PAIN IN PAEDIATRIC PATIENTS

INTRODUCTION

- In the past, doctors thought that babies didn't feel much pain and hence didn't suffer
- However, we know today that children do feel pain (perhaps even more than adults), and even premature babies can feel pain
- Pain in children is often under-recognised and under treated
- Nursing staff should be vigilant for pain – assessing and recording
- Pain in children needs to be addressed and treated adequately
- If pain is not treated adequately, it can have a negative impact on the child
- Hence, pain should be assessed as the 5th vital sign even in paediatric patients
- However, pain assessment (including the tools used) is slightly different in paediatric patients due to the different age groups

APPROACH TO ASSESSING PAIN IN CHILDREN

There are various ways to approach a child in pain and the suggested approach for doctors are to using the acronym 'QUESTT'.

Q	**Question the child**
U	**Use pain rating scales**
E	**Evaluate behavioural and physiological changes**
S	**Secure the parents' involvement**
T	**Take the cause of pain into account**
T	**Take action and evaluate results**

1. **Question the child**
   - Health professionals are advised to listen and believe a child's description of pain. Pain history is taken using the acronym:
     - P : Place or site of pain
     - A : Aggravating factors
     - I : Intensity
     - N : Nature and neutralizing factors

2. **Use pain rating scales**
   - Children as young as 4 years can reliably report their pain. When choosing a pain rating scale, one needs to consider not only the age but also the child's developmental level, personality and condition. Do not only use the pain scores in isolation and must take into consideration of parents' accounts.

3. **Evaluate behavioural and physiological changes**
   - Infants and young children may not be able to verbalise pain but changes in behaviour eg. facial expression, body posture, activity, appearance) and physiological parameters (heart rate, blood pressure, respiratory rate) can be used as proxy measures for pain.

4. Secure the parents' involvement

- It is important to involve parents as they often are able to accurately judge their children's pain. In addition, they can contribute in pain management.

5. Take the cause of pain into account

- Before starting any treatment, do consider simple correctable cause of pain for example a tissued iv line.

6. Take action and evaluate the results

- do not ignore any complaints and action must always be taken. An action might not necessarily be administering a drug but sometimes just simple reassurance to parents or patients. You need to reassess the child after every action.

WHEN SHOULD PAIN BE ASSESSED?

It is recommended that pain should be assessed under the following situations:

1. At regular intervals – as the 5th vital sign
    - Done when undertaking other routine assessments (other vital signs like BP, heart rate, respiratory rate and temperature) to avoid unnecessary distress or disturbance

2. At other times apart from scheduled observations if
    - Unexpected intense pain occurs, especially if associated with altered vital signs
    - When indicators of pain are present in an otherwise previously pain free child
    - After procedures

WHO SHOULD BE ASSESSED?

Pain should be assessed in all paediatric patients in the following groups:

1. All inpatients in all medical and surgical wards(including various surgical disciplines like orthopedics, ophthalmology etc)
2. All daycare patients

TOOLS FOR ASSESSING PAIN IN CHILDREN

The suggested tools for pain assessment in paediatrics are:

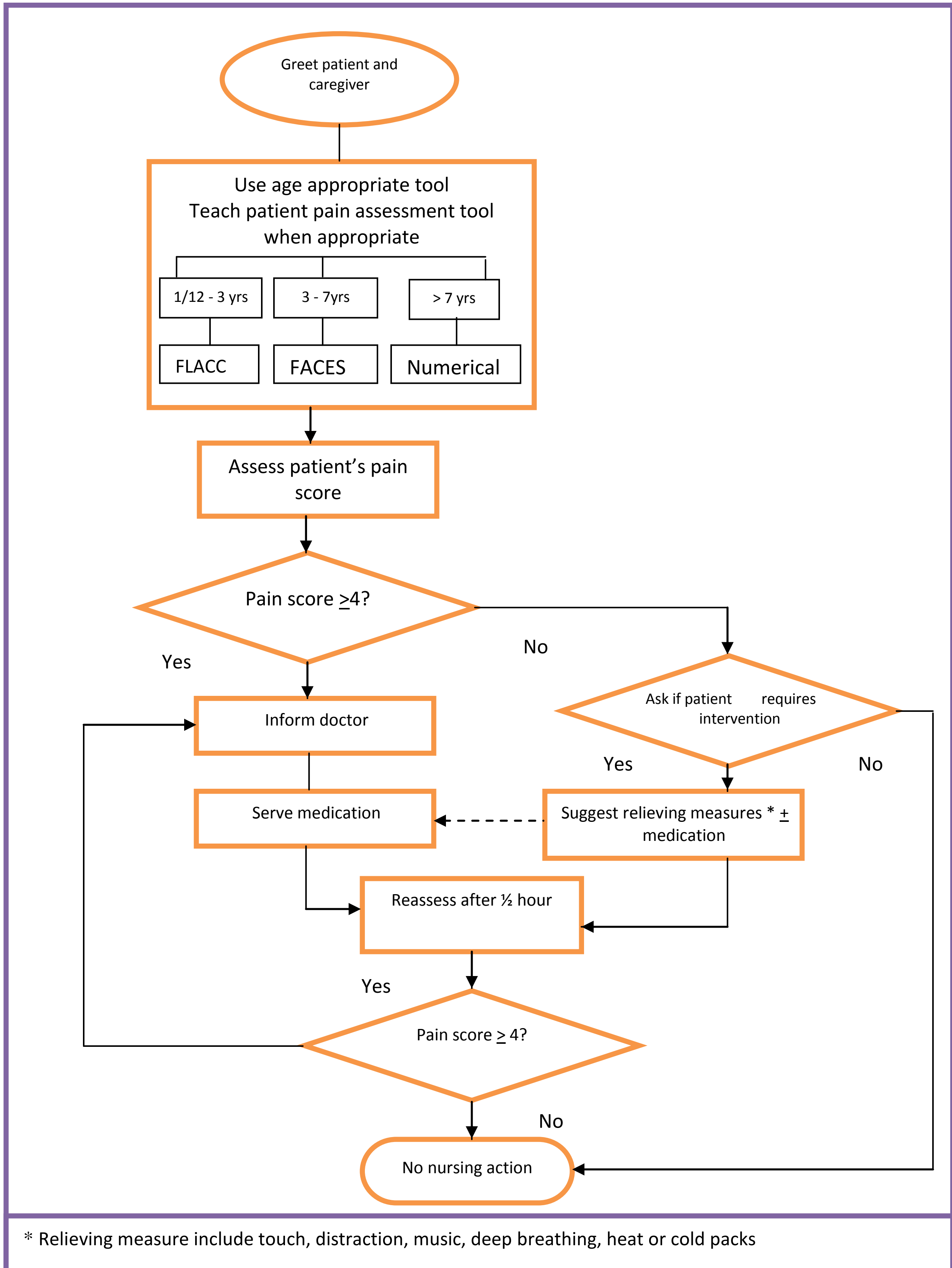
- **1 month – 3 years : FLACC.**
  - this is a observational behavioural assessment and can be done by observing the child for 2-5 minutes.

- **> 3 - 7 years : Wong-Baker FACES Pain Rating Scale**
  - this is a self report tool whereby a child is asked to choose a face which best describes his pain. This is a simple and quick measure but children can sometimes get confused with happiness measure.

- **> 7 years : numerical scale**
  - this is a self report tool whereby the child is asked to rate his pain based on a numerical scale whereby ‘0’ is no pain, ‘10’ is the worst pain experience.

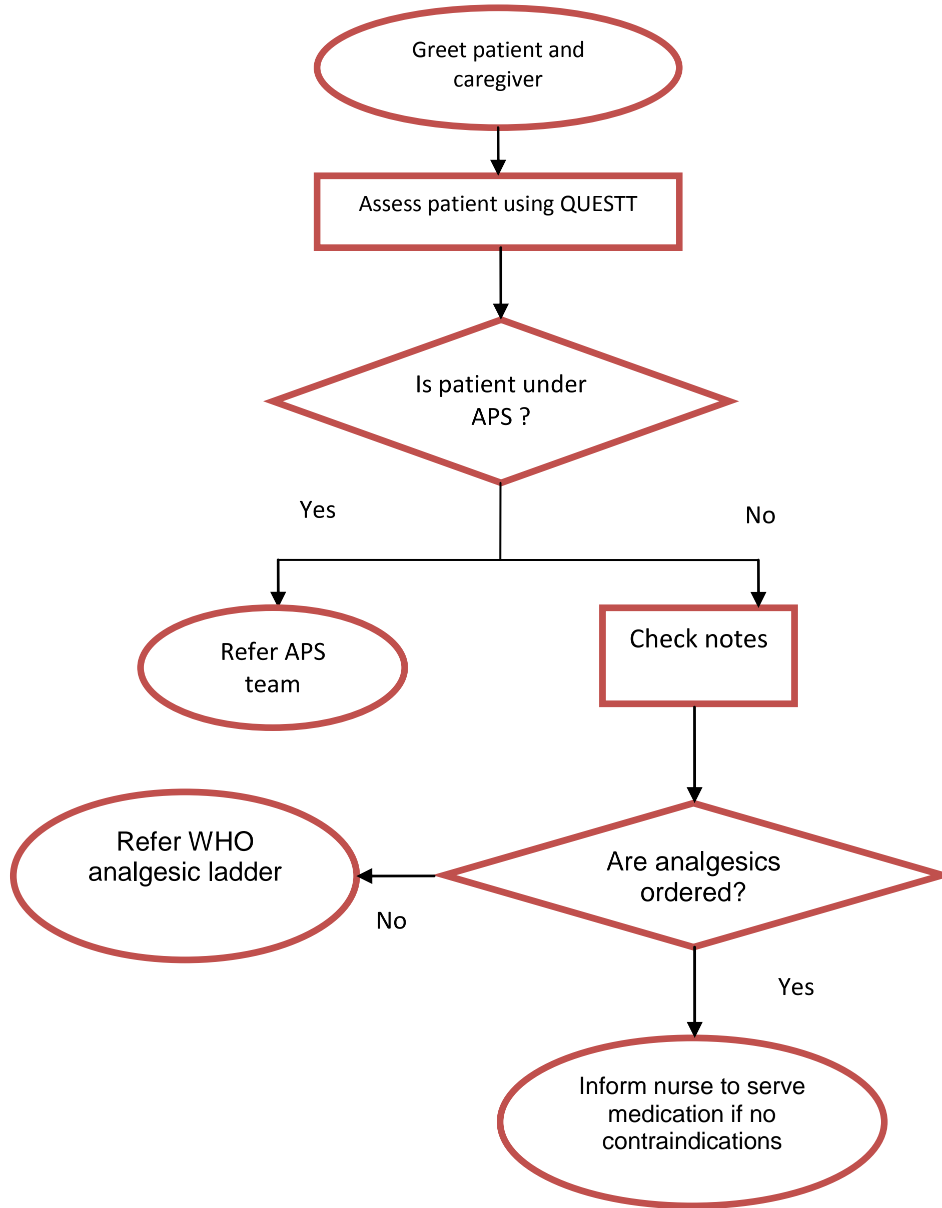
(refer Appendix 1,2,3,4)

FLOWSHEET FOR INITIAL ASSESSMENT OF PAIN IN CHILDREN >1/12



* Relieving measure include touch, distraction, music, deep breathing, heat or cold packs

FLOWSHEET FOR MANAGING PAIN IN CHILDREN > 1/12



APS : Acute Pain Service

GUIDELINES IN PAEDIATRIC PAIN MANAGEMENT

Key concepts in pain management [1]

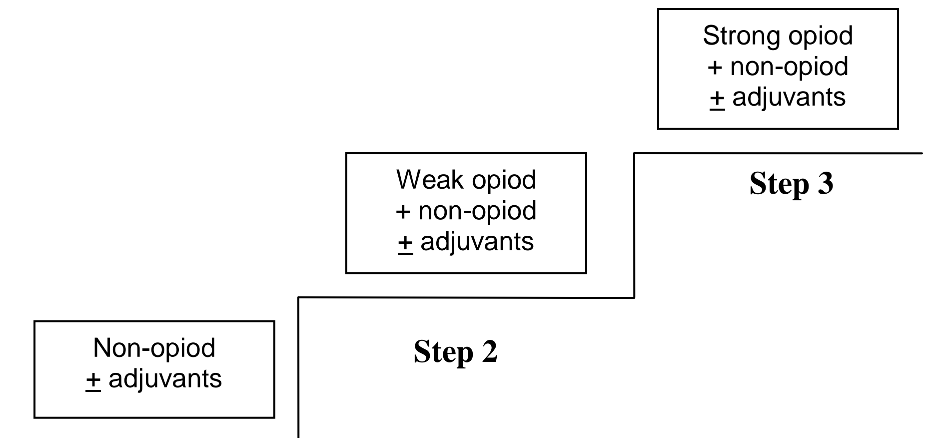
1. **"By the ladder"**
   Enabling a stepwise approach to treatment commencing with non-opiods and increasing to strong opioids (Refer WHO Analgesic ladder). The level at which a child enters the ladder is determined by the child's needs, the intensity of pain and response to previous treatment

2. **"By the clock"**
   Regular scheduling ensures a steady blood concentration, reducing the peaks and troughs of *pro re nata* (prn) dosing

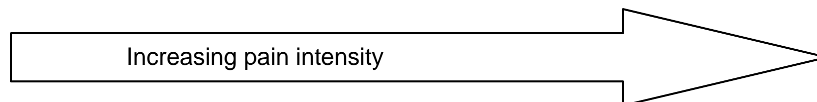
3. **"By the appropriate route"**
   Use the least invasive route of administration. The oral route is convenient, non invasive and cost effective.

4. **"By the child"**
   Individualise treatment according to the child's pain and response to treatment.

WHO Analgesic Ladder [2]



APS : acute pain service



METHODS OF PAIN RELIEF

1) Medications

- Paracetamol is the most commonly used analgesic for mild to moderate pain.
- Oral paracetamol is better than rectal paracetamol because the absorption of rectal paracetamol is slow and somewhat variable.
- NSAIDs like Ibuprofen can be used for mild to moderate pain.
- Children appear to have a lower incidence of renal and gastrointestinal side effects when compared to adults even with chronic administration.
- For a vast majority of children, opiods provide excellent analgesia with a wide margin of safety.
- Opiods should be normally be given via the oral or iv route in children. Avoid intramuscular injections when possible as children might deny they are in pain to avoid a shot.

Non-opiod analgesics
Paracetamol
Non steroidal anti-inflammatory drugs
Ibuprofen
Naproxen
Diclofenac
Meloxicam
Opiod analgesics
Weak opiod
Tramadol
Strong opiod
Pethidine
Morphine

(refer Appendix 5 & 6 for drug dosages)

2) Non Pharmacological interventions

a) Environmental factors

- Create a child friendly environment. Avoid bright lights or loud noisy places.

b) Other methods

Distractive techniques

- Use age appropriate distraction strategies. This teaches the child to focus on something other than his pain.
  - Holding a familiar object (comforter) , such as pillow or soft cuddly toy
  - Singing; concentrating on nice things; telling jokes; games and puzzles
  - Blowing out air or bubbles
  - Reading pop-up books
  - Playing with a kaleidoscope or a 3D viewer
  - Breathing out (but not hyperventilating, which may increase anxiety and induce venoconstriction)
  - Watching television or a video; playing interactive computer games

    - Listening to stories or music (through headphones)

Guided imagery

- Teach the child to imagine that he is in his favourite place and doing his favourite things.

Information

- Explain to the child what is going to happen during a procedure or surgery, this might decrease his nervousness and understand the pain that he might feel.

Music and Dance

- Listening to music and dancing can ease the child's pain and take the child's mind off his pain or illness.

Heat and cold packs

- Some types of pain are decreased by using heat whilst others might improve with cold

Massage and physical therapy

- Massage, caress or stroking a child might make them more relaxed and soothe their pain.

Appendix 1

PAIN ASSESSMENT TOOL FOR UNDER 3 YEARS AND THOSE WHO CANNOT SELF REPORT

FLACC Scale: Rating scale is to be used for children less than 3 years of age or other patients who cannot self-report

Category	Scoring		
	0	**1**	**2**
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to distractable	Difficult to console

Each of the five categories (F)face, (L)legs, (A)activity, (C) cry and (C) consolability is scored from 0-2, resulting in total range of 0-10

TRANSLATION OF FLACC SCALE IN BAHASA MALAYSIA

This is for reference only and not to be used in pain measurement as it is not a validated version.

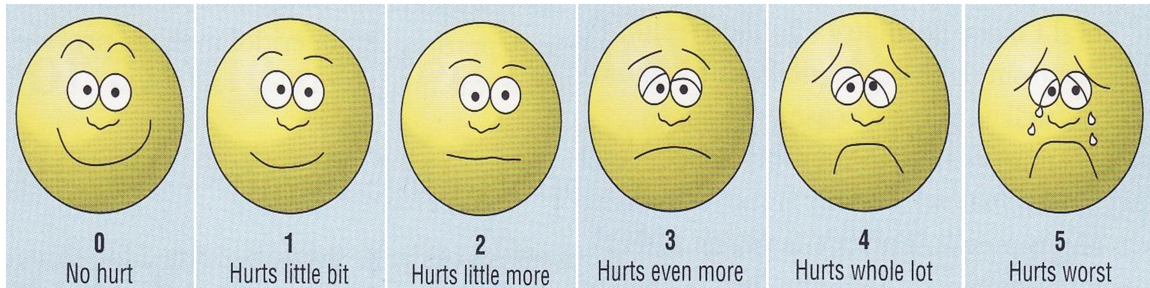
Skala FLACC : Skala permarkahan ini adalah untuk diaplikasikan terhadap kanak-kanak kurang dari 3 tahun atau pesakit lain yang tidak mampu megadu.

Kategori	**Permarkahan**		
	0	**1**	**2**
Wajah	Tiada ekspresi tertentu di wajah atau dalam keadaan tersenyum	Kadang terlihat muka berkerut, murung, tidak bermaya atau tidak bersemangat	Rahang terkancing, dagu berketar (pada kadar kerap hingga berterusan)
Kaki	Kedudukan biasa atau selesa	Keadaan tidak nyaman, resah atau tegang	Menendang – nendang atau membengkokkan kaki
Aktiviti	Berbaring tenang, berkedudukan biasa, bergerak dengan nyaman	Berguling, berganjak depan dan belakang, tegang	Meringkuk, kaku atau menggelupur
Tangis	Tidak menangis (keadaan tidur atau terjaga)	Merengek dan kadang mengeluh	Menangis berterusan, berteriak dan teresak-esak, sering mengeluh
Kebolehpujukan	Tenang	Masih dapat dipujuk dengan sesekali sentuhan, pelukan atau kata-kata sehingga mudah terganggu	Sukar dipujuk

Setiap kategori diberi markah 0-2 dengan jumlah keseluruhan 0-10

PAIN ASSESSMENT TOOL FOR AGES 3-7 YEARS

Wong-Baker FACES Pain Rating Scale



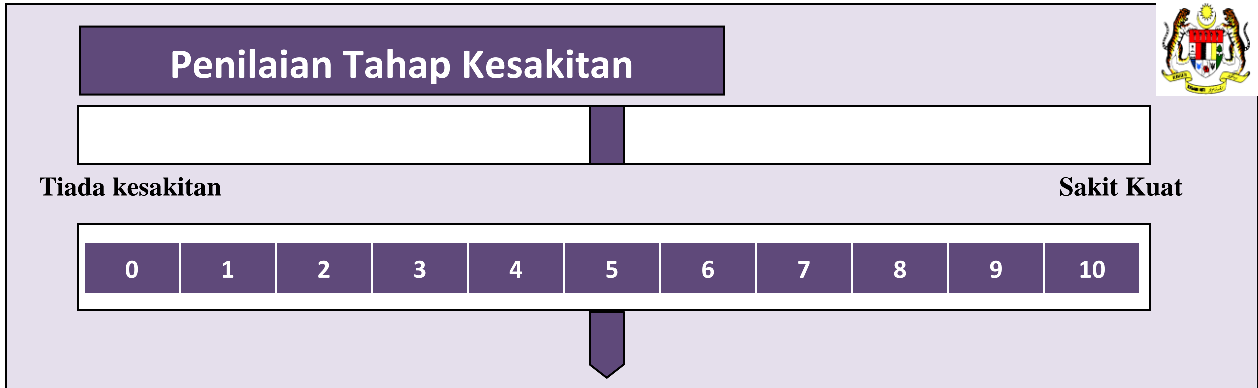
The Wong-Baker faces scale (adapted from Wong DL *et al.*, eds. *Whaley and Wong's essentials of pediatric nursing.* 5th ed. St Louis, MO: Mosby, 2001)

Explain to the child that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain.
- Face 0 is very happy because he doesn't hurt at all.
- Face 1 hurts just a little.
- Face 2 hurts a little more.
- Face 3 hurts even more.
- Face 4 hurts a whole lot.
- Face 5 hurts as much as you can imagine, although you don't have to be crying to feel this bad.

Ask your child to choose the face that best describes how he is feeling.
Mulitply the score obtained by a factor of 2 to make a total score out of 10.

PAIN ASSESSMENT TOOL FOR MORE THAN 7 YEARS OF AGE

Numerical Scale



Explain to the child that he can rate the pain he is feeling on a scale from 0 to 10, ‘0’ being no pain and ‘10’ being the worst pain that can be imagined.

DRUG DOSAGES IN PAEDIATRIC PAIN MANAGEMENT

Appendix 5

Drug	Route	1 month – 2 years	2- 12 years	12- 18 years	Frequency	Comments
		Dose				
Paracetamol	Oral loading	20 mg/kg	20 mg/kg	-	Single dose	
	Oral maintenance	1-3 months 20 mg/kg > 3 months 15 mg/kg	15 mg/kg	500 mg – 1 g	8 hourly 4-6 hourly	Max total dose in 24 hours < 3 mths : 60 mg/kg > 3 mths – 12 years : 90 mg/kg > 12 years : 4 grams
	Rectal loading	1-3 months 30 mg/kg > 3months 40 mg/kg	-	-		
	Rectal maintenance	20 mg /kg	20 mg/kg	500 mg- 1 gram	1-3 mths: 8 hourly > 3 mths : 4-6 hourly	Max total dose in 24 hours < 3 mths : 60 mg/kg > 3 mths – 12 years : 90 mg/kg > 12 years : 4 grams
Ibuprofen	Oral	5 mg/kg			6 -8 hourly	Max total dose 20mg/kg/day, up to 2.4g/day
Indomethacin	Oral	500 mcg – 1 mg/kg			12 hourly	Max dose 50 mg
Naproxen	Oral	5-10 mg/kg			12 hourly	Max total dose 1 g/day. In severe disease, doses > 10mg/kg should be used only for a few weeks
Meloxicam	Oral	-	-	< 50 kg : 7.5 mg >50 kg : 15 mg	24 hourly 24 hourly	Patients at increased risk should start at 7.5 mg. Terminal renal failure : 7.5 mg
Diclofenac	Oral	< 6 mths : Not recommended > 6 mths : 300mcg-1mg/kg	300mcg-1mg/kg		8 hourly	Up to a max of 150 mg/day
	Im/ iv infusion	Same as above	300mcg-1mg/kg		12-24 hourly	Up to max of 150mg/day & for max of 2 days

Appendix 6

DRUG DOSAGES IN PAEDIATRIC PAIN MANAGEMENT

Drug	**Route**	**1 month – 2 years**	**2- 12 years**	**12- 18 years**	**Frequency**	**Comments**
		Dose				
Tramadol	Oral	-	-	50-100 mg	4 hourly	
	IV	-	-	1 mg/kg/dose	4 -6 hourly	
Pethidine	iv	500 mcg-1mg/kg		25-50 mg	Single dose	Neonates and infants < 1 year show increased susceptibility to respiratory depression
	sc/im	500 mcg-2mg/kg		25-100 mg	Single dose	<2 months : repeat every 10-12 hourly >2 months : repeat every 4-6 hourly
Morphine	iv bolus	100-200 mcg/kg		2.5 mg-10 mg	< 6 mths: up to 4x/24 hrs > 6 mths: up to 6x/24 hrs	Give iv injection at least 5-10 minutes. Respiratory monitoring mandatory.
	Im/sc	100-200 mcg/kg	200 mcg/kg	5-20 mg		
	Iv Infusion	10-30 mcg/kg/hour <6 mths : initial rate 10 mcg/kg/hr >6 mths : initial rate 20 mcg/kg/hr			Continuous	Use iv bolus as a loading dose first
	Sc infusion	1-3 mths: 10 mcg/kg/hr >3 mths : 20 mcg/kg/hr	20 mcg/kg/hour		Continuous	Use a 24G cannula over deltoid or abdominal area. Change rate and change sites every 24-48 hours.
	Oral	< 1yr: 80 mcg/kg > 1yr: 200-400 mcg/kg	200-500 mcg/kg	10-15 mg	Up to 6x in 24 hrs	

Patient information leaflet in English

PAIN AS THE FIFTH VITAL SIGN

Welcome to Hospital________________ ! We understand that every admission to the hospital is often a traumatic experience not only for the child but also for you as parents or caregivers. For the child, it often means being in a different environment and having a whole new range of experiences. There is often a lot of anticipation and fears of possible painful experiences and the commonest include frequent procedures like blood taking and line setting, or even an operation. You might worry if your child would be able to sleep or be comfortable at all during their stay in hospital.

In the past, children especially small babies and infants were believed to be unable to feel pain. However today we recognize that this is certainly not true and babies who are even premature have been proven to have the capacity to feel pain. As such, we want to recognize any pain in your child and to help them.

In order to ensure that your child obtains the best possible pain free hospital stay, we will be 'measuring' to see if your child is suffering from any pain at regular intervals. This will be done when the nurses are taking other observations like the measuring heart rate or blood pressure. We might also need to assess pain in your child under other circumstances for example soon after an operation or if your child complains of pain. We will assess if your child is in pain using several methods depending on your child's age. We will need your help to get a response from your child and your opinion on your child's status.

After getting a pain score, we can then decide with you and/or your child whether any further interventions or medications are required to make your child more comfortable. If you have any questions or concerns about procedures or medications, please feel free to speak to any of us. Help us to make your child's stay a pleasant and pain free one.

Patient Information Leaflet in Bahasa Malaysia

KESAKITAN SEBAGAI TANDA VITAL KELIMA

Selamat datang ke Hospital ______________ ! Kami memahami bahawa pengalaman tinggal di hospital mungkin merupakan satu pengalaman yang kurang menyenangkan untuk anak anda dan juga anda sekeluarga. Anak anda mungkin berasa resah-gelisah kerana dia berada di dalam satu suasana yang amat berlainan daripada apa yang dia biasa alami. Seringkali terdapat perasaan ketakutan ataupun kegelisahan kerana dia mungkin mengalami prosedur-prosedur yang boleh mendatangkan kesakitan seperti pengambilan darah mahupun memasukkan jarum ke dalam vena, ataupun mungkin satu pembedahan. Anda mungkin berasa bimbang sama ada anak anda akan dapat tidur dengan lena ataupun berasa selesa semasa dia berada di hospital.

Pada masa yang lalu, ramai pakar perubatan berpendapat bahawa kanak-kanak kecil terutama bayi tidak berupaya untuk merasa kesakitan.Walaubagaimanapun, melalui kemajuan di dalam bidang sains perubatan, kin terdapat bukti bahawa bayi termasuk yang pramatang oun boleh merasai kesakitan. Oleh yang demikian, kami ingin mengenalpasti sama ada anak anda mengalami sebarang kesakitan dan sekiranya ya, kami akan cuba menolong anak anda menangani masalah ini.

Untuk memastikan supaya anak anda sentiasa selesa dan tidak mengalami sebarang kesakitan semasa di hospital, kami akan 'mengukur' tahap kesakitan anak anda dari masa ke semasa. Pengukuran tahap kesakitan ini akan dilakukan pada masa-masa yang tertentu apabila jururawat mengambil tanda-tanda vital yang lain seperti tekanan darah dan tahap nadi. Kami juga mungkin perlu mengukur tahap kesakitan pada masa yang lain umpamanya selepas prosedur dijalankan, selepas pembedahan ataupun bila anak anda mengadu kesakitan. Kami akan mengukur tahap kesakitan dengan menggunakan beberapa kaedah yang berlainan yang selaras dengan umur anak anda. Bantuan anda akan diperlukan di dalam proses ini seperti menolong dalam mendapatkan respons dari anak anda ataupun memberi pendapat anda tentang tahap kesakitan anak anda.

Selepas mendapat tahap kesakitan (pain score), kami akan membuat keputusan bersama anda dan/ataupun anak anda sama ada sebarang ubat-ubatan ataupun kaedah lain yang diperlukan untuk meningkatkan keselesaan anak anda. Sekiranya anda mempunyai sebarang kemusykilan ataupun pertanyaan mengenai sebarang prosedur ataupun ubat-ubatan anak anda, sila hubungi kami. Bantulah kami untuk memastikan anak anda sentiasa selesa dan tidak mengalami sebarang kesakitan semasa di hospital