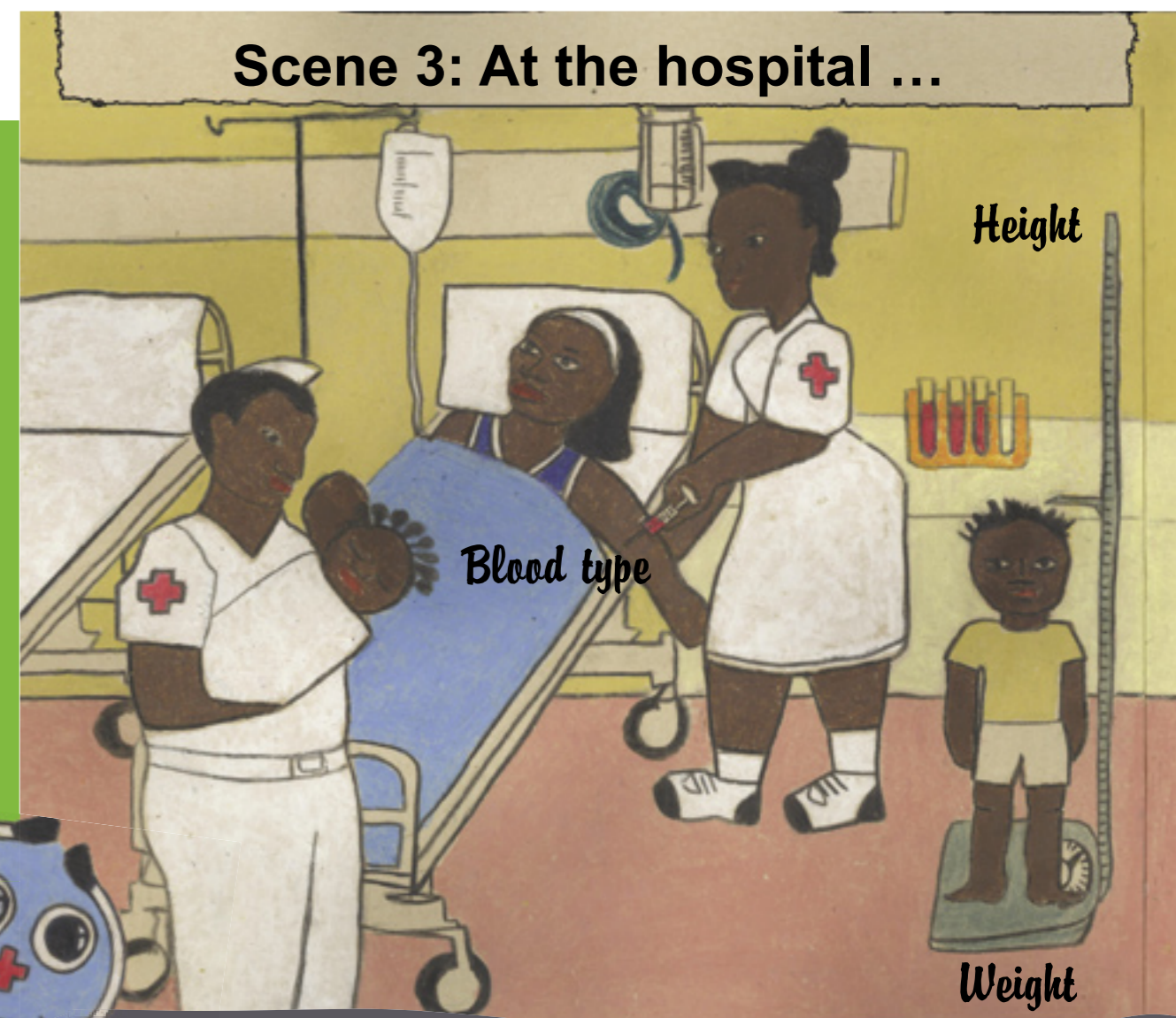
Hello, I'm Sam the stethoscope and I work in a hospital! I will be assisting you in learning about types of measurements in health and the importance of accurate measurements. First let me introduce you to the Mpilo family. They are about to go on a holiday trip in their motor vehicle. Let's join them!

Scene 2: The Mpilo's car accident ...



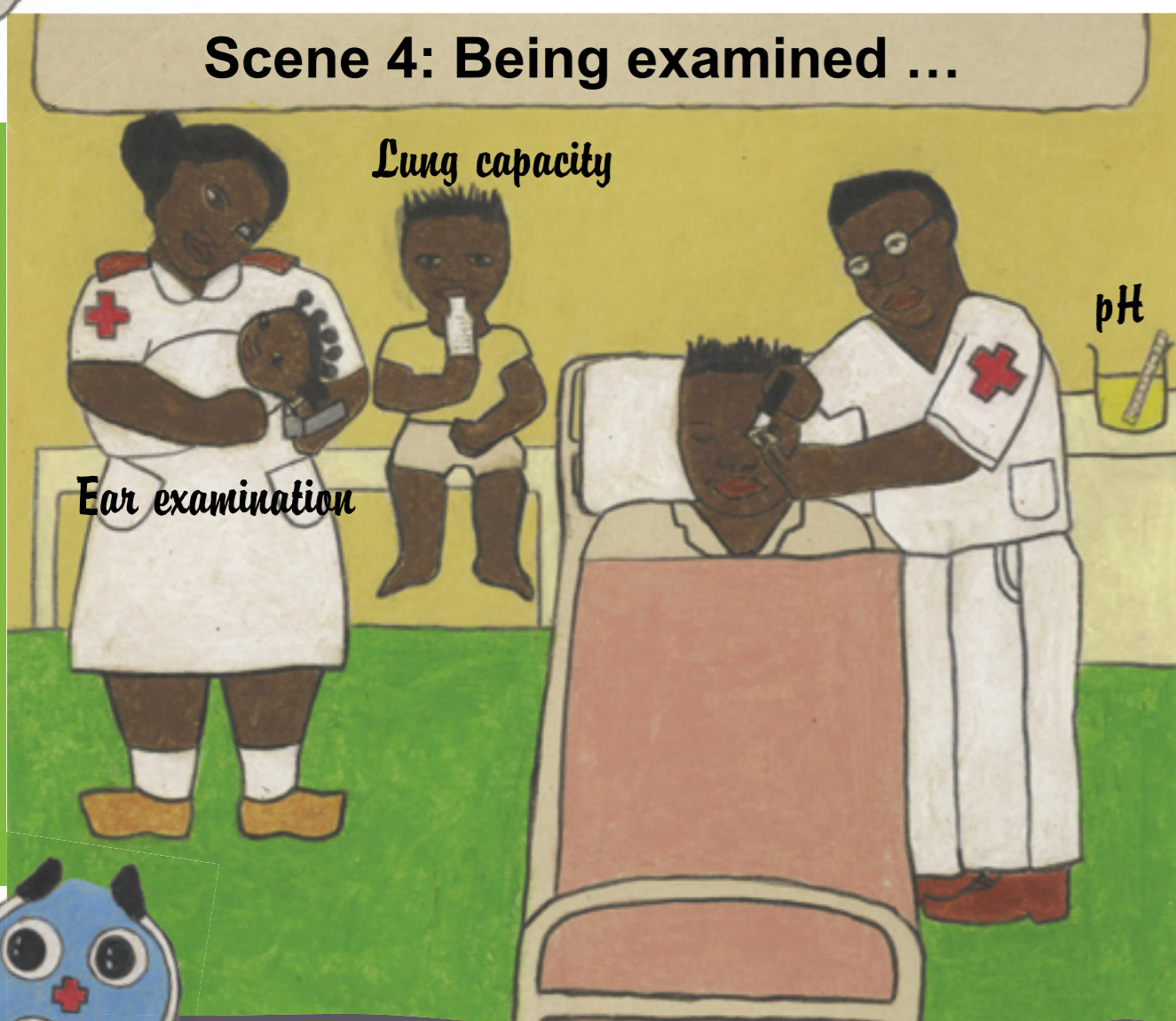
Oh dear ... Father Mpilo's body temperature reads 38,5 degrees Celsius ($^{\circ}\text{C}$) on our thermometer. This is about $1,5^{\circ}\text{C}$ above the norm. Luckily his blood pressure looks fine at 120 over 80 millimetres (mm) of Mercury. Mother Mpilo's pulse rate is good at 60 beats per minute. However she is dehydrated and we have put her on a drip containing 500 millilitres (ml) of saline solution.

Scene 3: At the hospital ...



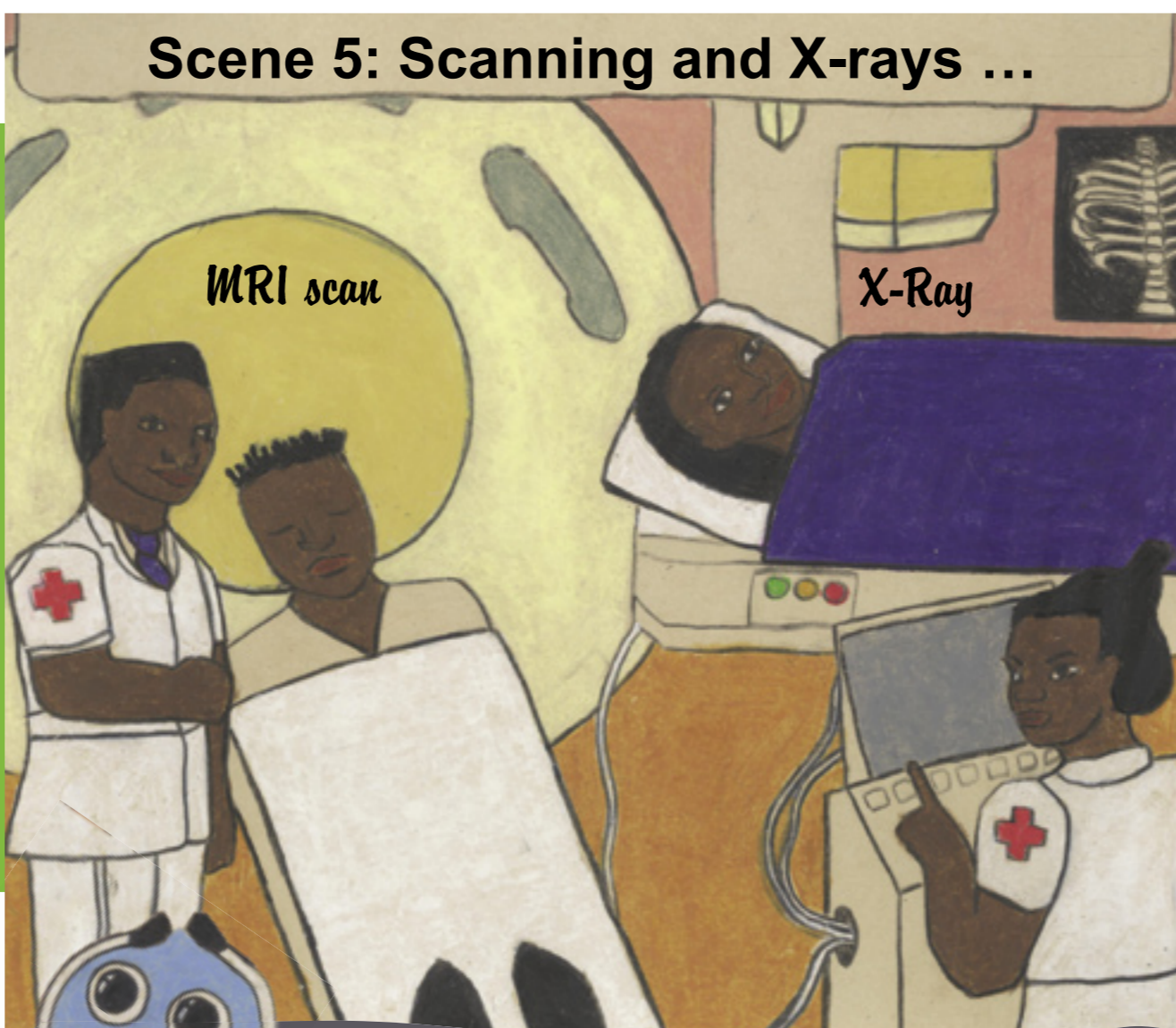
Right ... we are measuring Brother Mpilo's weight in kilograms (kg) on a scale and his height in metres (m) with a measuring stick. This is important in order to administer the correct medication dosages. Ouch! Mother Mpilo has lost some blood in the accident and 25 ml of her blood is being drawn into a sterilized syringe. This will be sent to the pathology laboratory to determine her blood type, in case she needs a blood transfusion.

Scene 4: Being examined ...



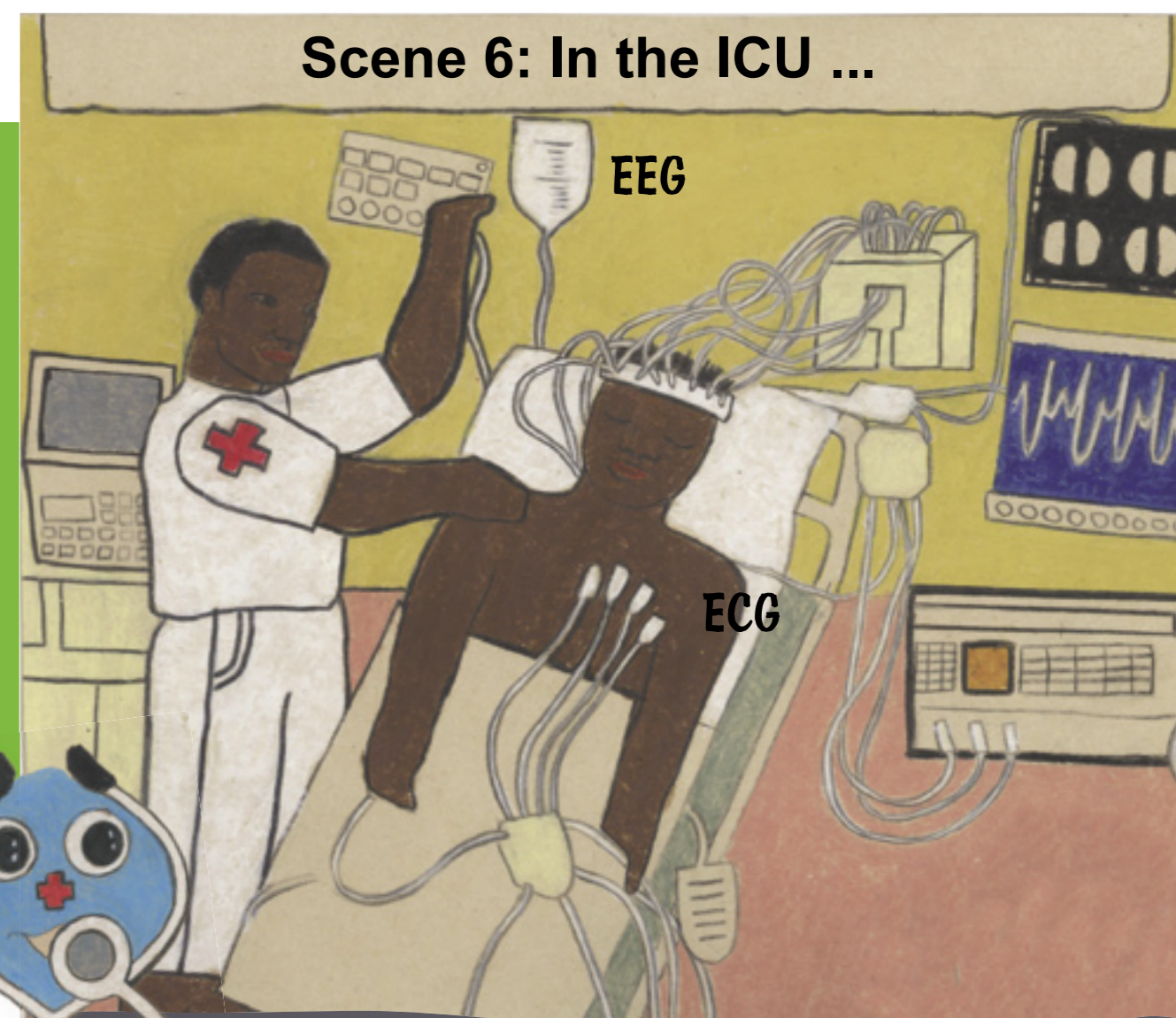
Good grief ... as he is wheezing Brother Mpilo's lung capacity is being tested in litres, whilst Father Mpilo's eye functionality is being checked with an ophthalmoscope. Shame, the nurse is examining Baby Mpilo's outer ear canal and eardrum as well as taking her temperature using an otoscope. Test strips are being used to determine the pH (degree of acidity) of Baby Mpilo's urine which will tell us whether she has an infection.

Scene 5: Scanning and X-rays ...



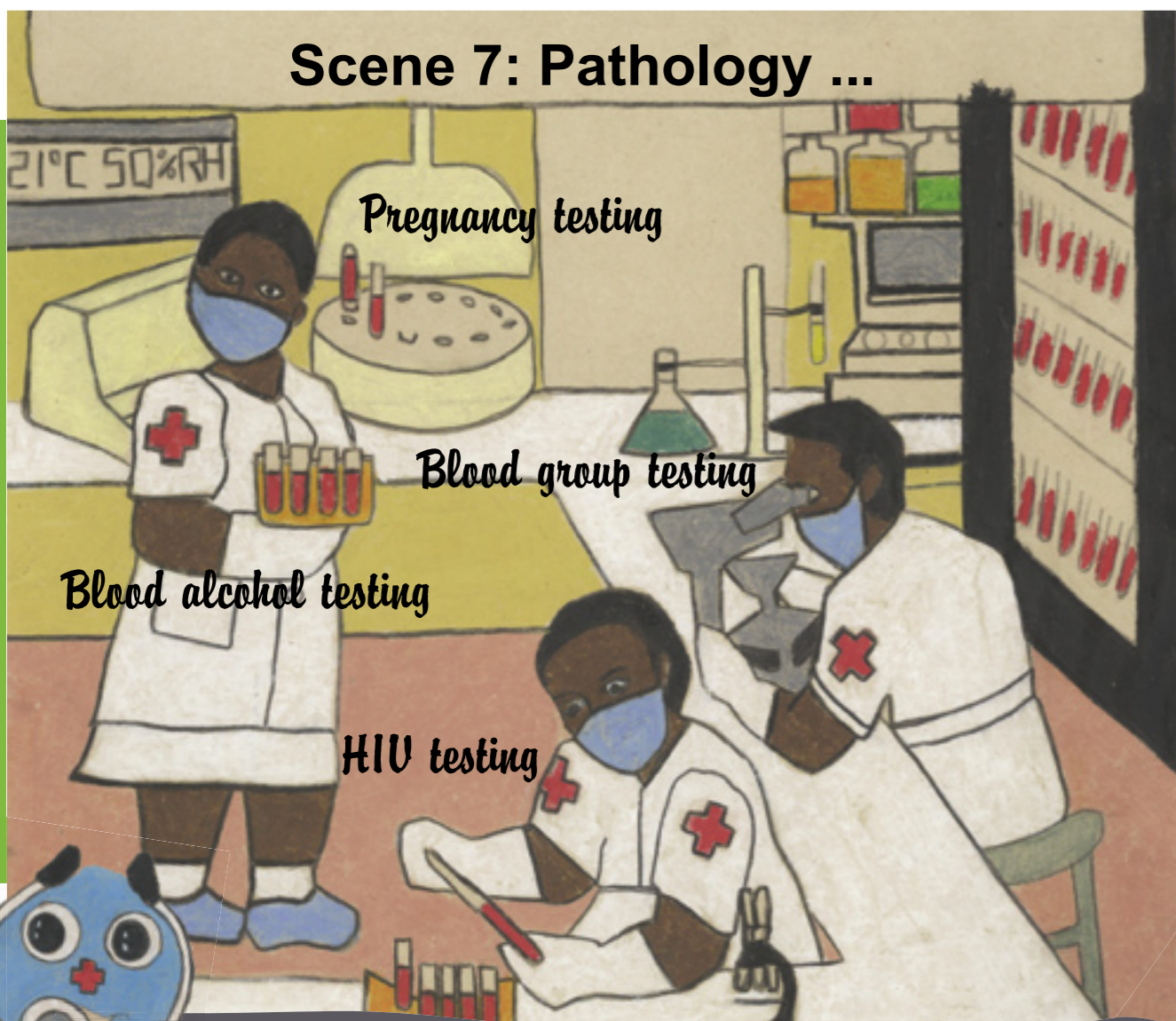
Unfortunately, Father Mpilo has sustained serious head and chest injuries. He is undergoing a magnetic resonance imaging (MRI) scan to determine the nature of his injuries. We suspected that Mother Mpilo had broken a few of her ribs and therefore x-rays were taken, using a fluoroscope. The good news is that her ribs are only a little bruised!

Scene 6: In the ICU ...



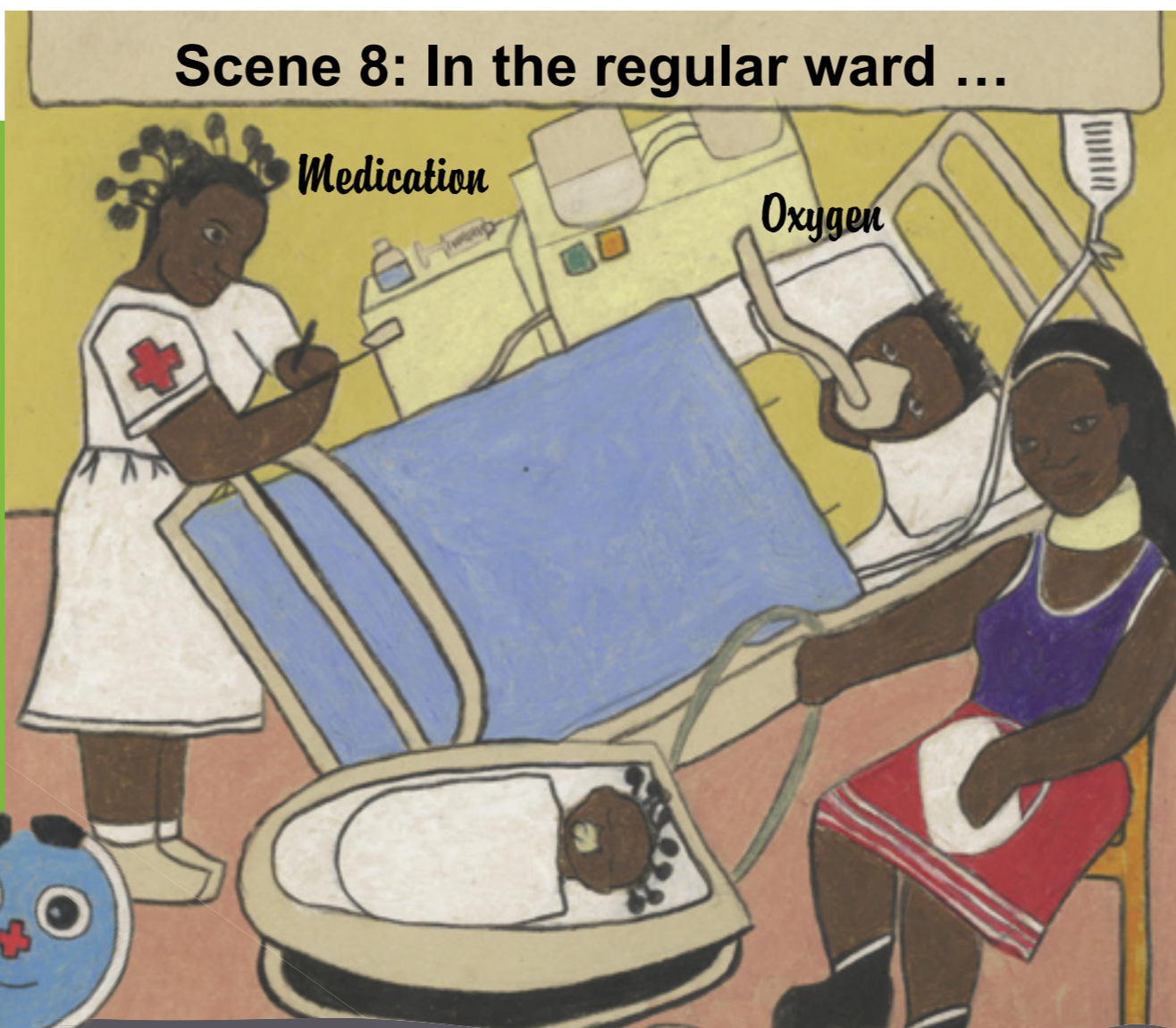
Phew! It is a good thing we got Father Mpilo to the ICU as quickly as we did. We are monitoring the electrical activity of his brain using an electroencephalogram (EEG) to check for blood clotting. We are also measuring the electrical activity of his heart using an electrocardiogram (ECG) to establish the condition of his heart. It goes without saying that these measurements need to be extremely accurate.

Scene 7: Pathology ...



Wow! Mother Mpilo's blood samples are now being tested for blood group type. The common blood grouping system comprises A, B, O, AB and Rhesus (D) groups. Blood alcohol content, which is recorded in milligrams (mg) of alcohol per 100 ml of blood, is also being tested. Pregnancy tests are done by checking for the pregnancy hormone. The EIA (enzyme immunoassay) is the standard screening test used to detect the presence of antibodies to HIV.

Scene 8: In the regular ward ...



At last! We can give Brother Mpilo medication for his asthma. We normally administer medication in measured doses of quantity and volume (ml). This is being given to him through an oxygen mask. Oxygen (O_2) purity is important and O_2 containing not less than 99.0 percent, by volume is used. A 5 ml anti-inflammatory injection was administered through his drip.

Scene 9: Dispensing and departing ...



Hooray, somebody's finally going home! The dispensary is kept under regulated temperature ($^{\circ}\text{C}$) and humidity (% of dampness in the air). Looks like Baby Mpilo will be getting some syrup, Mother Mpilo some tablets and Brother Mpilo will be getting an asthma pump. I'm sure glad that there are metrology institutions which ensure accurate measuring instruments. Can you imagine the impact if this wasn't the case? Remember; keep your medication in a dry, cool place and away from children. **Bye for now.**

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