Pediatric Cancer Pain

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GLOBOCAN

- Pediatric Cancer Incidence in Iran (2018): 3314
- ASR: 13.6/100,000
- Pediatric Cancer Mortality in Iran (2018): 1245
- ASMR: 5.1/100,000
- Prevalence 1y: 2552
- Prevalence 3y: 7055
- Prevalence 5y: 11190

http://gco.iarc.fr/today/online-analysis

Pediatric Pain

- Clinical audits reveal that upwards of **50%** of pediatric cancer outpatients report undertreated pain.

Van Cleve L, Muñoz CE, Savedra M, et al. Symptoms in children with advanced cancer: child and nurse reports. Cancer Nurs 2012;35(2):115-125.

- Study found that among other common distressing symptoms, pain was reported **48%** of the time among children with advanced cancer.
- In the last 12 weeks of life, pain prevalence was even higher, at **62%**

Wolfe J, Orellana L, Ullrich C, Cook EF, Kang TI, Rosenberg A, Geyer R, Feudtner C, Dussel V (2015) Symptoms and distress in children with advanced cancer: prospective patient-reported outcomes from the PediQUEST study. J Clin Oncol 33:1928-1935

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Pediatric Pain

- declines in quality of life
- difficulty with sleep
- increased pain sensitivity
- procedural distress
- Restriction of social activities

- the development of emotional and behavioral problems
- Parents greatest distress: failing to protect their child from pain

Evidences about Pediatric Pain Management

- The incidence of pain in children is similar to that of adults

Chiaretti A, et al. Current practice and recent advances in pediatric pain management. European Review for Medical and Pharmacological Sciences. 2013; 17(Suppl 1): 112-126

- USA: adults receive more than two - three times as many analgesic doses as children (with identical diagnoses)

Schechter NL, Allen DA, Hanson K. Status of pediatric pain control: a comparison of hospital analgesic usage in children and adults. Pediatrics. 1986 Jan;77(1):11-5.

- Compared to adults, pediatric patients receive fewer and/or incorrectly dosed analgesics in daily routine

Ellis, J. A., O'Connor, B. V., Cappelli, M., Goodman, J., Blouin, R., & Reid, C. W. Pain in hospitalized pediatric patients: How are we doing? Clinical Journal of Pain. 2002 18, 262-269.

Evidences about Pediatric Pain Management

- Children with persistent pain suffer more physical symptoms in adult life, more anxiety and more depression…
- There is general agreement that pain in infants, children and young people is often underestimated and undertreated. This under estimation and treatment of pain in children reflects various persistent misconceptions:
- that infants do not feel pain; they do not remember painful experiences;
- that children suffer less pain than adults; fears regarding the use of pharmacological agents;
- that children become addicted to opioids more easily than adults; deficits in knowledge of pain assessment and management; the inability of infants to express their pain, personal values and beliefs

Myths and Barriers to Using Opioids

- Case Scenario: You are taking care of a 15-y-old child with metastatic osteosarcoma. Her major was severe pain…
- What would be the most common concerns you might hear from your colleagues or parents arguing against opioid use in this child?

- Addiction/ Tolerance
- Respiratory Depression
- Constipation
- Medication “Too strong”
- Masking Symptoms

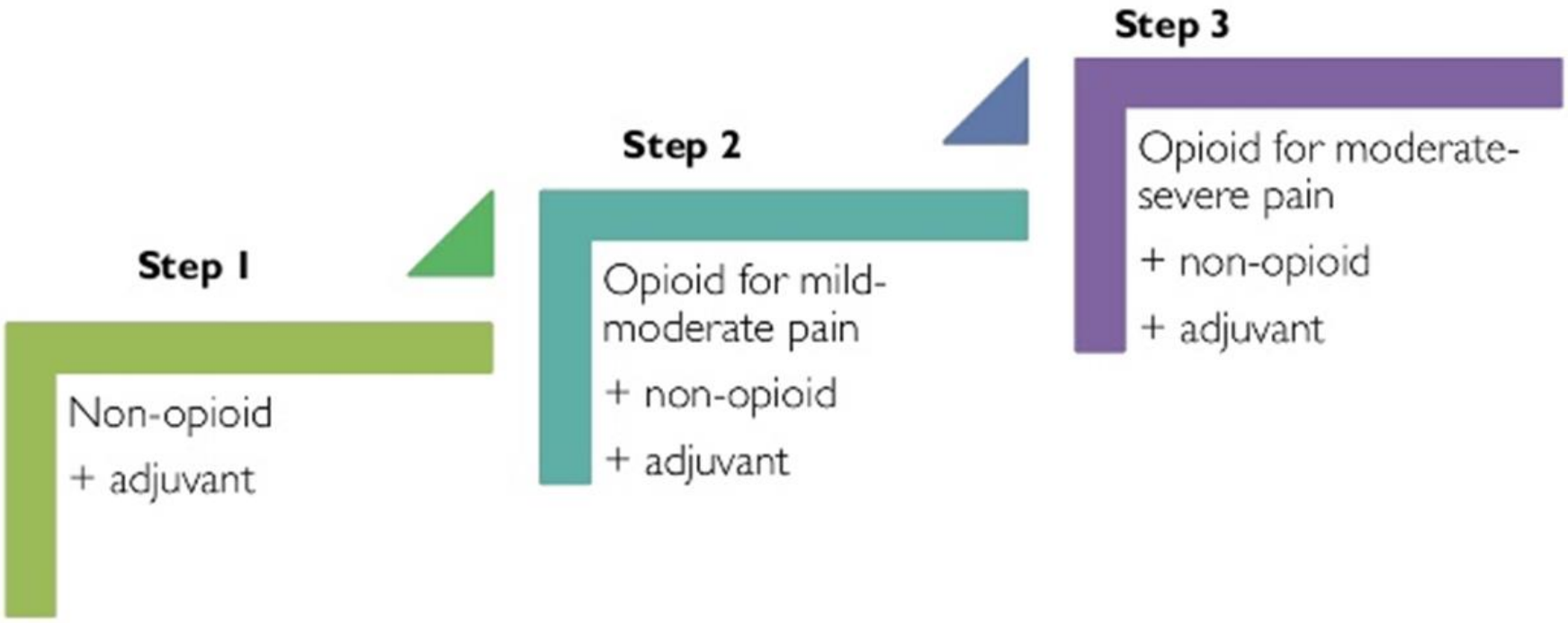
How does pain management in pediatric patients differ from that in adults?

- Children are not small adults and so medications must be adjusted accordingly.
- It is important to communicate with or assess the child directly if possible to get information about symptoms.
- The main differences between adult and pediatric patients has to do with the role of the parents.

…

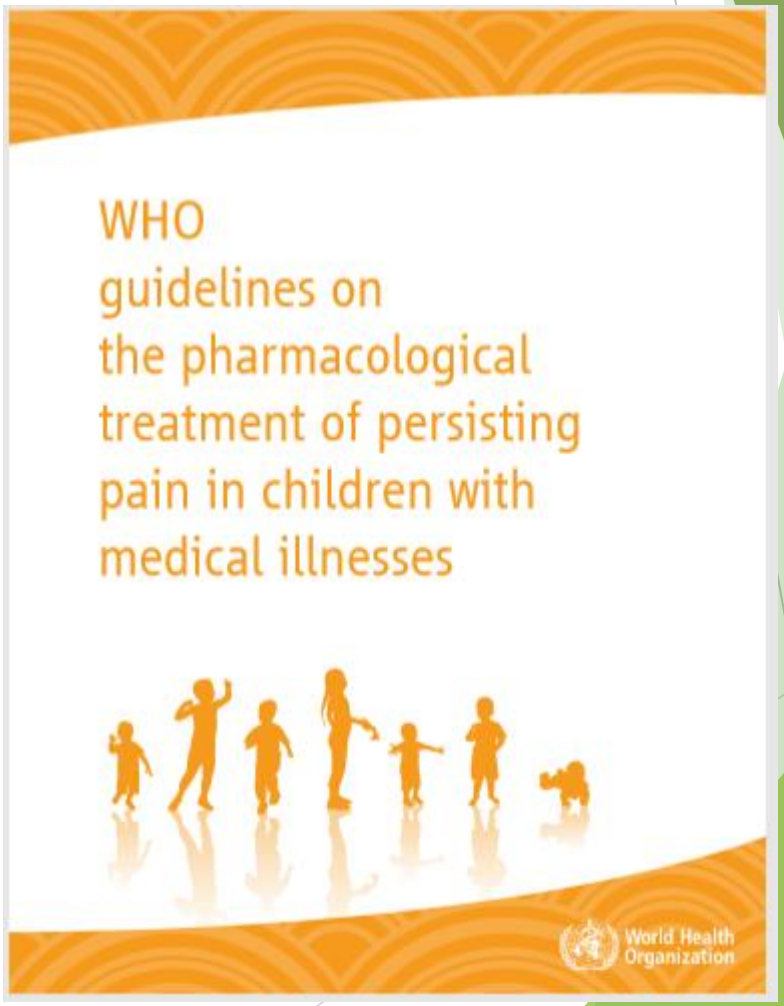
- Ensure you inform the whole team that you are using opioid medication and address any concerns they may have.
- Concerns will often be allayed when the team sees an improvement in the child's condition.
- To help minimize the risk of opioid abuse, screen pediatric patients and their parents should be screened regarding previous/current opioid use before prescribing opioid analgesics.

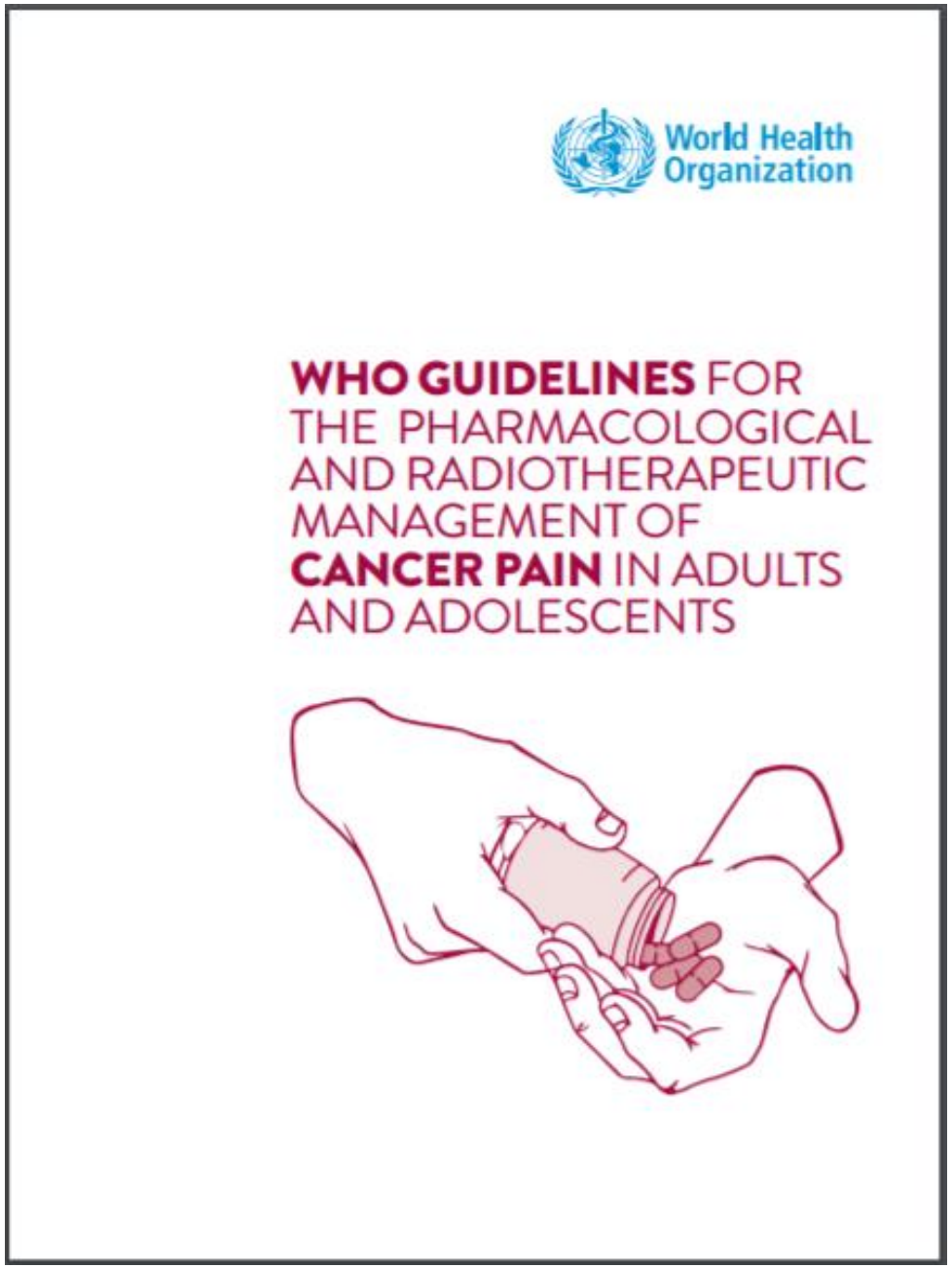
WHO's Pain Relief Ladder 1986



How Do We Manage Cancer Pain in Children?

WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses (2012)



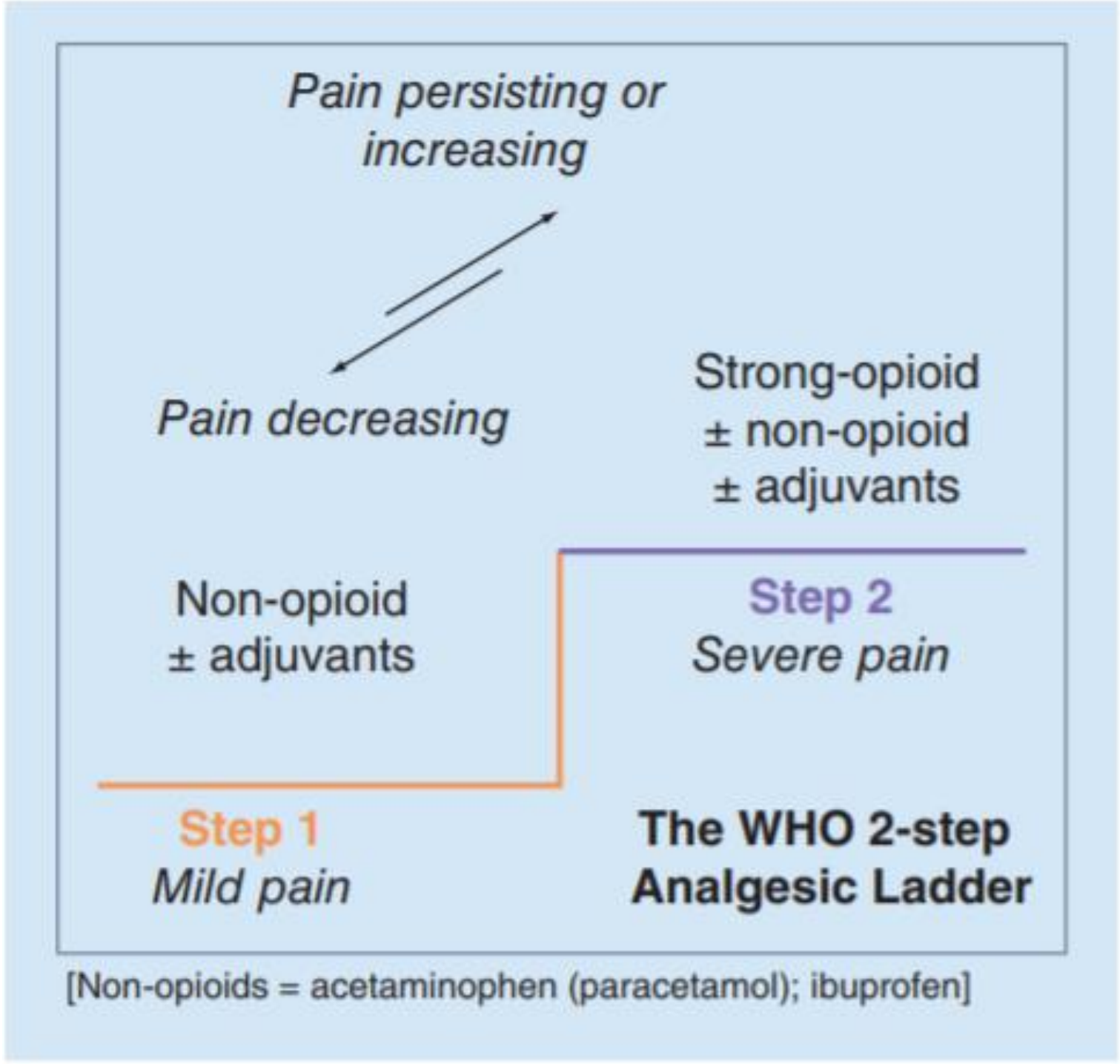


https://www.who.int/ncds/management/palliative-care/cancer-pain-guidelines/en/

Principles for the pharmacological management of pain

- using a two-step strategy: “by the ladder”
- dosing at regular intervals: “by the clock”

  PRN: Patient Receive Nothing!!
- using the appropriate route of administration: “by the mouth”
- adapting treatment to the individual child: “by the child”


Pain persisting or increasing
Pain decreasing
Strong-opioid
± non-opioid
± adjuvants
Non-opioid
± adjuvants
Step 2
Severe pain
Step 1
Mild pain
The WHO 2-step Analgesic Ladder
[Non-opioids = acetaminophen (paracetamol); ibuprofen]

Opioids with active metabolites

- Codeine & Tramadol:
- broken down in the liver by CYP2D6:
  - poor drug metabolizer
  - hyper-metabolizers
- In 2017, the FDA issued a warning specifically for codeine and tramadol in all patients less than 12 years of age,
- The FDA warns that in the 12-17-year age group (obesity, obstructive sleep apnea, lung tissue disease)

Strong Opioids

1. **Morphine** is recommended as the first-line strong opioid for the treatment of persisting moderate to severe pain in children
2. **Oral** administration of opioids is the recommended route of administration
3. **Switching** opioids and/or route of administration in children is strongly recommended in the presence of inadequate analgesic effect with intolerable side-effects.

Starting dosages for opioid analgesics in opioid-naive children (1–12 years)

Medicine	Route of administration	Starting dose
Morphine	Oral (immediate release)	1–2 years: 200–400 mcg/kg every 4 hrs 2–12 years: 200–500 mcg/kg every 4 hrs (max 5 mg)
	Oral (prolonged release)	200–800 mcg/kg every 12 hrs
	IV injection[c]	1–2 years: 100 mcg/kg every 4 hrs 2–12 years: 100–200 mcg/kg every 4 hrs (max 2.5 mg)
	SC injection	
	IV Infusion	Initial IV dose : 100–200mcg/kg[c], then 20–30 mcg/kg/hr
	SC infusion	20 mcg/kg/hr
Fentanyl	IV injection	1–2 mcg/kg[c], repeated every 30–60 minutes
	IV infusion	Initial IV dose 1–2 mcg/kg[c], then 1 mcg/kg/hr
Hydromor-phone	Oral (immediate release)	30–80 mcg/kg every 3–4 hrs (max 2 mg/dose)
	IV injection[c] or SC injection	15 mcg/kg every 3–6 hrs
Methadone[d]	Oral (immediate release)	100–200 mcg/kg every 4 hrs for the first 2–3 doses, then every 6–12 hrs (max 5 mg/dose initially)[e]
	IV injection[e] and SC injection	
Oxycodone	Oral (immediate release)	125–200 mcg/kg every 4 hours (max 5 mg/dose)
	Oral (prolonged release)	5 mg every 12 hours

Adjuvant “Co-analgesics” for Pediatric Neuropathic Pain Syndromes and Chronic Pain

- Anticonvulsants: Gabapentin
- Tricyclic Antidepressants: Amitriptyline
- Muscle Relaxants: Baclofen
- Corticosteroids: Dexamethasone

Policy

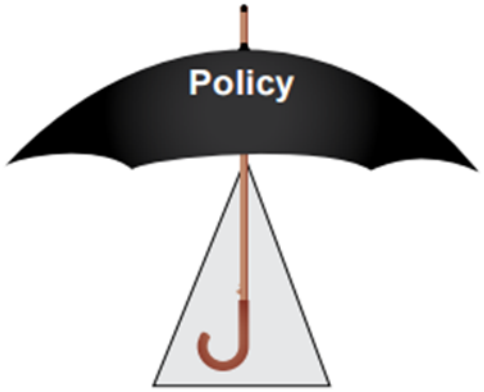
- Palliative care part of national health plan, policies, related regulations
- Funding/service delivery models support palliative care delivery
- Essential medicines

(Policy makers, regulators, WHO, NGOs)

Medicine availability

- Opioids, essential medicines
- Importation quota
- Cost
- Prescribing
- Distribution
- Dispensing
- Administration

(Pharmacists, drug regulators, law enforcement agents)



Education

- Media and public advocacy
- Curricula, courses – professionals, trainees
- Expert training
- Family caregiver training and support

(Media and public, healthcare providers and trainees, palliative care experts, family caregivers)

Implementation

- Opinion leaders
- Trainer manpower
- Strategic and business plans – resources, infrastructure
- Standards, guidelines measures

(Community and clinical leaders, administrators)

Stjernsward et al. 2007[33]. Used with permission.


icpcn
international children's
palliative care network

ICPCN ESTIMATE OF GLOBAL CHILDREN'S PALLIATIVE CARE PROVISION