

Table 1. Points to consider for observations of people with a learning disability – a framework

Observation	Mechanisms	Considerations
Respiration	<p>Affected by posture, disease, (in)activity/exercise, body temperature</p> <p>Regulated by homeostatic mechanisms; neural hormonal</p> <p>Compromised by altered homeostatic responses</p>	<p>Discussion takes place about their knowledge of someone with profound and multiple learning disability (PMLD) who is inactive and may have a distorted body shape, and these may determine the individual's 'normal' clinical range for respiration. Discussions take place about:</p> <ul style="list-style-type: none"> • Normal breathing mechanisms and how this can be compromised by distortion of the rib cage. • The importance of full ventilation of the lungs and the impact of shallow breathing more likely seen in an individual with PMLD. • Possible congenital abnormalities and early onset pathology of the lungs and/or nervous system that may impair normal regulatory mechanisms. • The increased incidence of respiratory disease and respiratory failure due to altered brain function. • The ageing population with Down's syndrome are more susceptible to asthma and pneumonia. • The impact of medications on the central nervous system, particularly those that depress the respiratory centre. <p>We also discuss how individuals with challenging behaviour and/or those on the autism spectrum may exhibit higher levels of anxiety which may impact on the baseline level. We discuss the ability of the body to respond to the respiratory demands being placed on it in stressful situations.</p> <p>We ask students to consider whether there are variations in respiratory rate, rhythm and depth that relate to the above. If yes, what actions should the nursing student take and why?</p>
Pulse	<p>Affected by age, gender, posture, disease, (in)activity, exercise, temperature, stress/anxiety</p> <p>Neural-hormonal regulation</p>	<p>Discussion takes place around students' knowledge of someone with PMLD:</p> <ul style="list-style-type: none"> • Who is inactive? Inactivity can predispose individuals to weight

	Compromised by altered homeostatic responses	<p>gain and circulatory problems, with a resultant effect on pulse.</p> <ul style="list-style-type: none"> • Who may have a distorted body shape and how this may determine the individuals' 'normal' clinical range for pulse. • Whether students have been able to assess the pulse of someone with PMLD and factors which may impede on this skill being performed, such as a radial pulse being difficult to undertake due to contractures, on individuals who are cold, or who have poor circulation. • Possible congenital abnormalities and early onset pathology of the heart and or nervous system may impair normal regulatory mechanisms. • Higher brain functions may be affected due to structural variations and malfunctions resulting in an increased risk of heart disease. • Impact of medication on homeostatic regulation <p>We also discuss with students how individuals with challenging behaviour and/or those on the autism spectrum may exhibit higher levels of anxiety which may impact on the baseline level.</p> <p>We ask the students to consider variations in pulse rate, rhythm and strength that relate to the above. If yes, what actions should the nursing student take and why.</p>
Temperature	<p>Affected by metabolic rate/metabolism; (in)activity, exercise, nutritional status, eating pattern, environmental temperature.</p> <p>Regulated by hypothalamus</p> <p>Compromised regulation (sensitivity, responsiveness) by brain damage, muscular spasms.</p>	<p>We discuss how body temperature is determined by the balance of heat loss versus heat gain and the individual variation of the set point as regulated by the hypothalamus. A discussion takes place about:</p> <ul style="list-style-type: none"> • Impact of a learning disability on brain function and how this relates to the individual's ability to conserve or transfer heat. • The impact of hypotonia, hypertonia and spasticity on metabolic rate and the individual's temperature are identified through cases histories.

		<ul style="list-style-type: none"> • Awareness about malnutrition and the potential impact on metabolism and core temperature. <p>We link this into how difficult it is for people with PMLD to achieve thermal comfort. We ask students to identify what actions they should take and why.</p>
<p>Blood pressure (BP)</p>	<p>Regulated by homeostatic mechanisms; neural hormonal and renal responses. Heart rate (HR), stroke volume (SV), systematic vascular resistance (SVR), blood volume. Influenced by stress, medication, environmental temperature.</p>	<p>We discuss:</p> <ul style="list-style-type: none"> • The impact of congenital abnormalities of the heart, as seen in Down’s syndrome. • Altered neural-hormonal regulation, including renal function, that may affect the long-term regulation of blood pressure. • How inactivity can predispose individuals to weight gain and circulatory problems, with a resultant effect on blood pressure. • The potential impact of medication on homeostatic regulation of the cardiovascular system. • We discuss how to take a BP of someone with contractures or a distorted body shape. • Individuals with challenging behaviour and/or those on the autism spectrum may exhibit higher levels of anxiety, which may impact on the baseline BP. <p>We ask students to consider whether there are variations in blood pressure in relation to the above. If yes, what actions should the nursing student take and why.</p>

