Lessons from the Design and Implementation of a Pediatric Critical Care and Emergency Medicine Training Program in a Low Resource Country The South American Experience

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IAMSE
INTERNATIONAL ASSOCIATION OF MEDICAL SCIENCE EDUCATORS

OBJECTIVES

- Define the importance of an Integrated Model of Care that incorporates Pediatric Palliative Care (PPC) and a human rights-centered approach into the Pediatric Intensive Care Unit (PICU)
- Identify opportunities to implement palliative care in different stages of illness

OBJECTIVES

- Describe a model of continuous medical education that increases the number of professionals competent in the integrated care of critically ill children in low resource environments

Grunauer MA, et al. Journal of Pediatric Intensive Care, 2016

INTRODUCTION

- **Why do we prolong the survival of critically ill patients?**

- **Children's rights**
- **Health equity**
- **Social justice**

Capt. John Severns - 2007

INTRODUCTION

- 6.3 million children died in 2013, mostly in developing countries
- Only about 10-20% of these children were ever referred to a hospital and about 30-50% of them died the first day of hospitalization due to:

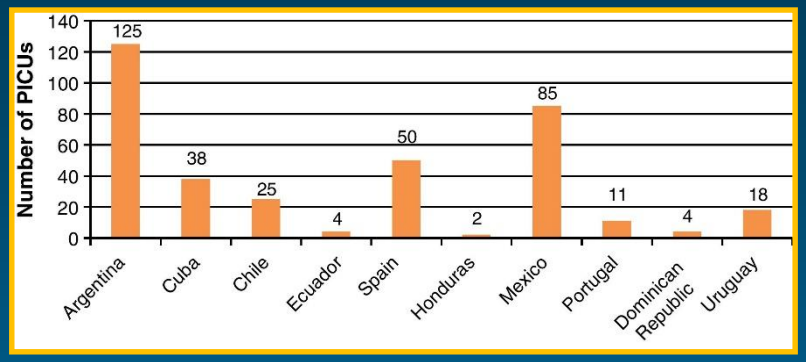
  -Lack of specialists

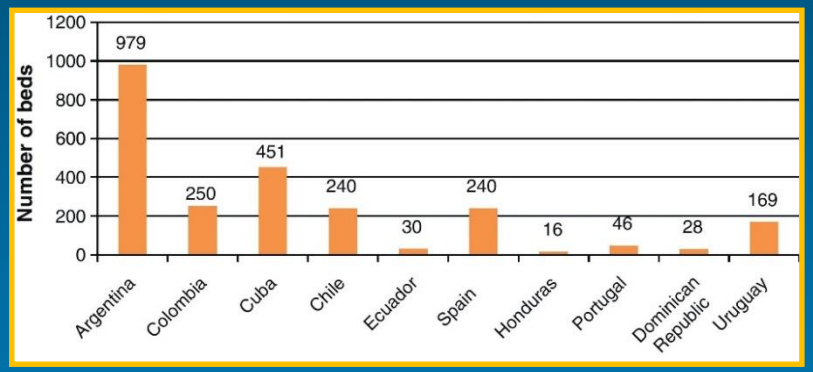
  -Insufficient infrastructure

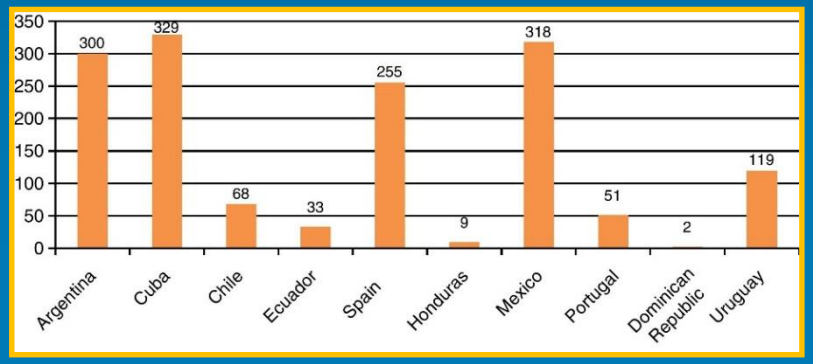
  -Socioeconomic factors

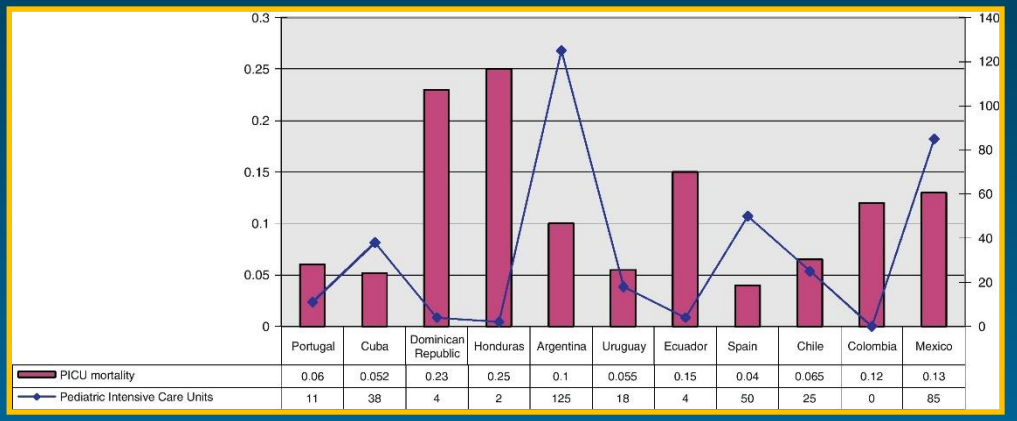
UNICEF REPORT. The United Nations Children's Fund: New York 2014

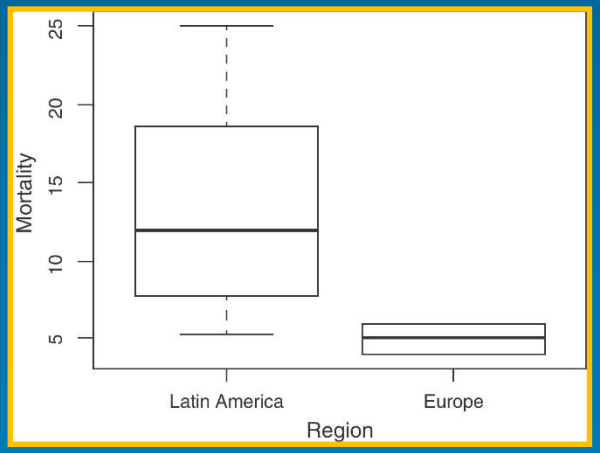
PICUs in Latin America vs. Europe











Campos-Miño, et al. Medicina Intensiva, 2012; 36:3-10

PICU-Hospital de los Valles

Family-Centered Model of Care

- Shared decision-making model
- Multidisciplinary meetings that involve the family
- Consistency in communication and interculturality
- Honesty
- Presence of the family during rounds and CPR
- Flexible and constant visits
- Support for the family before, during, and after the patient's discharge or death

Aslakson RA, et al. Crit Care Med. 2014;42(11):2418-28.

QUALITY OF LIFE!

Integrated Model of Care

- Critical Care + Palliative medicine

with a focus on human rights

"The term palliative care is often perceived by some of my colleagues and by some parents as synonymous with giving up hope or working with the death squad—and with death itself."

"What they can't understand is that it is clear that applying palliative care really leads to children living longer and better."

Dr Stefan Friedrichsdorf

MYTHS ABOUT PALLIATIVE CARE IN THE PICU

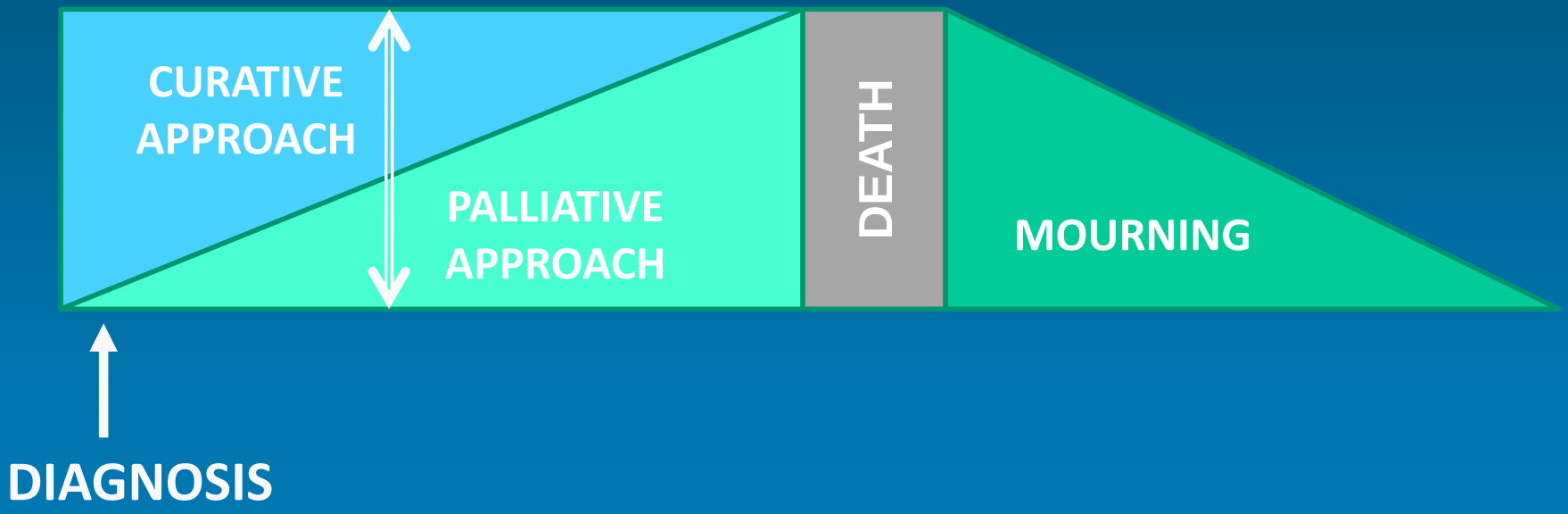
- Myth #1: A child must have a terminal illness or be at the end of their life to receive palliative care
- Myth #2: Palliative care = giving up hope
- Myth #3: A child should have a DNR in order to receive palliative care
- Myth #4: PPC is only applicable for children with cancer
- Myth #5: In order to provide PPC, you must also abandon all of the disease-directed treatment

Stefan J. Friedrichsdorf, et al. EPEC-Pediatrics, 2010-2016

PEDIATRIC PALLIATIVE CARE

- Pediatric palliative care prevents, identifies, and treats the suffering of children with serious illnesses as well as that of their families and the teams that care for them
- Pediatric palliative care is appropriate in whatever stage of the disease, and it can be applied in conjunction with treatment directed at curing the disease

PPC is initiated when the life-threatening disease has been diagnosed and continues whether or not the child receives curative treatment



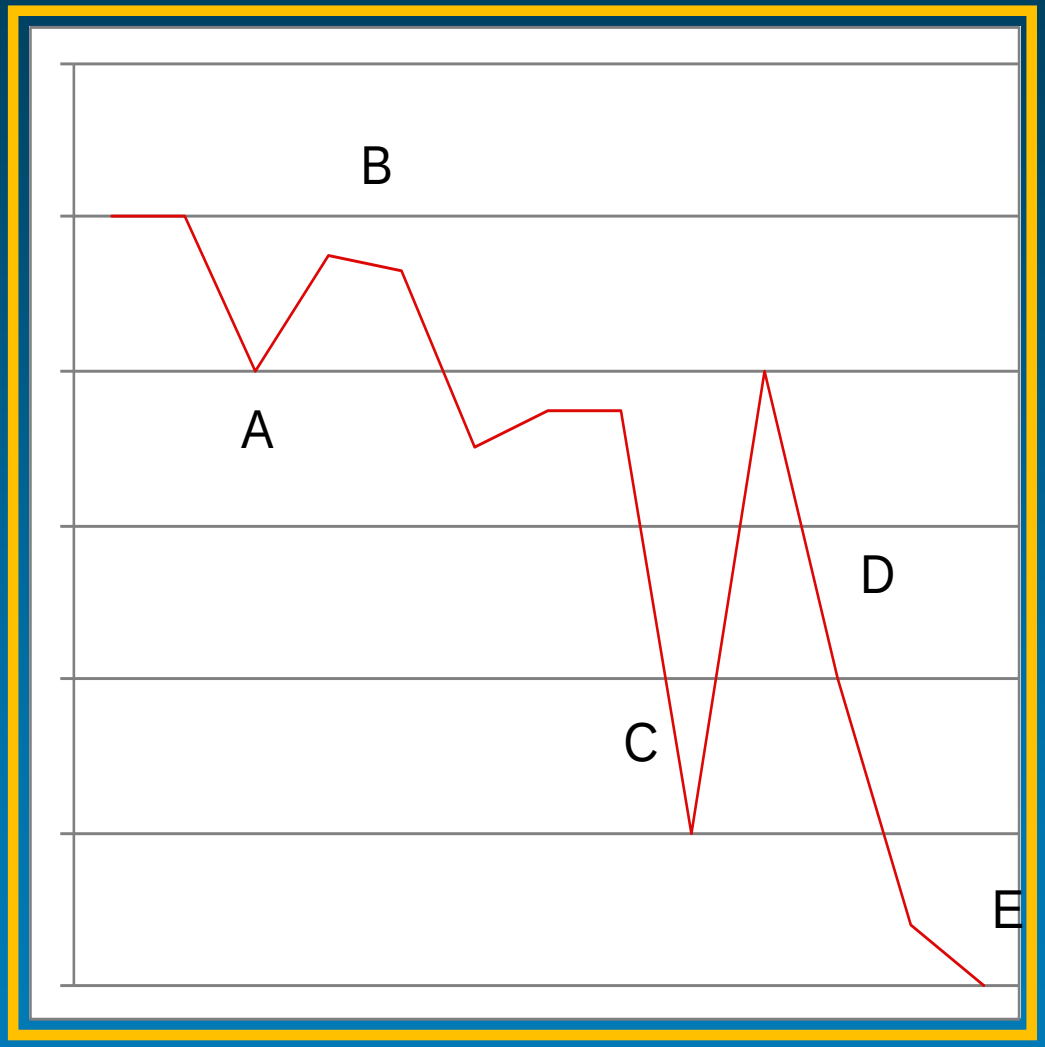
Frager G (1997). Child Adolesc Psychiatr Clin North Am. 6:889–909

PEDIATRIC PALLIATIVE CARE

- PPC prevents, identifies, and treats the suffering of children with serious illnesses as well as that of their families and the teams that take care of them.
- PPC is appropriate in all stages of the disease and can be provided alongside treatment directed at curing the disease.
- UNDHR/CRC: 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 27, 28, 29, 30, 31, 33, 34, 39, 42.

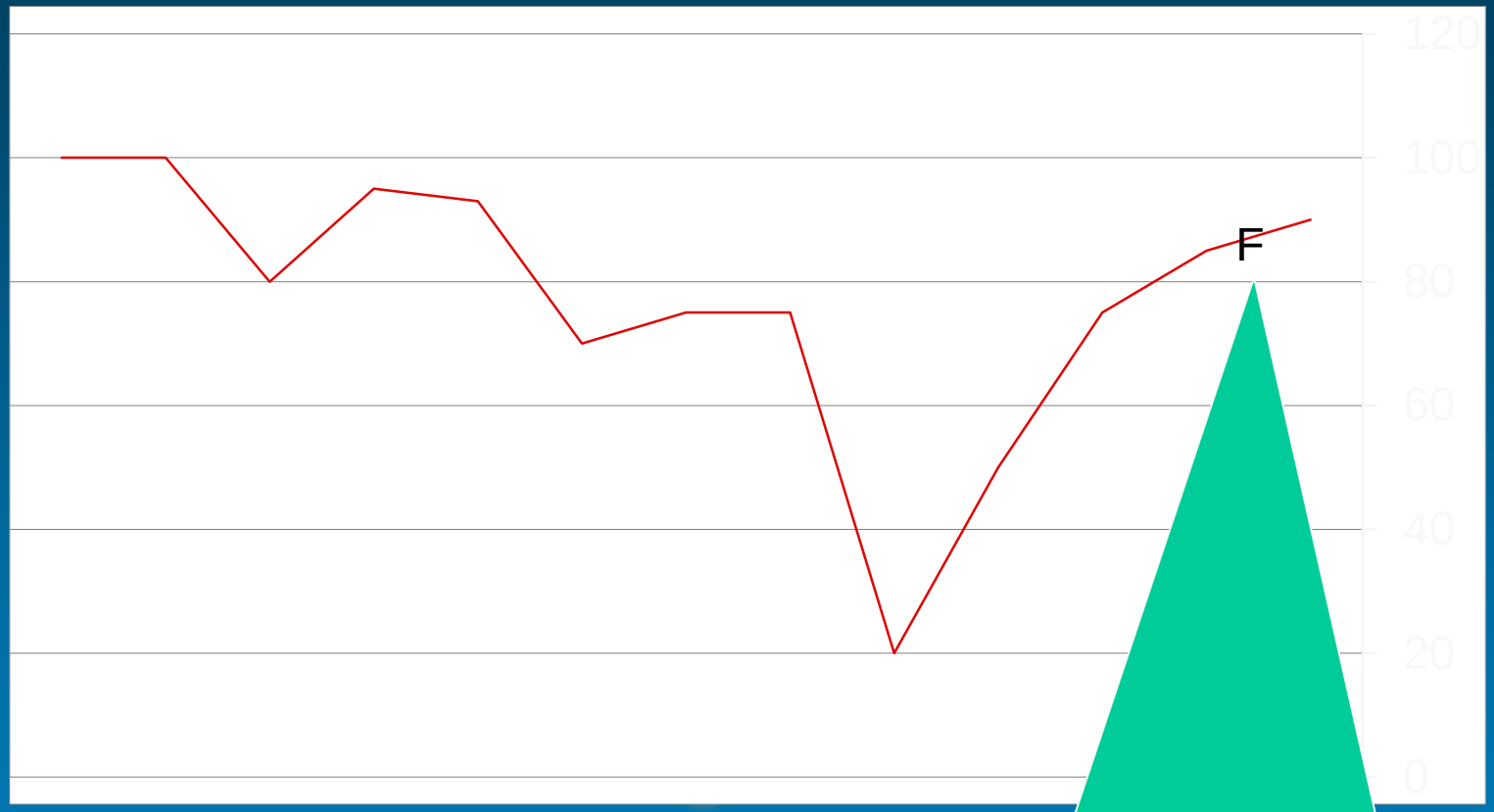
The United Nations (1989). Convention on the Rights of the Child

PREDICTABLE OPPORTUNITIES TO INITIATE PALLIATIVE CARE TASKS IN THE PICU



State of health/Function over time

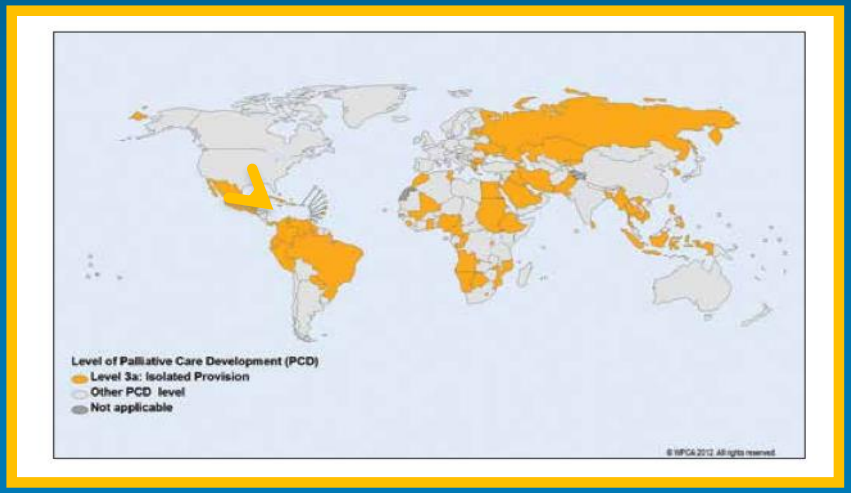
POINT F: RECOVERY



Maximizing recovery and optimizing function
Monitoring and managing late effects

ECUADOR: CURRENT STATE OF PALLIATIVE CARE

- According to the Worldwide Palliative Care Alliance:
  - Ecuador's Palliative Medicine Development Ranking:
    - 3a→ Countries with limited provision of palliative care



Worldwide Palliative Care Alliance, Global Atlas of Palliative Care at the End of Life, available online: http://www.who.int/nmh/Global_Atlas_of_Palliative_Care.pdf (ingreso: Septiembre, 2016)

Paediatric Palliative Screening Scale (PaPaS Scale): applications in the PICU

- Eva Bergstraesser; Richard D Hain; José L Pereira *BMC Palliative Care* 2013, 12:20.

OBJECTIVES OF THE STUDY

- Implement the PaPaS scale in a pediatric patient population in HDLV's PICU
- Determine the functionality of the scale in this population
- Demonstrate the validity of the PaPaS scale to predict which patients should receive PPC
- Discover associations between PaPaS scores with morbidity and mortality

Grunauer MA; Cordero A. 2011-2015, manuscript under review

DIAGNOSES UPON ADMISSION 2011-2015

Diagnosis (%)	Total
	n=510
Respiratory infections	103 (20%)
Trauma	67 (13%)
Congenital abnormalities	99 (19%)
CNS diseases	107 (21%)
Cardiac diseases	35 (7%)
Sepsis	25 (5%)
Others	74 (15%)

Grunauer MA; Cordero A. 2011-2015, manuscript under review

DEMOGRAPHIC VARIABLES 2011-2015

	Total	PaPaS <25	PaPaS ≥25	P-value
	n=511	n=372	n=139	
Age (years and SD)	5.3 ± 4.9	5.4 ± 4.9	5.1 ± 4.8	0.014
Male sex (%)	266 (52%)	205 (55%)	61 (44%)	
Race: *mestizo*(%)	432 (85%)	332 (89%)	100 (72%)	
Days hospitalized (average and SD)	13.2 ± 13.8	12 ± 11.7	16 ± 18	0.0001

Mortality: 4.8 %

PaPaS: 23.4 ± 2.9

Grunauer MA; Cordero A. 2011-2015, manuscipt under revision

THE INTEGRATED MODEL OF CARE "LAUDE" IN PEDIATRIC EMERGENCY AND CRITICAL CARE

Team Training

Pediatric Intensive Care & Palliative Medicine

All children are admitted to the Program:
"INTEGRATED MODEL OF CARE"
irrespective of their prognoses

Grunauer MA, et al. Journal of Pediatric Intensive Care, 2016

IMPLEMENTATION:

-Innovation for Humanity Program
-Johns Hopkins University
-Universidad San Francisco de Quito
-Hospital de los Valles

GOAL:

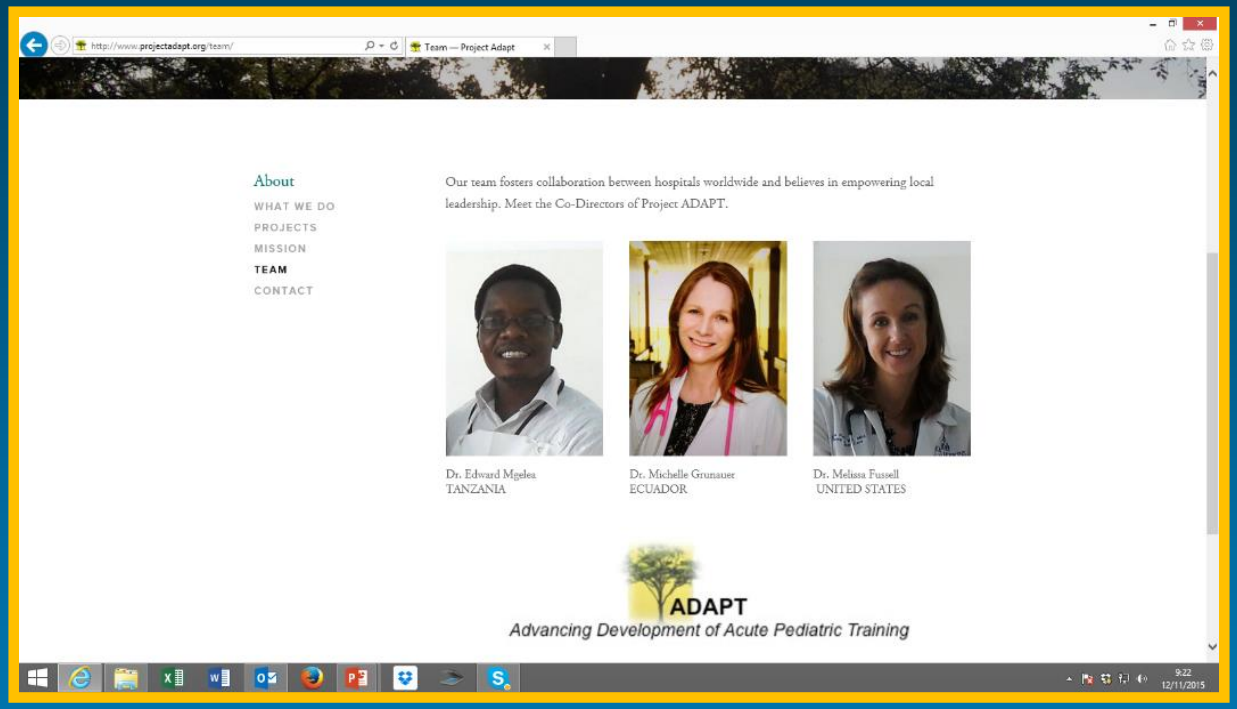
Development of Units of Excellence in Pediatric Intensive Care with an Integrated Model of Care

GOAL: CONTRIBUTE TO THE DEVELOPMENT OF NATIONAL CAPACITY

- Provide “the best evidence-based, most cost-effective medicine focused on the conservation of resources in a socially responsible way.”

Lumb, Crit Care Clinics, 2006; 22:383-392

GENERATION OF THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE



Discard the concept of universality

Grunauer MA, et al. Pediatric Critical Care Medicine, 2014; 15:4 (144)

http://www.projectadapt.org/

THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE

- Advanced Resuscitation
- Shock
- Heart failure
- Arrhythmias
- Myocarditis, cardiomyopathy
- Congenital Cardiac Malformations
- Cardiac tamponade
- Postoperative care for cardiac surgery
- Trauma
- Withdrawal of life support
- Brain death
- Sedation and anesthetic management
- Pain as the fifth vital sign

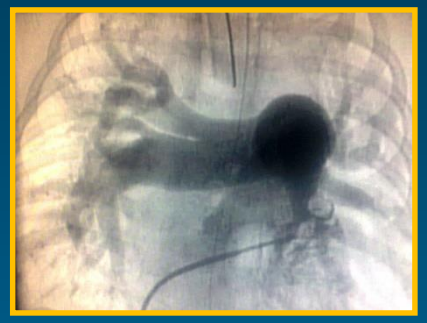
Grunauer MA, et al. Journal of Pediatric Intensive Care, 2016

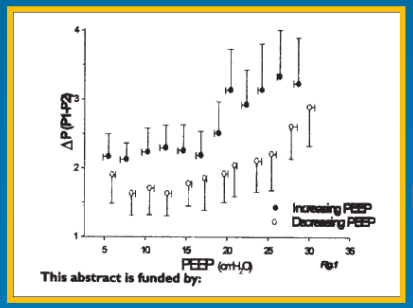
THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE

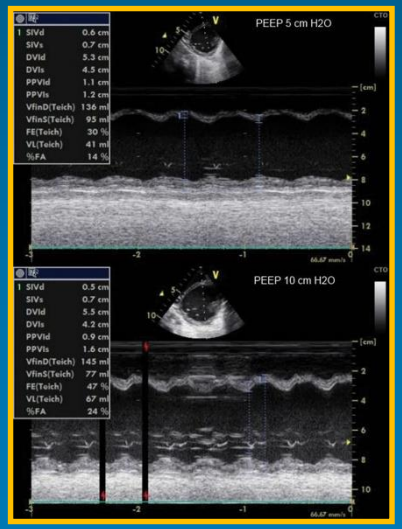
Obstructive pulmonary symptoms, asthma, bronchiolitis, respiratory infection
Shock, multiorgan failure
Severe malnutrition
Disasters
Diabetic Ketoacidosis
Sharing bad news-communication
Research methodology
Ethics, law
Family-Centered Model of Care

Grunauer MA, et al. Journal of Pediatric Intensive Care, 2016

THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE







Grunauer MA; Amato MBP; Barbas CSV; et al. American Journal of Respiratory and Critical Care Medicine 1997; 155

Grunauer MA; Fabara E; et al Pediatric Critical Care Medicine 2014; 15 (Suppl): p119

THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE
LESSONS LEARNED

- In 2 years, we trained 3 hospitals and 30 doctors in Quito
- Scholarly products
- The mortality rate from the first evaluated center lowered from 7.6% to 5%
- Duration of the program
- Cost $150,000-250,000 USD (Volunteer model: $40,000 USD)

Grunauer MA, et al. Journal of Pediatric Intensive Care, 2016

THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE LESSONS LEARNED

How can we maintain the quality, sustainability and the impact of this program?

THE LAUDE PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE

COMPONENTS

+

APLS + Integrated Model of Care

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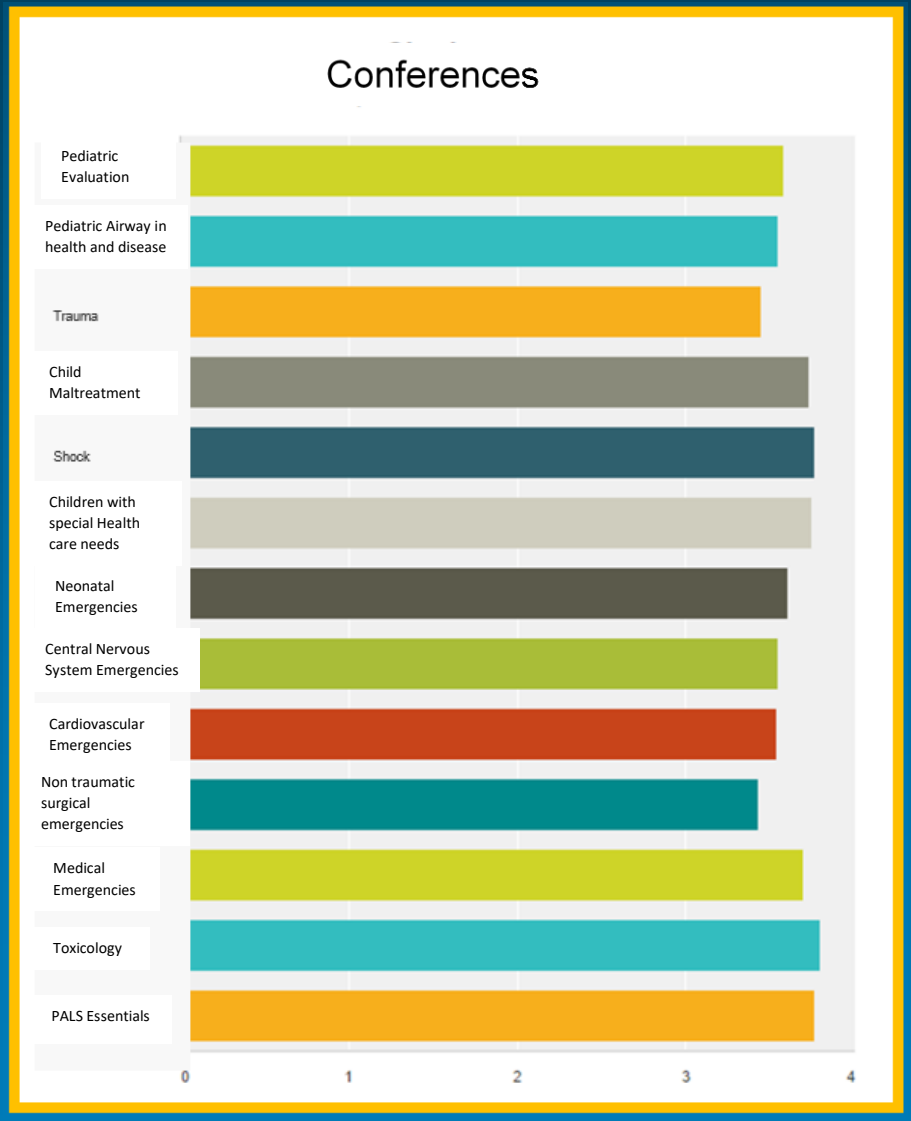
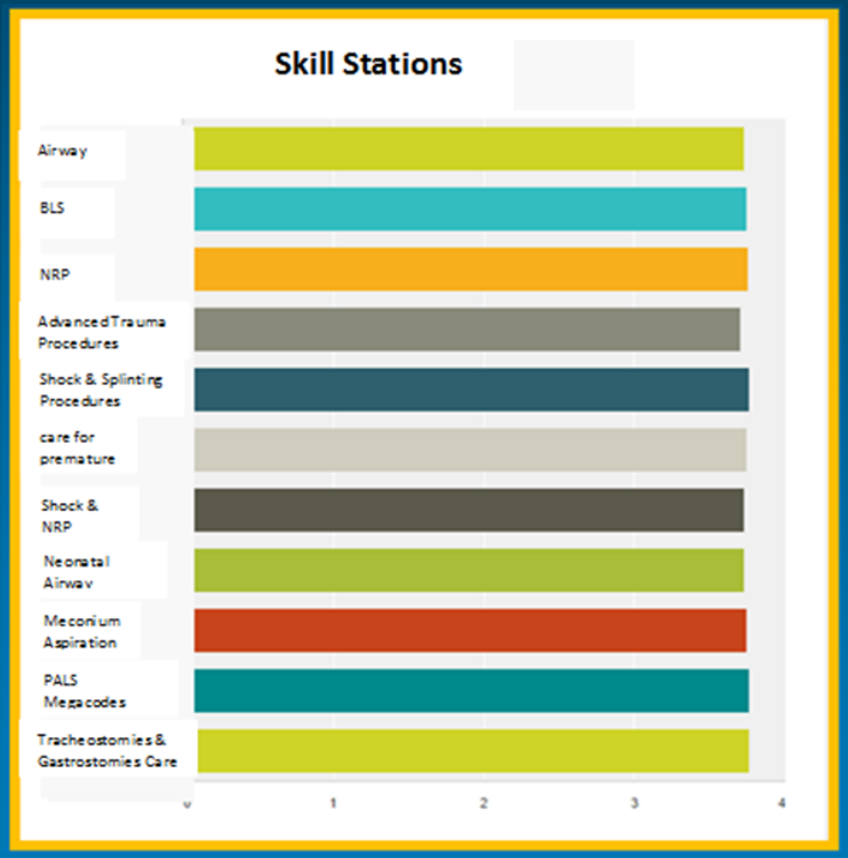
PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE —APLS COMPONENT



PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE —APLS COMPONENT



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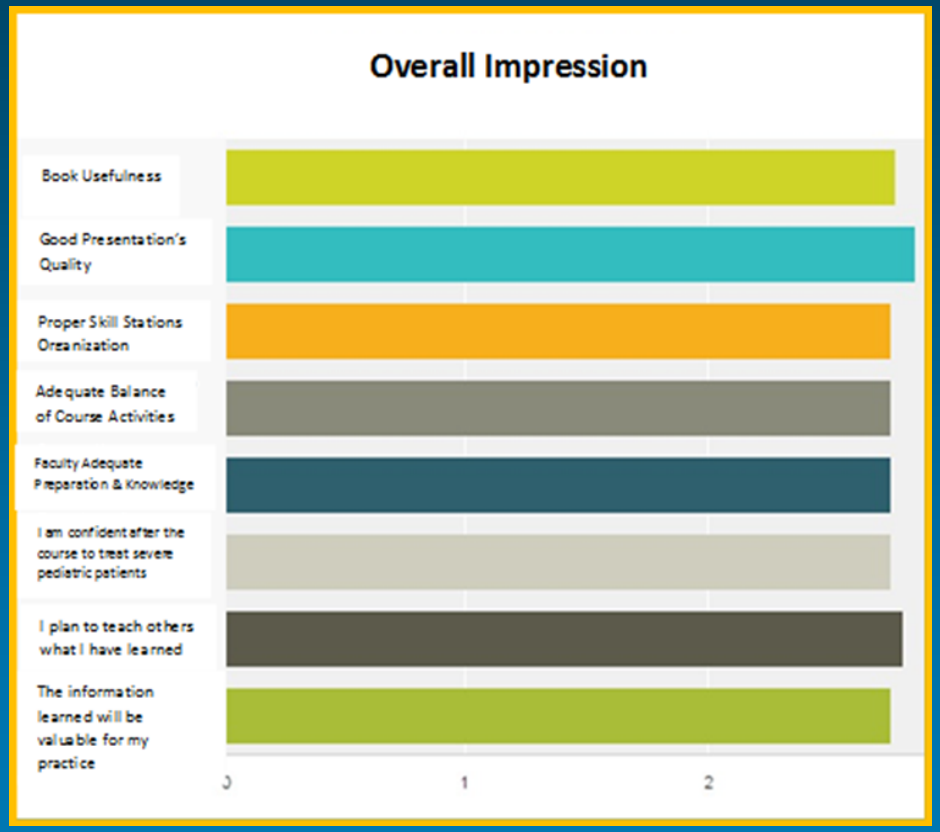
PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE —APLS COMPONENT



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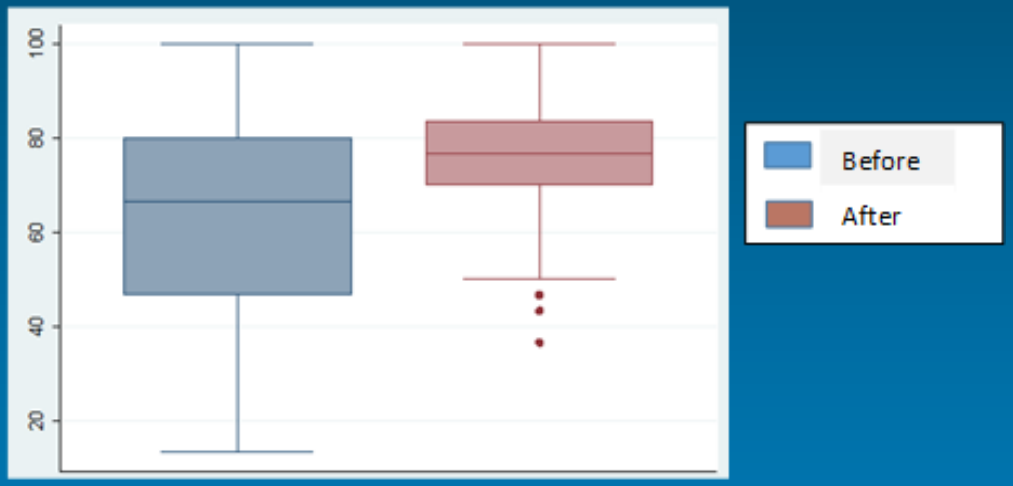
APLS Team

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE —APLS COMPONENT

Differences in pre and post test scores before and after APLS training



N (169) 75.5 post-APLS versus 64.8 pre-APLS (p<0.0001)

APLS Team, manuscript in preparation, 2016

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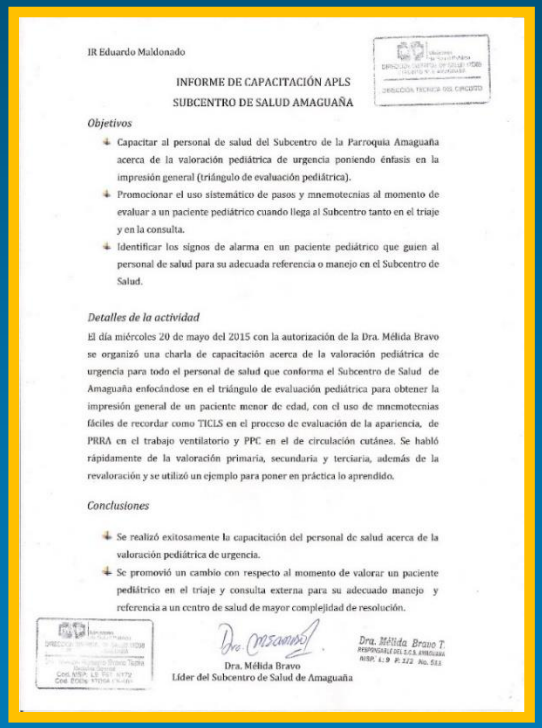
PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

APPLIED PROJECT IN THE HOSPITAL GINECO OBSTÉTRICO ISIDRO AYORA – PEDIATRIC ASSESSMENT TRIANGLE AND NRP

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

CHANGE IN HEALTH POLICIY-SUBCENTRO DE SALUD AMAGUAÑA



IR Eduardo Maldonado

INFORME DE CAPACITACIÓN APLS
SUBCENTRO DE SALUD AMAGUAÑA

Objetivos

- Capacitar al personal de salud del Subcentro de la Parroquia Amaguaña acerca de la valoración pediátrica de urgencia poniendo énfasis en la impresión general (triángulo de evaluación pediátrica).
- Promocionar el uso sistemático de pasos y mnemotecnias al momento de evaluar a un paciente pediátrico cuando llega al Subcentro tanto en el triaje y en la consulta.
- Identificar los signos de alarma en un paciente pediátrico que guíen al personal de salud para su adecuada referencia o manejo en el Subcentro de Salud.

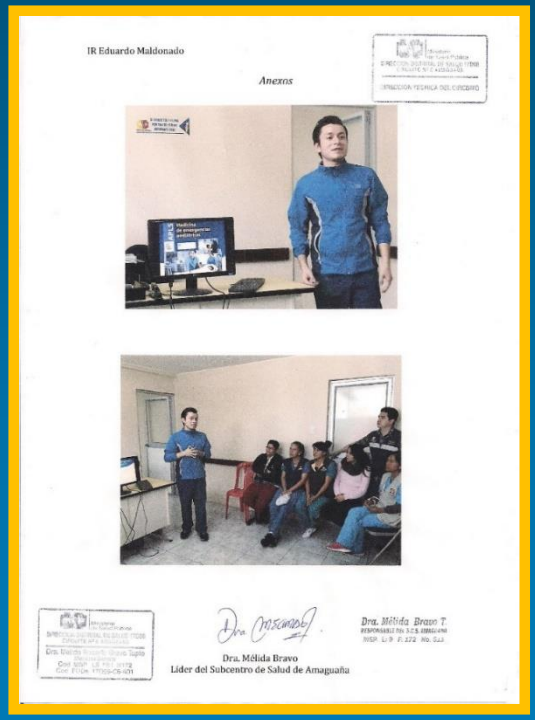
Detalles de la actividad

El día miércoles 20 de mayo del 2015 con la autorización de la Dra. Mélida Bravo se organizó una charla de capacitación acerca de la valoración pediátrica de urgencia para todo el personal de salud que conforma el Subcentro de Salud de Amaguaña enfocándose en el triángulo de evaluación pediátrica para obtener la impresión general de un paciente menor de edad, con el uso de mnemotecnias fáciles de recordar como TICLS en el proceso de evaluación de la apariencia, de PIRRA en el trabajo ventilatorio y PPC en el de circulación cutánes. Se habló rápidamente de la valoración primaria, secundaria y terciaria, además de la revaloración y se utilizó un ejemplo para poner en práctica lo aprendido.

Conclusiones

- Se realizó exitosamente la capacitación del personal de salud acerca de la valoración pediátrica de urgencia.
- Se promovió un cambio con respecto al momento de valorar un paciente pediátrico en el triaje y consulta externa para su adecuado manejo y referencia a un centro de salud de mayor complejidad de resolución.

Dra. Mélida Bravo
Líder del Subcentro de Salud de Amaguaña



IR Eduardo Maldonado

Anexos

Dra. Mélida Bravo
Líder del Subcentro de Salud de Amaguaña

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

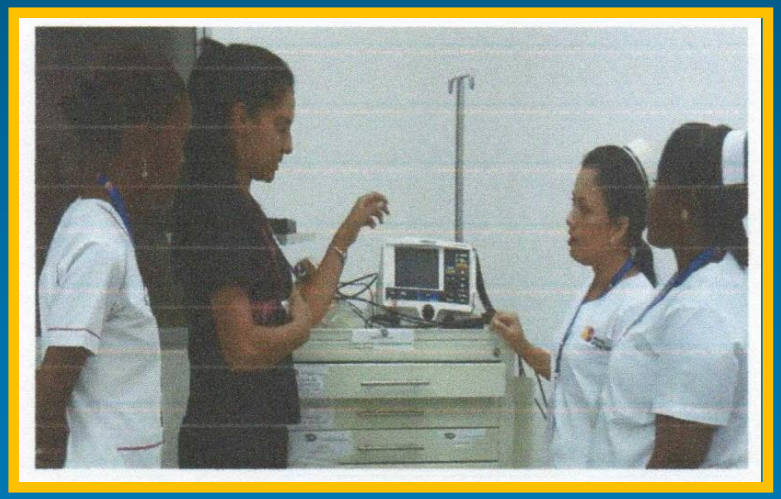
IMPLEMENTATION OF CODE BLUE IN THE PEDIATRIC AREA OF THE HOSPITAL SAN FRANCISCO DE QUITO

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

ALGORITHM FOR PEDIATRIC RESPIRATORY PROBLEMS MOST COMMONLY SEEN IN TYPE A HEALTH CENTERS

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

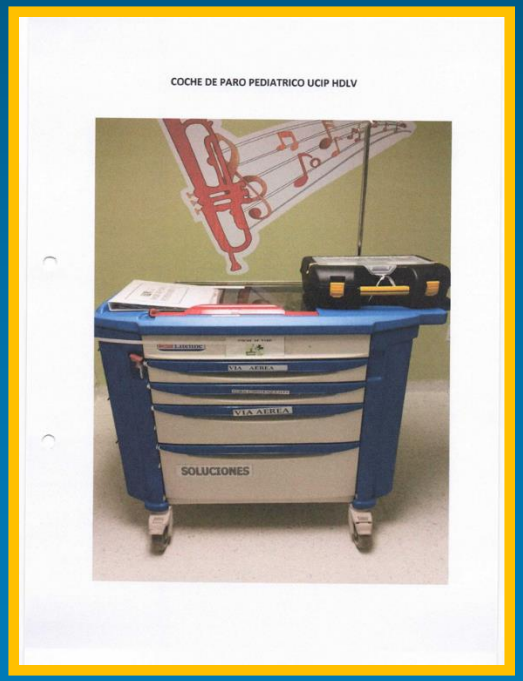
TYPE C OPERATIVE UNIT OF SAN RAFAEL: IMPLEMENTATION OF ADVANCED PEDIATRIC LIFE SUPPORT ALGORITHMS



Training TEAMS instead of individual training was highly successful

PROGRAM IN PEDIATRIC EMERGENCY AND CRITICAL CARE IMPLEMENTATION COMPONENT IN THE WORK PLACE

IMPLEMENTATION OF CODE BLUE RESPONSE IN THE HOSPITAL DE LOS VALLES

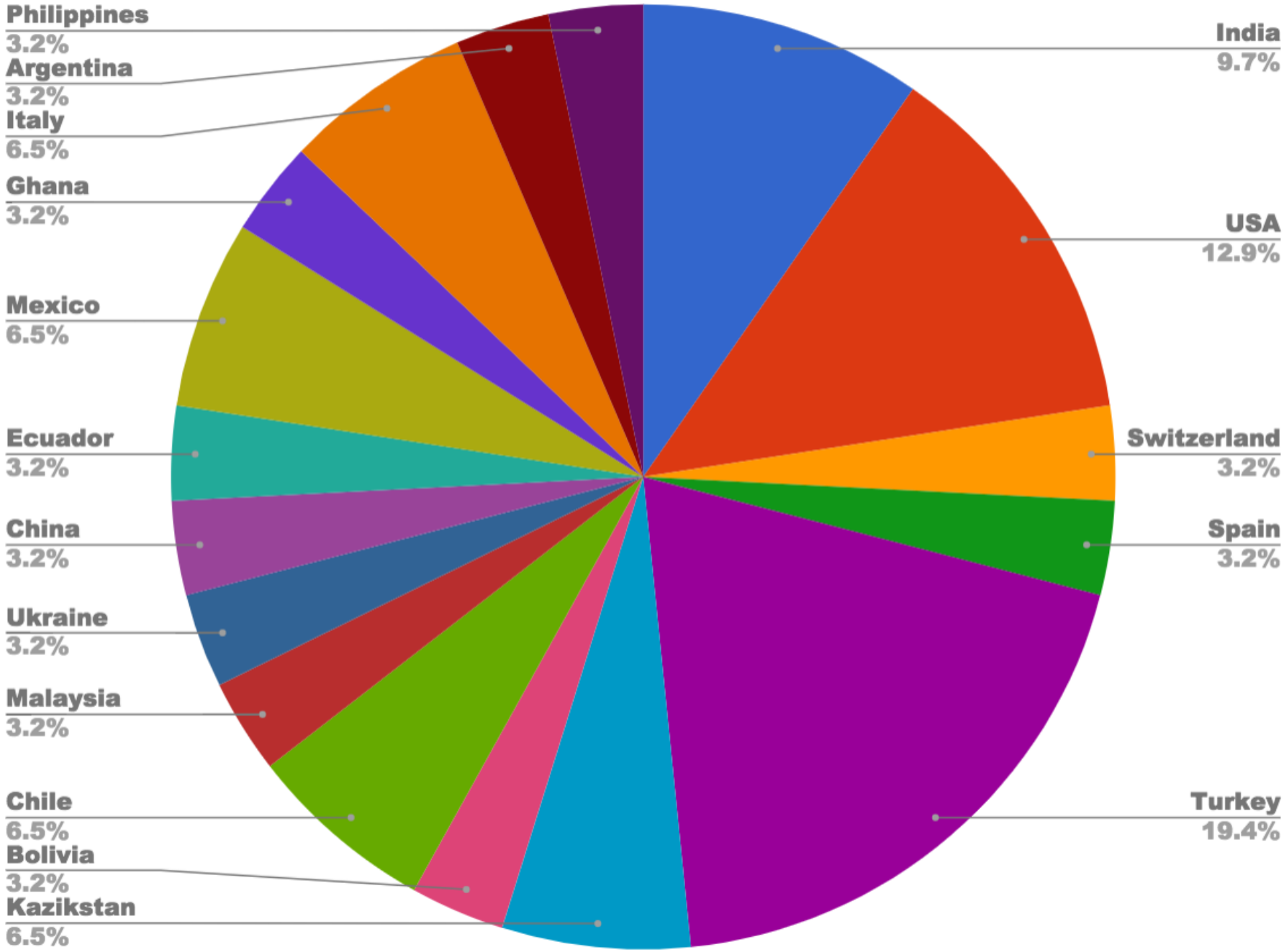


HOSPITAL DE LOS VALLES

PROGRAM IN PEDIATRIC EMERGENCY CRITICAL CARE
APLS COMPONENT

180 PROFESSIONALS In 20 provinces TRAINED in 12 MONTHS

Number of Participating Centers per Country



SUMMARY

- Ecuador can establish a Model of Integrated Care for critically ill children.
- This program is aimed at providers with no formal training in PCC and who, nonetheless, care for severely ill children.
- This program resulted in stronger, more cohesive PICU teams with improved resuscitation times and coordination during simulation rounds.
- Hospitals that implemented the program had a decrease in mortality rates.

Thank you!

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