Leicestershire Partnership NHS Trust

PROCESS FOR MONITORING TEMPERATURE, RESPIRATORY RATE, PULSE and PULSE OXIMETRY, DIANA CHILDRENS COMMUNITY SERVICES.

For Completion by SOP Author	
Version	1
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CONTENTS

1. INTRODUCTION

The Diana children's community services provide care to infants, children and young people in their homes or in a non-hospital setting, such as education facilities including special schools.

Many children in receipt of this care require support from medical devices to maintain their health status. Early detection, timeliness, and competency of response to changes in clinical observations are important determinants of clinical outcome in the event that health status deteriorates during our care. This document was developed to ensure consistent safe practice, ensuring safety is maintained, any after care is given including safe transfer to hospital if this is needed.

2. PURPOSE

Staff who are routinely providing this monitoring function are Specialist Practitioners and Nursing Associates supported by Registered Nurses. Therefore this SOP is to provide a safe local procedure for supporting all staff in Diana children's community services to effectively monitor the health status of children and young people. Children who are becoming unwell may have abnormalities that are detectable by clinical observations in advance of deterioration and can be recognised through monitoring of vital signs/clinical observations.

This SOP will ensure a standardised approach to:

- Monitoring of vital signs
- Identifying normal parameters for respiratory rate, oxygen saturations, pulse rate and temperature recordings
- When to report abnormalities and any immediate actions to be taken
- Using agreed medical devices for monitoring vital signs/clinical observations

3. SCOPE

The SOP is applicable to all Staff in the Diana Community Childrens Services.

To ensure that all infants, children and young persons in receipt of care from the Diana service are managed safely and deterioration in health status is recognised and acted on appropriately in a timely manner.

4. ABBREVIATIONS & DEFINITIONS

CCT	Continuing care team
'GETTING TO KNOW'.	This is a term used by the Diana children's community services The purpose of the 'getting to know' is to enable the named nurse and Key Workers to get an overview of the child's routine, nursing care and preferences that will be required during the service provision; as well as the home environment in which they will be working. It also allows the child and family time to get to know their key staff. It is intended to provide guidance to minimise the risk of a delay in service provision to the child and family, to support staff and child's safety and to identify essential competencies required for each individual child's care.
FYPC LDA	Families young peoples, children's, learning disability and autism division.
SYSTMONE	The electronic record keeping platform used by services in LPT.
NAMED NURSE	The lead practitioner responsible for identifying the nursing care required to maintain the health status of the child, developing care plans to reflect this care and agreeing these with the child and family. The named nurse will also identify the competency assessments required by the key workers, ensure these are completed and that appropriate care is provided by the key workers. The named nurse also provides support and guidance to both the key workers and the family regarding all aspects of the child's nursing care.
SP	Diana children's services specialist practitioner
KEY WORKER	Diana children's services specialist practitioner / nursing associate assigned to provide continuing care to a particular child and family.
RN	registered nurse
NA	Nursing associate
PYREXIA	Body core temperature regarded as 37°C. Pyrexia (fever) is a rise above 37°C
HYPOTHERMIA	Hypothermia is a low body temperature below 35 °C

VITAL SIGNS / CLINICAL OBSERVATIONS	Clinical observation is defined as the measurements of the body's most basic functions temperature, pulse (H/R), oxygen saturation and respiratory and from a patient in a healthcare setting. Clinical observations may also be known as vital signs.
EPR	Electronic patient record
TRAUMATIC PETECHIAE	Petechiae are pinpoint non-blanching spots that measure less than 2 mm in size and affect the skin and mucous membranes. Petechial rashes are common and can be a significant cause for concern for parents and the interprofessional team. Petechial rashes result from areas of haemorrhage into the dermis.

5. DUTIES AND RESPONSIBILITIES

The registered nurses as named nurses, NA's and SP's need to fulfil the duties outlined in the process section of this document.

The Team Leaders and Clinical Leads need to support named nurses in their role and support training and competence assessment for all staff.

RN's, NA's and SP's need to maintain their own competence. Highlight any concerns regarding their own competence with named nurse or on call staff when they arise and keep the named nurses updated with any changes to the health status of the child/young person.

6. PROCESS

Routinely.
Observations of vital signs or clinical observations need to be monitored and recorded routinely as dictated by the child or young person's care plan.

When a child or young person is unwell.
Observations of vital signs or clinical observations will also need to be monitored and recorded more frequently than routine care plan dictates if the child or young person is unwell. Often, parents will initially alert staff of the need to perform this, SP's and NA's need to report and discuss this with the named nurse if on duty or the coordinator or nurse on call if out of hours. If this occurs out of hours the on-call nurse will need to be contacted to discuss frequency and appropriateness. If this is a child in school, Diana School Nursing Team staff may be asked to record observations to determine the health status of the child before they report to their team leader their concerns or prior to telephoning parents or for an ambulance.

The child, young person and or parent/carer should consent to vital signs monitoring. In School staff will do this as a duty of care as they act in loco parentis.

Where appropriate, the child, young person and parent or carer should be given the opportunity to assist the practitioner in performing vital sign monitoring and measurement.

All staff within the CCT team will spend a period of at least 4 weeks getting to know every child in their care, in this period they will learn what is ‘normal’ for the specific child, making it easier to determine any deviation from the norm indicating possible illness. Staff within the special schools will get to know young people on getting to know visits and will take direction from school staff who are their main carers at School.

RESPIRATORY RATE.

An elevated respiration rate is a powerful sign of acute illness and distress in all children and young people, as is a reduced respiratory an indicator of central nervous system depression.

Respiratory rate should be recorded for 60 seconds to account for variations in respiratory rate and pattern.

Depth, symmetry and pattern of respiration should also be noted and recorded if abnormal together with any associate sounds e.g., wheeze, cough and should form part of any assessment.

Any deviation from identified normal parameters should prompt immediate discussion with named nurse if on duty or the coordinator or nurse on call if out of hours. If child frequently has episodes that deviate from normal parameters action should be documented in care plan. All staff should be aware of care plan and actions to be taken.

Normal respiratory pattern is an easy, relaxed, subconscious physiological activity which takes place at a rate dependent on the age and activity of the child.

Where oxygen saturation monitoring is indicated, respiratory assessment and measurement should be made and recorded simultaneously to give a complete respiratory assessment.

The pattern, effort and rate of breathing should be observed and recorded as dictated by plan of care.

Skin colour, pallor, mottling, cyanosis and any traumatic petechiae around the eyelids, face and neck should be observed and documented.

Infants and children less than six to seven years of age are predominantly abdominal breathers therefore, abdominal movements should be counted.

Signs of respiratory distress e.g., nasal flaring, grunting, wheezing, stridor, dyspnoea, recession, use of accessory and intercostal muscles, chest shape and movement should be assessed by looking and listening and findings reported to the named nurse if on duty or the coordinator or nurse on call if out of hours and documented in the EPR.

The frequency of respiratory assessment and monitoring should be dictated by the child's care plan, any immediate actions required following deviation from the norm should also be highlighted in the care plan. All staff should be familiar with the plan of care having spent a period of 'getting to know' with the child and family. During the GTK period the normal breathing rates and rhythms of children and young people with complex needs, will be observed as these can differ from normal parameters.

Guide for normal parameters:
Age rate (breaths per min)

Infants 30-60
Toddlers 24-40
Pre-schoolers 22-34
School-aged children 18-30
Adolescents 12-16

Normal respiratory rates in children (Hazinski 2013)

OXYGEN SATURATION.

Children whose normal oxygen saturations fall outside the normal acceptable limits should be noted and documented within the EPR for reference to enable staff to report or escalate concerns correctly.

Where oxygen saturation monitoring is indicated, respiratory assessment and measurement should be made and recorded simultaneously in order to give a complete respiratory assessment.

Oxygen saturation and any supplemental oxygen and delivery device should be recorded in the plan of care.

Oxygen is a drug and requires a written prescription and rationale for use recorded in the child's respiratory plan.

If oxygen saturations appear to drop then initially if being used check the device, flow rate, cylinder or concentrator to ensure optimum oxygenation. In addition, check the position of the probe is in contact with the skin and has not moved or become dislodged.

Any deviation from identified normal parameters should prompt immediate discussion with named nurse if on duty or the coordinator or nurse on call if out of hours and documented in the EPR.

The frequency of oxygen saturation assessment and monitoring should be dictated by the child's care plan, any immediate actions required following deviation from the norm should also be highlighted in the care plan. All staff should be familiar with the plan of care having spent a period of 'getting to know' with the child and family.

Normal oxygen saturations (sats) are between 95%-100% in a well child, we do accept to 92% any lower than this we would expect SP's and NA's to raise concerns with parents, on-call or the co-ordinator. Some children may have lower accepted oxygen saturations but this will be specified in the care plan and discussed with SP's and NA's by the named nurse.

PULSE RATE.

Staff working in the CCT team and school teams will only be required to monitor and record pulse rate that is displayed on a saturation monitor NA's and SP's will not be expected to manually detect pulse rate routinely.

If pulse rate alters or deviates from the norm initially check the position of the probe that it is in contact with the skin and has not moved or become dislodged.

Any deviation from identified normal parameters should prompt immediate discussion with named nurse if on duty or the coordinator or nurse on call if out of hours and documented in the EPR.

The frequency of pulse rate assessment and monitoring should be dictated by the child's care plan, any immediate actions required following deviation from the norm should also be highlighted in the care plan. All staff should be familiar with the plan of care having spent a period of 'getting to know' with the child and family.

Normal heart rates in children (Hazinski 2013)

Age in years	Awake (bpm)	Sleeping (bpm)
Neonate	100 -180	80 -160
Infant (6 months)	100 - 160	75 - 160
Toddler	80 - 110	60 - 90

Pre-schooler	70 - 110	60 - 90
School age	65 - 110	60 - 90
Adolescent	60 - 90	50 - 90

TEMPERATURE.

Extremes of temperature- both pyrexia and hypothermia are sensitive markers of acute illness severity, sepsis and physiological disturbance.

The thermometer should be left in position for the appropriate time, suggested by the manufacturer's instructions, to gain an accurate reading.

A normal temperature for babies and children is 36.4C, a high temperature is 38C.

Any deviation from identified normal parameters should prompt immediate discussion with Named Nurse if on duty or the coordinator or nurse on call if out of hours and documented in the EPR.

The frequency of temperature assessment and monitoring should be dictated by the child's care plan, any immediate actions required following deviation from the norm should also be highlighted in the care plan. All staff should be familiar with the plan of care having spent a period of 'getting to know' with the child and family.

Body core temperature regarded as 37°C

Pyrexia (fever) is a rise above 37°C

Low grade pyrexia, raised temp up to 38°C

Moderate to high grade pyrexia 38 - 39.9°C

Hyperpyrexia is a temperature ≥ 40ºC (life threatening)

Hypothermia is a low body temperature below 35 °C.

7. TRAINING REQUIREMENTS

The named nurse will identify the competency assessments required by the key workers, ensure these are completed and that appropriate care is provided by the key workers for each individual child and family.

Competency assessments for respiratory rate, oxygen saturations, pulse rate and temperature recordings will use the LCAT assessments included in the appendix contained within this SOP.

All SP's and NA's will receive a demonstration on how to use any medical devices present in the child's home or school for the purpose of recording vital signs or clinical observations. This will include turning equipment on and off, trouble shooting, applying probes for oxygen saturation monitoring, correct siting of the thermometer and recording the value presented. SP's and NA's will have opportunities to practice this skill under supervision prior to having an LCAT assessment of competence.

All staff using medical devices will need to complete the 'safe use of medical equipment checklist' for each piece of equipment used. This will be kept on file in the Diana children's community service.

SP's and NA's will also receive training and education about the normal values for the vital signs and clinical observations monitored and recorded.

Individualised care plans will assist SP's and NA's to monitor vital signs or clinical observations according to the child's need and will give direction of what to report, when and to whom if vital signs should differ from the norm. One such action may be telephoning 999 for an emergency ambulance.

8. REFERENCES AND ASSOCIATED DOCUMENTATION

Diana Childrens Community Service on-call local policy.
Diana Childrens Community Service, Getting to Know SOP.

Standards for Assessing, Measuring and Monitoring Vital Signs in Infants, Children and Young People. © 2017 Royal College of Nursing.
Hazinski 2013

9. VERSION HISTORY LOG

This area should detail the version history for this document. It should detail the key elements of the changes to the versions.

Version	Date Implemented	Details of Significant Changes
1		

10. APPENDICES

Appendix 1: LCAT assessment for respiratory rate
Appendix 2: LCAT assessment for oxygen saturations and pulse rate
Appendix 3: LCAT assessment for temperature recordings
Appendix 4: For completion for medical devices
Appendix 5: Training materials ‘clinical observations’

The Leicester Clinical Procedure Assessment Tool: Assessors Recording Form Appendix 1

RESPIRATORY RATE

Candidate's Name	Child's Name
Skill assessed : Respiratory Rate	Date

Competence Category	Gold Standard	Positive Features	Opportunities for improvement (Omissions)	Performance level or score
Communication and working with the patient and/or family	Introduction of self, explanation of the procedure and why, communicates with child/young person throughout and after procedure, reassurance provided if needed, consent gained.			
Safety	Verifies identification of child/young person. Demonstrates awareness of upper and lower parameters for Respiratory rate (from Diana internal study day). Age Rate (breaths per min) Infants 30-60 Toddlers 24-40 Preschoolers 22-34 School-aged children 18-30			

	Adolescents 12-16 Is able to identify when the child is deteriorating and what to do in an emergency, call assistance from Diana Nurse or in an emergency dial 999 for a paramedic ambulance.			
Infection prevention	Washes hands prior to procedure, hands thoroughly washed and dried.			
Procedural competence	Prepares child/young person for the procedure, understands why the child/young person is having the procedure. 'Measures' respiratory rate. Need a watch with a second hand. Ensure patient is comfortable and you can see the chest moving clearly enough to record the rate. Observe the rise and fall of the chest. This counts as one breath. Count the breaths for one minute. Note the rate, pattern and depth of breaths.			

	Record if the child is having Oxygen.			
Team working	Is aware of whom to contact/speak with should problems arise with the child. Completes documentation accurately and confidentially. Communicates essential information to appropriate members of the child's family and or team members on the next shift or when child moves on to next establishment.			
Notes on overall performance (e.g. 2 or 3 strengths/weaknesses				Overall score
Specific strategies for improvement				
Assessors name	Assessors signature		Date	

The Leicester Clinical Procedure Assessment Tool: Assessors Recording Form OXYGEN SATURATION MONITORING

Appendix 2

Candidate's Name	Child's Name
Skill assessed : Set up and Usage of Saturation Monitor – Nellcor N550/N560 OR Nellcor PM100N	Date

Competence Category	Gold Standard	Positive Features	Opportunities for improvement (Omissions)	Performance level or score
Communication and working with the patient and/or family	Introduction of self, explanation of the procedure and why, communicates with child/young person throughout and after procedure, reassurance provided if needed, consent gained.			
Safety	Verifies identification of child/yp.,reads through care plan for upper and lower parameters for heart rate and oxygen levels, gives equipment a visual check for electrical safety, ensures that it's been serviced/pat tested, ensures saturation monitor is placed on a hard flat surface and not on a carpet or blanket, applies probe in the correct position on the finger, toe, hand or foot ensuring that the lead			

	runs up the arm or the leg to prevent entanglement, is aware of probe site changes to prevent pressure sores and / or burns. Is able to identify when the child is deteriorating and what to do in an emergency, call assistance 999.			
Infection prevention	Washes hands prior to procedure, ensures child's skin and probe is clean prior to probe attachment to ensure an accurate reading, hands thoroughly washed and dried.			
Procedural competence	Prepares child/young person for the procedure, understands why the child/young person is having the procedure, ensures all equipment is ready and working, upper and lower limits set for heart rate and oxygen levels as per care plan, is aware of implications for child if parameters not correctly set or alarms not acted upon, observes skin at probe site as aware of problems with adhesive wraps and how they can bond to skin with increases of heat and humidity, issues with skin trauma			
Team working	Is aware of whom to contact/speak with should problems arise with the use of the saturation monitor or the child, completes documentation			

	accurately and confidentially. Communicates essential information to appropriate members of the child's family and or team members on the next shift or when child moves on to next establishment, removes probe and turns off the saturation monitor at the end of the procedure and stores safely until next in use.			
Notes on overall performance (e.g. 2 or 3 strengths/weaknesses				Overall score
Specific strategies for improvement				
Assessors name	Assessors signature		Date	

The Leicester Clinical Procedure Assessment Tool: Assessors Recording Form Appendix 3

TEMPERATURE MONITORING

Candidate's Name	Child's Name
Skill assessed : Set up and Usage of Braun ThermoScan® PRO 6000 Ear thermometer	Date

Competence Category	Gold Standard	Positive Features	Opportunities for improvement (Omissions)	Performance level or score
Communication and working with the patient and/or family	Introduction of self, explanation of the procedure and why, communicates with child/young person throughout and after procedure, reassurance provided if needed, consent gained.			
Safety	Verifies identification of child/young person. Demonstrates awareness of upper and lower parameters for temperature (from Diana internal study day). Body core temperature regarded as 37°C Pyrexia (fever) is a rise above 37°C			

	Low grade pyrexia = raised temp up to 38°C Moderate to high grade pyrexia = 38-39.9°C Hyperpyrexia is a temperature ≥ 40ºC (life threatening) Hypothermia is a low body temperature below 35 °C Gives equipment a visual check for electrical safety, ensures that it's been serviced/pat tested. Is able to identify when the child is deteriorating and what to do in an emergency, call assistance from Diana Nurse or in an emergency dial 999 for a paramedic ambulance.			
Infection prevention	Washes hands prior to procedure, hands thoroughly washed and dried. Check that thermometer is visually clean and suitable for use.			
Procedural competence	Prepares child/young person for the procedure, understands why the child/young person is having the procedure, ensures all equipment is ready and working. Removes thermometer from cradle and notes that indicator			

	light displays showing thermometer is turned on. Correctly applies probe cover over ear probe. Checks that thermometer is 'ready'. Places probe snuggly in ear canal and is directed toward the opposite temple. 'Measures' temperature.			
Team working	Is aware of whom to contact/speak with should problems arise with the use of the thermometer or the child. Completes documentation accurately and confidentially. Communicates essential information to appropriate members of the child's family and or team members on the next shift or when child moves on to next establishment. Removes disposable probe and returns the thermometer to its cradle at the end of the procedure and stores safely until next in use.			
Notes on overall performance (e.g. 2 or 3 strengths/weaknesses				Overall score
Specific strategies for improvement				

Assessors name	Assessors signature	Date

Safe Use of Medical Devices Equipment Checklist

	Humidifier
	MR810

CHECKLIST CRITERIA

Appendix 5

Objectives

What is a Clinical observation?

Heart Rate

Temperature

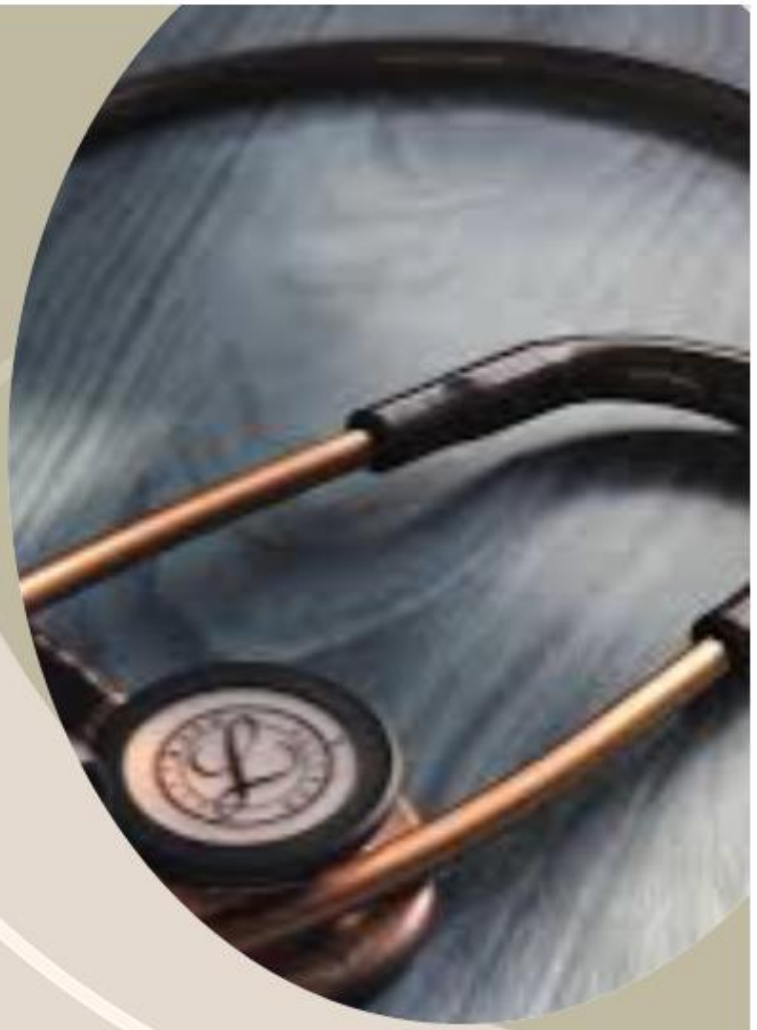
Oxygen Saturations

Respiratory rate

What is a Clinical Observation?

Observation is defined as *the action or process of closely observing or monitoring something or someone.*

Clinical observation is defined as the measurements of the body's most basic functions Temperature, Pulse (H/R), Oxygen Saturation and respiratory and from a patient in a healthcare setting. Clinical observations may also be known as vital signs.



WHY DO WE MEASURE OBSERVATIONS?

- As a baseline
- An alert to possible medical conditions
- To assess and monitor a patient's physiological condition
- To identify signs of clinical deterioration

START SIMPLE: LOOK, LISTEN, FEEL

- First Impressions: Look and Listen
  - Do they look unwell?
- Can you hear anything abnormal?
- Can you ask the patient – how are you feeling?
- What is the patient and/or parent telling you?
- Touch the patient: Do they feel hot, cold, clammy?

What factors may affect a child or young persons observations?

FACTORS THAT AFFECT A CHILD OR YOUNG PERSONS OBSERVATIONS

- Anxiety, Stress and Pain.
- Trauma, Infection.
- Medication – Buccolam, Heart Medications (Digoxin), Salbutamol
- Age, Exercise and Time of Day.
- Environment and Positioning.
- Nail Polish.
- Equipment Accuracy.

Heart Rate

The heart rate (pulse) is an impulse transmitted to arteries by contraction of the left ventricle and customarily palpated where an artery crosses a bone e.g. radial artery at the wrist or brachial artery at the cubital fossa.

We also measure heart rate via mechanical means such as a saturation monitor but best practice is to do a manual pulse as we may not always have access to a saturation machine.

Heart Rate

A normal child and young persons resting heart rate can vary dependant on age.

Tachycardia refers to an abnormally fast resting heart rate – and also can change dependant on age.

Bradycardia refers to an abnormally slow resting heart rate. Bradycardia as a heart rate in the awake state is measured below the normal range for age (ie, <100 beats per minute [bpm] for infants, <80 bpm for toddlers and young children, <70 for school age children, and <60 for adolescents).

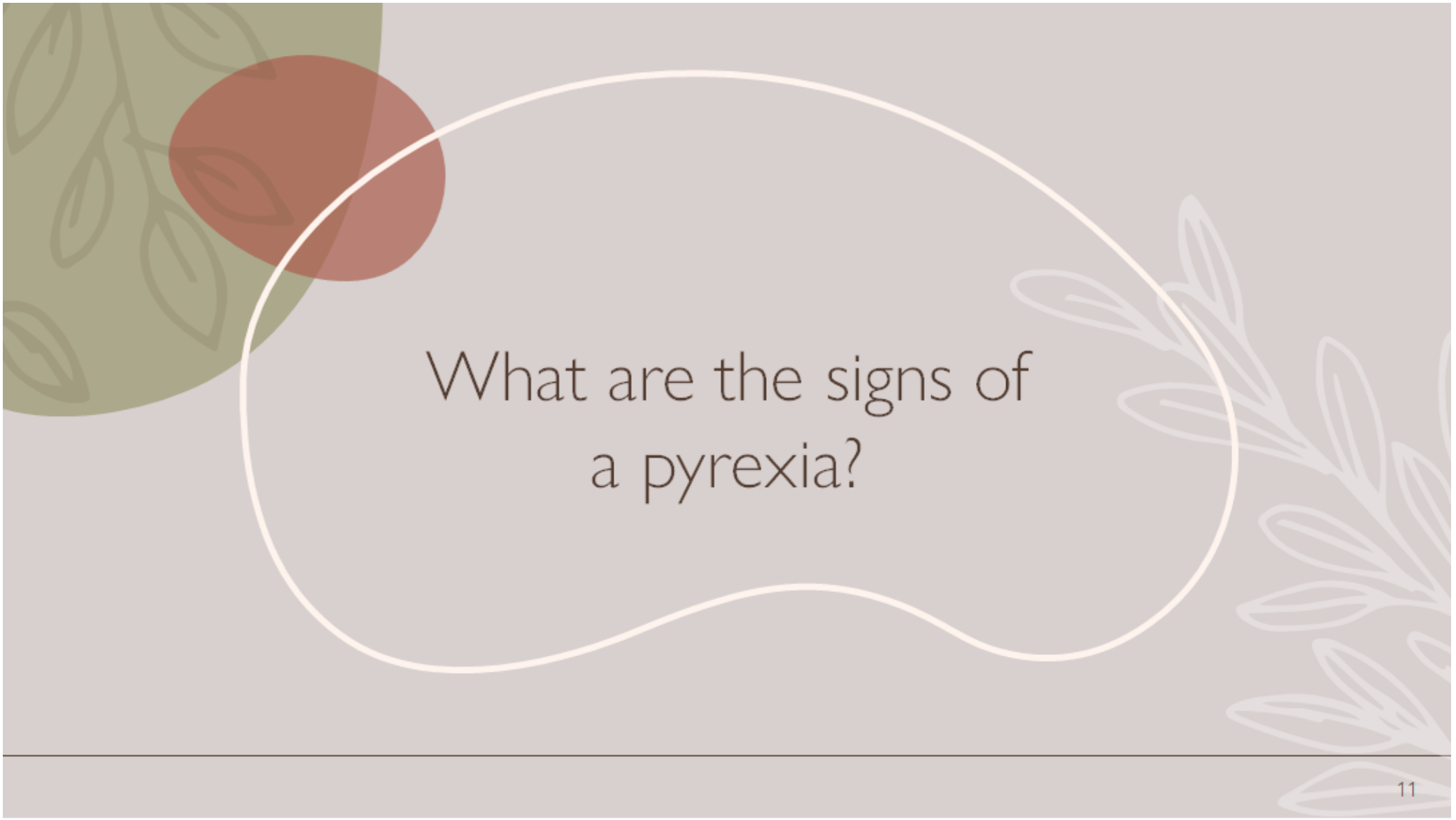
Age in years	Heart rate (bpm)	Consider as rapid (bpm)
Newborn	140	>160
Infant (<1year)	130–140	>150
Toddler	110	>120
Child	95–100	>110
Adolescents	60–90	>100

Temperature

- Measured in degrees celsius °C
- Body core temperature regarded as 37°C
- Pyrexia (fever) is a rise above 37°C

1. Low grade pyrexia = raised temp up to 38°C
2. Moderate to high grade pyrexia = 38-39.9°C
3. Hyperpyrexia is a temperature ≥ 40°C (life threatening)

- Hypothermia is a low body temperature below 35 °C


What are the signs of a pyrexia?
11

Signs and Symptoms

Pyrexia (high)	Hypothermia (low)
Fast, weak pulse	Slow pulse
Fast, deep breathing rate	Slow breathing
Skin flushed or warm to touch	Pale, cold, dry skin
Sweating	Low blood pressure
Thirst, dehydration	Slurred speech
Chills and shivering	Severe shivering
Confusion	Drowsiness, disorientation

Recording A Temperature

1. Ensure the equipment to be used has been cleaned and maintained as per local policies before use
2. Explain procedure to patient. Gain consent
3. Wash hands and use relevant PPE
4. Using the thermometer as per manufacturer's instructions, measure the patient's temperature – we are currently using Axilla (under arm) thermometres but we are changing to tympanic (in-ear) thermometres.
5. Wash your hands
6. Document findings in patient record
7. Act on and report any changes, abnormal reading or concerns to Parents and/or Co-ordinating/On-call nurse.

Oxygen Saturation

- Oxygen is carried on the red blood cells attached to haemoglobin molecules. Oxygen saturation is a measure of how much oxygen the red blood cells are carrying as a percentage (%) of the maximum it could carry.
- We measure Oxygen saturations using a pulse oximetre – with a probe that can be used on the fingers, toes and/or feet depending on the age of the child.
- Normal oxygen saturations (sats) are between 95%-100% in a well child, we do accept to 92% any lower than this we would expect you to raise concerns with parents, on-call or the co-ordinator. Some children may have lower accepted Sats but this will be specified in the care plan and discussed with you by the named nurse.

Oxygen Saturation

- Look: Are there any affecting factors ?
- Look : Colour of skin, finger clubbing,
- Check: Have I got the correct probe?

RESPIRATIONS

- Breathing or respiration is the process whereby air passes into the lungs so the blood can absorb oxygen and excrete carbon dioxide and water
- Breathing is automatic and controlled by the respiratory centre located in the brainstem
- The respiration rate is the number of breaths a person takes per minute

Respirations

How can our breathing change?

Slow or laboured
Fast or rapid
Panting
Gasping
Wheeze
Deep or shallow
Pain when breathing in
Difficulty breathing when lying flat or moving
Heavy sighing
Breathing stops

Normal Respirations

Normal Respiratory Rates in Children (Hazinski 2013)

Age Rate (breaths per min)

- Infants 30-60
- Toddlers 24-40
- Preschoolers 22-34
- School-aged children 18-30
- Adolescents 12-16

Respirations - Procedure

1. Need a watch with a second hand
2. Explain and discuss the procedure with the patient – gain consent
3. Wash hands. Use relevant PPE
4. Ensure patient is comfortable and you can see the chest moving clearly enough to record the rate
5. Observe the rise and fall of the chest. This counts as one breath
6. Count the breaths for one minute
7. Note the rate, pattern and depth of breaths. Consider if patient is on Oxygen.
8. Look and Listen.
9. Document findings in patient record.
10. Act on and report any changes, abnormal reading or concerns to parents and co-ordinator/on call.


Any Questions?