



PAIN ASSESSMENT IN INTENSIVE CARE UNIT



PAIN FREE PROGRAMME | KEMENTERIAN KESIHATAN MALAYSIA | UNIT AUDIT KLINIKAL

OUTLINE

1. INTRODUCTION
2. TYPES OF CRITICALLY ILL PATIENTS
3. CHALLENGES IN ASSESSING PAIN IN CRITICALLY ILL PATIENTS
4. GUIDELINES
5. METHODS OF ASSESSING PAIN IN CRITICALLY ILL PATIENTS
6. CONCLUSION

INTRODUCTION

- Pain is an unpleasant sensory and emotional experience...
(IASP in pain 1979; 6:249-252).
- Implying that it has to be reported by the person who is experiencing it.
- But many individuals cannot self-report due to the various factors.
- “The inability to communicate verbally does not negate the possibility that an individual is experiencing pain and is in need of appropriate pain-relieving treatment” (IASP Taxonomy).

INCIDENCE

- Pain often co-exists with ICU illness and treatment.
- Incidence: 40-70% of ICU patients (Puntillo 2006).
- Nearly 30% experience pain at rest, 50% during routine care (Chanques et al. 2007).
- Only 25% of patients are treated.

TYPE OF PAIN IN CRITICALLY ILL PATIENTS

- Continuous ICU treatment-related pain/discomfort
- Acute illness-related pain
- Intermittent procedural pain
- Pre-existing chronic pain before ICU admission

CONSEQUENCES OF PAIN

- **Physiological and psychological consequences**
- **Multisystemic complications**
- **Development of chronic disabling pain**
- **Sleep-related problems, PTSD**
- **Lower quality of life**
- **Death in the ICU**

CHALLENGES OF ASSESSING PAIN IN CRITICALLY ILL

- Severe illness
- Mechanical ventilation
- Sedative or relaxants
- Co-existing neurological and mental disorders
- Mentality of clinician/nursing staff
- Lack of policies or clinical guidelines



GUIDELINES

- The Pain Agitation Delirium guidelines of the Society of Critical Care Medicine (PAD SCCM) of 2013
- The pain, agitation/sedation, delirium, immobility, and sleep disruption guidelines of the society of critical care medicine (PADIS SCCM) of 2018
- Delirium agitation sedation (DAS) guidelines of 2015
- Early comfort using analgesia, minimal sedatives and maximal humane care (ecash concept) of 2016
- Recommend that pain is monitored routinely in all ICU patients

2018 ICU PADIS GUIDELINES

Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU

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Devlin et al., Critic Care Med 2018; 46(9):825-873



SCCM ICU LIBERATION INITIATIVES

A

Assess, Prevent and Manage Pain

B

Both SAT and SBT

C

Choice of analgesia and Sedation

D

Delirium: Assess, Prevent and Manage Pain

E

Early Mobility and Exercise

F

Family Engagement and Empowerment

METHOD OF ASSESSING PAIN IN CRITICALLY ILL

- Communicative patients
- Subjective (self-assessment)
- Non-communicative patients
- Objective (behavioural observation)

SELF ASSESSMENT METHOD

- The best and reliable tools to assess pain (Chanques et al. 2010).
- Gold standard of management.
- Patients involve in determining their level of pain intensity.
- Easy to use.



COMBINED NRS AND VAS (MOH PAIN SCALE)

 **PAIN FREE PROGRAM**
Transformasi Konsep Rawatan
Pelanggan Bebas Kesakitan

PAIN SCALE

 Kami Sedia Membantu
KEMENTERIAN KESIHATAN MALAYSIA

 **0** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** 

NO PAIN **WORST PAIN**

Adapted from IASP 2017

 **PAIN FREE PROGRAM**
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SKALA KESAKITAN

 Kami Sedia Membantu
KEMENTERIAN KESIHATAN MALAYSIA

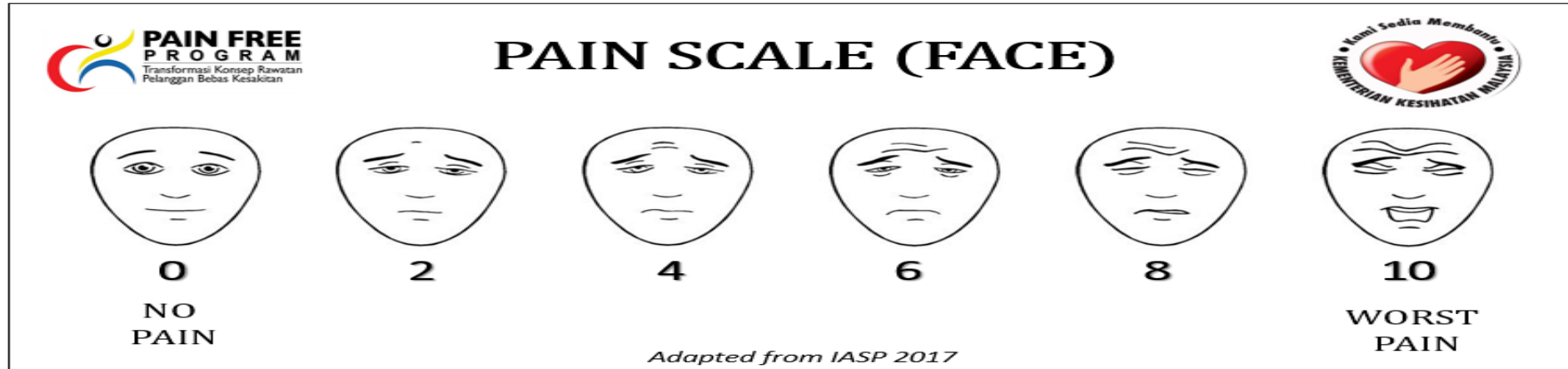
 **0** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** 

TIADA KESAKITAN **KESAKITAN YANG AMAT SANGAT**

Adapted from IASP 2017

ZERO: NO PAIN
10: WORST PAIN IMAGINABLE

FACES PAIN SCALE – REVISED (FPS-R)



PADIS GUIDELINES 2018

- The 0-10 numeric rating scale (NRS) verbally or visually is a valid and feasible pain scale in critically ill patients
- 0-10 NRS-visual best self-reported pain scale

Devlin et al., Critic Care Med 2018; 46(9):825-873



LIMITATIONS

- **Assume patient-caregiver cooperation**
- **Unsuitable for certain group of patients**
 - **Children (refer paediatric guideline)**
 - **Patients who cannot communicate**
 - **Cognitive disorders**
 - **Mental disorders**



BEHAVIORAL OBSERVATION TOOLS

- When the patient's self-assessment is not possible
- A validated, reliable and easy-to-use tool should be applied
- The authors of the PAD SCCM guidelines of 2013 analyzed six behavioral scales:
 - BPS-non-intubated (BPS-NI), CPOT, NVPS, PBAT, PAIN algorithm
- The most reliable and best validated behavioral = BPS and CPOT

**The Behavioural Pain Scale in
intubated (BPS) and non-intubated
(BPS-NI) patients and Critical- Care
Pain Observation Tool (CPOT)
demonstrate the greatest validity
and reliability for monitoring pain in
patient unable to self-report**

Devlin et al., Critic Care Med 2018; 46(9):825-873



	BPS	BPS-NI	CPOT	FLACC	NPAT	*NVPS	PAIN	BOT	Faces Scale	FACS	PAINAD	BPAT
Item selection description	2	2	2	2	1	1	1	2	1	2	1	2
Content validation	0	0	2	0	1	1	1	1	0	0	1	1
Limitations presented	1	0	1	1	1	1	1	1	0	0	1	1
Internal consistency	2	2	2	2	2	I=2 R=2	0	0	N/A	0	2	0
Inter-rater reliability	2	2	2	2	1	I=2 R=1	0	0	0	2	0	1
Inter-rater reliability with non-research team	1	1	1	1	1	1	1	1	1	0	1	1
Intra-rater reliability	0	N/A	0	N/A	0	I=N/A R=0	0	0	0	N/A	0	N/A
Total number of participants	2	2	2	1	2	2	1	2	2	2	2	2
Correlation with gold standard	2	1	1	0	0	0	0	1	2	0	0	1
Sensitivity	0	0	1	0	0	0	0	0	0	0	0	1
Specificity	1	0	2	0	0	0	0	0	0	0	0	1
Descriminant validation	2	2	2	2	0	2	0	2	0	2	0	2
Feasibility	1	1	1	0	0	I=0 R=1	0	0	0	0	0	0
Directives of use	1	1	1	0	1	0	1	1	0	1	1	1
Relevance in practice	1	1	1	0	0	I=1 R=0	1	0	0	0	0	0
Total score	18	15	21	11	10	I=13/23 R=13/25	7	11	6	9	9	14
Weighted score	15.1	14.8	16.7	9.6	7.2	I=12.4 R=9.8	5.9	7.5	4.5	7.4	6.4	10.6

Devlin et al., Critic Care Med 2018; 46(9):825-873



A validated approach to evaluating psychometric properties of pain assessment tools for use in nonverbal critically ill adults.

Semin Respir Crit Care
Med. 2013; 34(2):153-
68

Gélinas C; Puntillo KA;
Joffe AM; Barr

8 pain scales were
analyzed.

BPS and CPOT
showed the most
robust psychometric
findings.

CRITICAL-CARE PAIN OBSERVATION TOOL (CPOT)

Facial expression	Relaxed	Tense	Grimacing
	0	1	2
Body movement	Absence of movement or normal position	Protection	Agitation
	0	1	2
Muscle tension	Relaxed	Tense, rigid	Very tense/ rigid
	0	1	2
Compliance with ventilator (intubated)	Tolerating ventilator or movement	Coughing but tolerating	Fighting ventilator
	0	1	2
Vocalization (extubated)	Normal or silent	Sighing or moaning	Crying out or sobbing
	0	1	2

Gelinas et al., AJCC 2006; 15(4): 420-7



Facial expressions

0

Relaxed, neutral
(no muscle tension)

1*

Tense
(frowning, brow lowering, orbit
tightening, little levator contraction)

2

Grimacing
(contraction of the whole face: frowning,
brow lowering, eyes tightly closed, levator
contraction – mouth may be opened or the
patient may be biting the endotracheal tube)



Relaxed, neutral


Tense

Grimacing

0

1

2

Indicator	Score		Description
Facial expression 	Relaxed, neutral	0	No muscle tension observed
	Tense	1	Presence of frowning, brow lowering, orbit tightening, and levator contraction or any other change (eg, opening eyes or tearing during nociceptive procedures)
	Grimacing	2	All previous facial movements plus eyelid tightly closed (the patient may have mouth open or may be biting the endo-tracheal tube)
Body movements	Absence of movements or normal position	0	Does not move at all (does not necessarily mean absence of pain) or normal position (movements not aimed toward the pain site or not made for the purpose of protection)
	Protection	1	Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements
	Restlessness	2	Pulling tube, attempting to sit up, moving limbs/thrashing, not following commands, striking at staff, trying to climb out of bed
Compliance with the ventilator (intubated patients) or Vocalization (nonintubated patients)	Tolerating ventilator or movement	0	Alarms not activated, easy ventilation
	Coughing but tolerating	1	Coughing, alarms may be activated but stop spontaneously
	Fighting ventilator	2	Asynchrony: blocking ventilation, alarms frequently activated
	Talking in normal tone or no sound	0	Talking in normal tone or no sound
	Sighing, moaning	1	Sighing, moaning
	Crying out, sobbing	2	Crying out, sobbing
Muscle tension Evaluation by passive flexion and extension of upper limbs when patient is at rest or evaluation when patient is being turned	Relaxed	0	No resistance to passive movements
	Tense, rigid	1	Resistance to passive movements
	Very tense or rigid	2	Strong resistance to passive movements, inability to complete them
Total	___/8		

^a Adapted with permission from Gélinas et al.¹

DIRECTIVES TO USE

- **Observation period**
 - 1minute at rest (baseline)
 - During painful procedures
 - Before and at peak effect of analgesics

DIRECTIVES TO USE

- Rating: the highest score observed.
- Assess the muscle tension the last when patient is at rest.
- A score of >2 indicates the occurrence of pain.
- Does not measure severity of pain.
- Validated in English, French, Mandarin, Korean, Spanish, Swedish

BEHAVIOURAL PAIN SCALE (BPS)

ITEM	DESCRIPTION	SCORE
Facial expression	Relaxed	1
	Partially tightened (e.g. brow lowering)	2
	Fully tightened (e.g. eyelid closing)	3
	Grimacing	4
Upper limb movements	No movement	1
	Partially bend	2
	Fully bend with finger flexion	3
	Permanently retracted	4
Compliance with mechanical ventilation	Tolerating movement	1
	Coughing but tolerating ventilation for the most of the time	2
	Fighting ventilator	3
	Unable to control ventilation	4

Payen et al., CCM 2001;29(12):2258-2263



BEHAVIOURAL PAIN SCALE (BPS)

- Total score varies from 3 to 12
- Scores ≤ 3 no pain.
- Scores 4-5 mild pain.
- Scores 6-11 an unacceptable amount of pain.*
- Scores ≥ 12 maximum pain.*
- Target score < 5 .
- Validated in English, French and Mandarin.

BPS (intubated patients)

1

2

3

4

Facial expression



Relaxed



Partially
tightened
= brow lowering



Fully
tightened
= eyelid closing



Grimacing
= folded cheek

Movements of upper limbs



No movement



Partially bent
At rest: check the tonus by mobilisation
of the limb



Very bent with
finger flexion



Retracted,
opposition to care

Compliance with ventilation



Tolerating
ventilation



Coughing but
tolerating
ventilation
most of the time



Fighting
ventilator but
ventilation pos-
sible sometimes



Unable to control
ventilation

BPS-NI (non-intubated patients)

1

2

3

4

Facial expression



Relaxed



Partially tightened
= brow lowering



Fully tightened
= eyelid closing



Grimacing
= folded cheek

Movements of upper limbs



No movement



Partially bent



Very bent with
finger flexion



Retracted,
opposition to care

At rest: check the tonus by mobilisation of the limb

Vocalisation

No pain
vocalization

Moaning not
frequent
($\leq 3/\text{mn}$) and
not prolonged
($\leq 3 \text{ s}$)

Moaning
frequent
($> 3/\text{mn}$) or
prolonged
($> 3 \text{ s}$)

Howling or
verbal complaint
including
< Ow! , Ouch ! >
or breath-holding

Chanques et al., Intensive Care Med
2009; 35:2060-2067

PROXY REPORTERS

- Family can be involved in their loved one's pain assessment process.
- Correctly identified pain presence 74% and pain severity 53% of the time, with a tendency to overestimate.
- There are families who may not want to be involved or situations is not appropriate.
- Should not substitute for an ICU team's role and commitment to systematic pain assessment and optimal analgesia.

PHYSIOLOGICAL MEASURES

- Heart rate, arterial pressure, respiration rate, end tidal CO₂.
- Not valid indicators.
- Misleading.
- Should only be used as cues to initiate further assessment.

SCCM PAIN CARE BUNDLE

Assess

- Assess pain ≥ 4 X shift/ PRN
- Significant pain with NRS>3, BPS>5, OR CPOT >2

Treat

- Treat patient within 30 minutes and reassess
- Non-pharmacological and pharmacological treatment

Prevent

- Administer pre-procedural analgesia and/or non-pharmacological interventions
- Treat pain first, then sedate

A STEPWISE APPROACH

American Society For Pain Management Nursing

Attempt to obtain the patient self report- Gold standard

Look for behavioural change
Use a standardized and valid behavioural observation tools

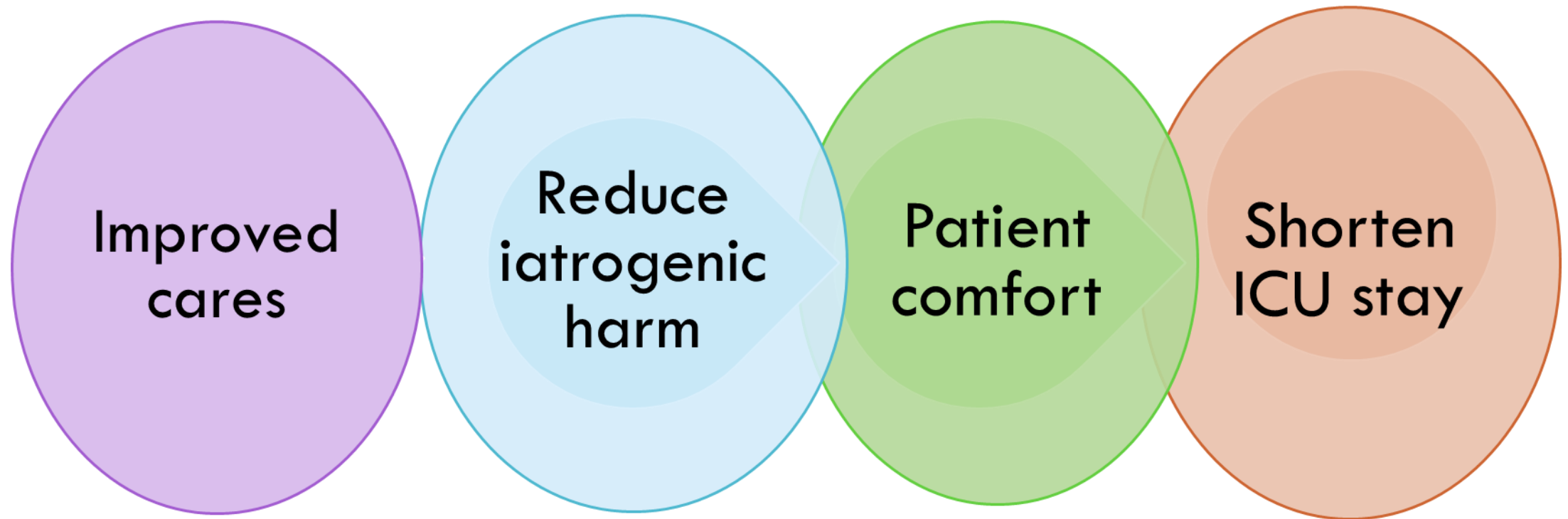
The family can help to identify the pain behavioural

Source of pain= “Assume pain is present”
Attempt an intervention for pain relief

PEEP / CPAP		12/25	12/25	12/25
Pressure support		8	12/10	10/10
IPAP / EPAP			0	0
SpO ₂ / ETCO ₂		100%	100%	100%
Suction				
	Amount			
	Colour			
PH		7.35	7.35	7.35
PCO ₂		40.5	40.5	40.5
PO ₂		125	125	125
HCO ₃ (Actual)		18.5	18.5	18.5
BE (B)		-6.5	-6.5	-6.5
Sat		98.5	98.5	98.5
K+		4.2	4.2	4.2
Dextrostic				
Glasgow coma score (total score)		15	15	15
Eye opening / verbal response / Motor response		4/4/6	4/4/6	4/4/6
Pupils	R size • L size •	3mm 3mm	3mm 3mm	3mm 3mm
Limb movements	RA / LA RL / LL	3mm 3mm	3mm 3mm	3mm 3mm
Pressure / CCP (mmHg)		120	120	120
Consciousness (Rass)		1	1	1
Pain Score		1	1	1
	Type / Amount			
Drop 2 (100 QND) → NS 0.4% + 2mmol/l MgSO ₄		200	200	200
Drip 3				
Infusion 1 w morphine 1mg/mls		5	5	5
Infusion 2				
Infusion 3				
Infusion 4				
Infusion 5				
Infusion 6				
Infusion 7				
Infusion 8				
Infusion 9				
Infusion 10				
Oral / Enteral HPD				
Medication (Bolus / Stat)				
TOTAL		205	425	405
Drain I	Site / Amount			
Drain II	Site / Amount			
Drain III	Site / Amount			
Aspiration	Nature / Amount			
Bowel	Nature / Amount			
Urine	Amount	40	40	50
TOTAL		40	40	50
FLUIDS BALANCE		+165	+387	+355
CUMMULATIVE BALANCE		+165	+552	+400
Nebulizer				
Mouth Care / Eye Care				

WHAT TO TAKE HOME

- Management of pain for adult ICU patients should be guided by routine pain assessment and use analgesic before sedatives.
- Assessment pain should not only be done at rest, but also during care procedures, before and after treatment.
- Always try to obtain patient's self-report of pain.
- When self-report is impossible, use validated pain behavioural observation tools e.g. CPOT & BPS.
- Use an assessment-driven, protocol-based, stepwise approach for pain and sedation management in critically ill adults



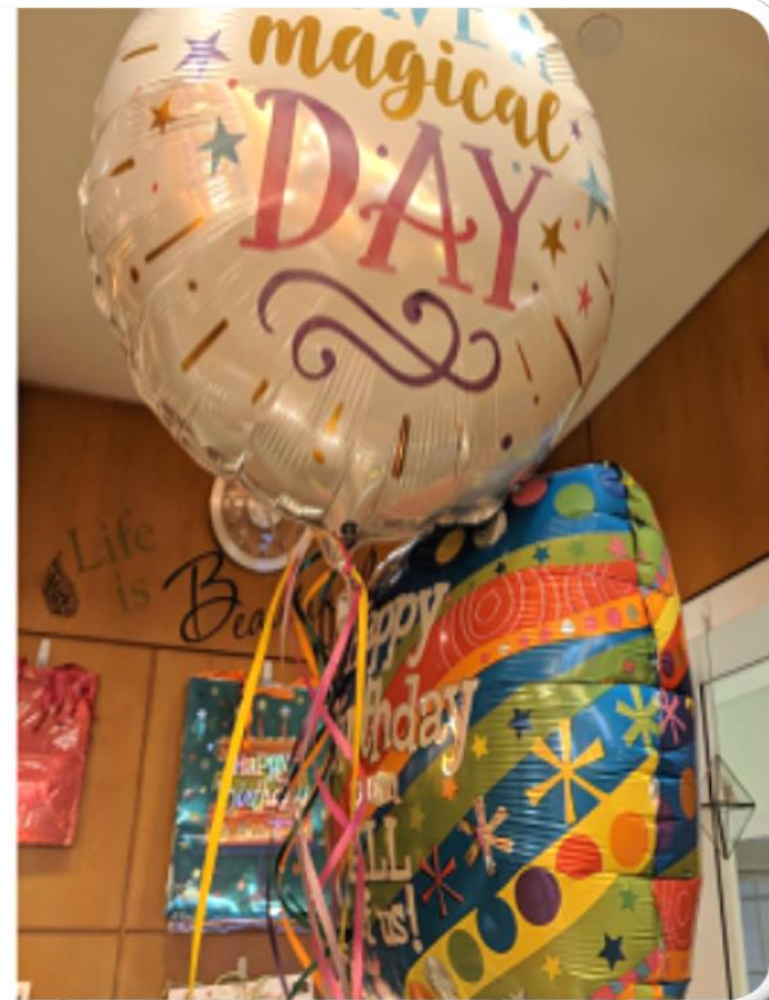
DON'T LET YOUR PATIENTS SUFFER IN SILENCE!



LIBERATE YOUR PATIENT FROM PAIN!



therapeutic exercise
 improve the end of life experience
 dignify the dying process
 healing grieving
 celebrate the patient's life
 family centered care
 closure
 multidisciplinary
 create meaning at the end of life
 kindness
 provide support
 it's the little things that matter
 UCLA Medical ICU
 compassion
 impact
 healing
 love
 kind gesture
 moving
 3 Wishes
 fulfill
 dignify
 comforting
 hope
 help families cope
 honor the patient
 meaningful
 humanize the environment
 remember the patient as a person
 find comfort
 acknowledge the patient as a person
 create positive memories
 humanize the dying process



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THANK YOU



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