

SAGE Technical Consultation Group on Reducing Pain and Distress at the Time of Vaccination

Impact of Pain and Distress at Time of Immunization

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SAGE Meeting

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**World Health
Organization**

Epidemiology of Injection Pain

1. Routine medical care:

Newborns: Vitamin K injection + newborn screening test

Children: ~ dozen vaccine injections

Adults: ~ 1 blood test + vaccine injection /year

2. Hospitalization:

~1 needle procedure per day

3. Chronic condition:

+++ needle procedures



**High
Income
Countries
(HIC)**

Immunization Injection Pain in LMIC-1

WHO recommended vaccines:

- large number of injectable vaccines!
- despite combination vaccines, need for multiple injections during same visit

http://www.who.int/immunization/policy/Immunization_routine_table1.pdf?ua=1
 file:///F:/WHO%20Demand/Demand%20meeting%20Apr%2030%20-May%201/Dudley%20PPT%202_WHOMultiple_Immunization_study_09March2015_reformat.pdf

Antigen		Children (see Table 2 for details)	Adolescents
Recommendations for all immunization programmes			
BCG ¹		1 dose	
Hepatitis B ²		3-4-doses (see footnote for schedule options)	3 doses (for high-risk groups (see footnote))
Polio ³		3-4 doses (at least one dose of IPV) with DTP	
DTP ⁴		3 doses	Booster (Td) (see footnote)
<i>Haemophilus influenzae</i> type b ⁵	Option 1	3 doses, with DTP	
	Option 2	2 or 3 doses, with booster at least 6 months after last dose	
Pneumococcal (Conjugate) ⁶	Option 1	3 doses, with DTP	
	Option 2	2 doses before 6 months of age, plus booster dose at 9-15 months of age	
Rotavirus ⁷		Rotarix: 2 doses with DTP RotaTeq: 3 doses with DTP	
Measles ⁸		2 doses	
Rubella ⁹		1 dose (see footnote)	1 dose (adolescent girls and/or previously vaccinated)
HPV ¹⁰			2 doses (females)

Feb 26, 2015 Table

TABLE 2 Attitudes and Behaviors Regarding Vaccination Decisions of HealthStyles Respondents With at Least 1 Child Aged 6 Years or Younger, 2009 (*N* = 475)

	Weighted %	95% Confidence Interval
I have given a lot of thought to my decision concerning vaccination for my child		
Strongly/somewhat agree	70.8	67.0–74.5
Neither agree nor disagree	19.8	16.7–23.3
Strongly/somewhat disagree	9.4	7.3–12.1
I am worried about vaccinating my youngest child		
Strongly/somewhat agree	12.3	9.8–15.3
Neither agree nor disagree	12.6	10.0–15.5
Strongly/somewhat disagree	75.1	71.4–78.5
I am unsure about vaccinating my youngest child		
Strongly/somewhat agree	10.5	8.1–13.2
Neither agree nor disagree	12.1	9.6–15.0
Strongly/somewhat disagree	77.4	73.9–80.8
Which of the following best describes your plans for vaccinating your youngest child?		
Has already received all recommended vaccines	74.5	70.8–78.1
Will receive all recommended vaccines	18.9	15.8–22.3
Will receive some but not all recommended vaccines	5.5	3.8–7.6
Will receive none of the recommended vaccines	1.1	0.5–2.2
What is the most number of vaccine shots you are comfortable with your youngest child getting in 1 doctor's visit?		
None	1.3	0.6–2.5
1–2	42.2	38.3–46.5
3–4	33.6	29.8–37.7
≥5	0.4	0.1–1.2
Whatever the doctor recommends	22.5	19.1–26.0

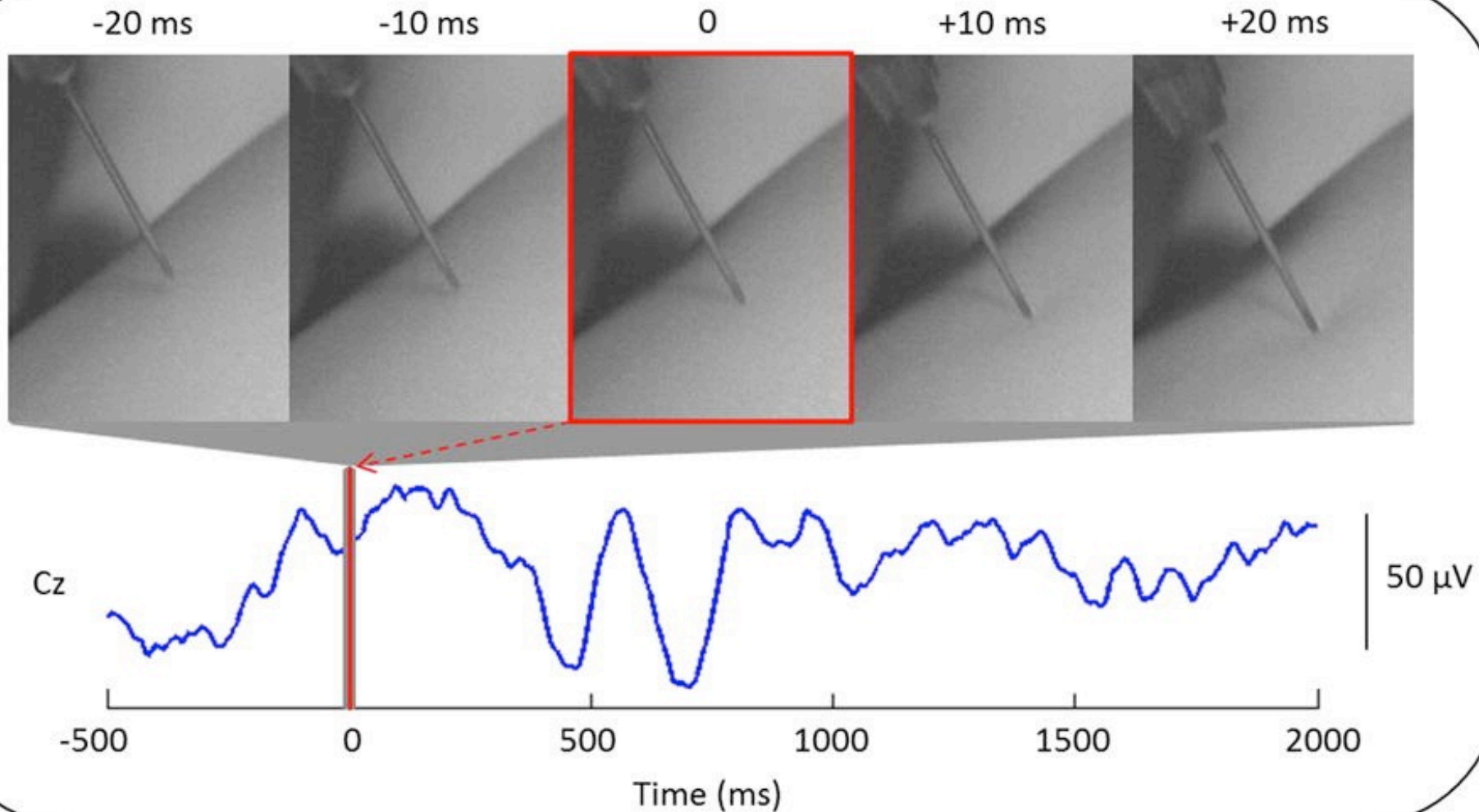


Pain and Distress with Vaccinations -HIC

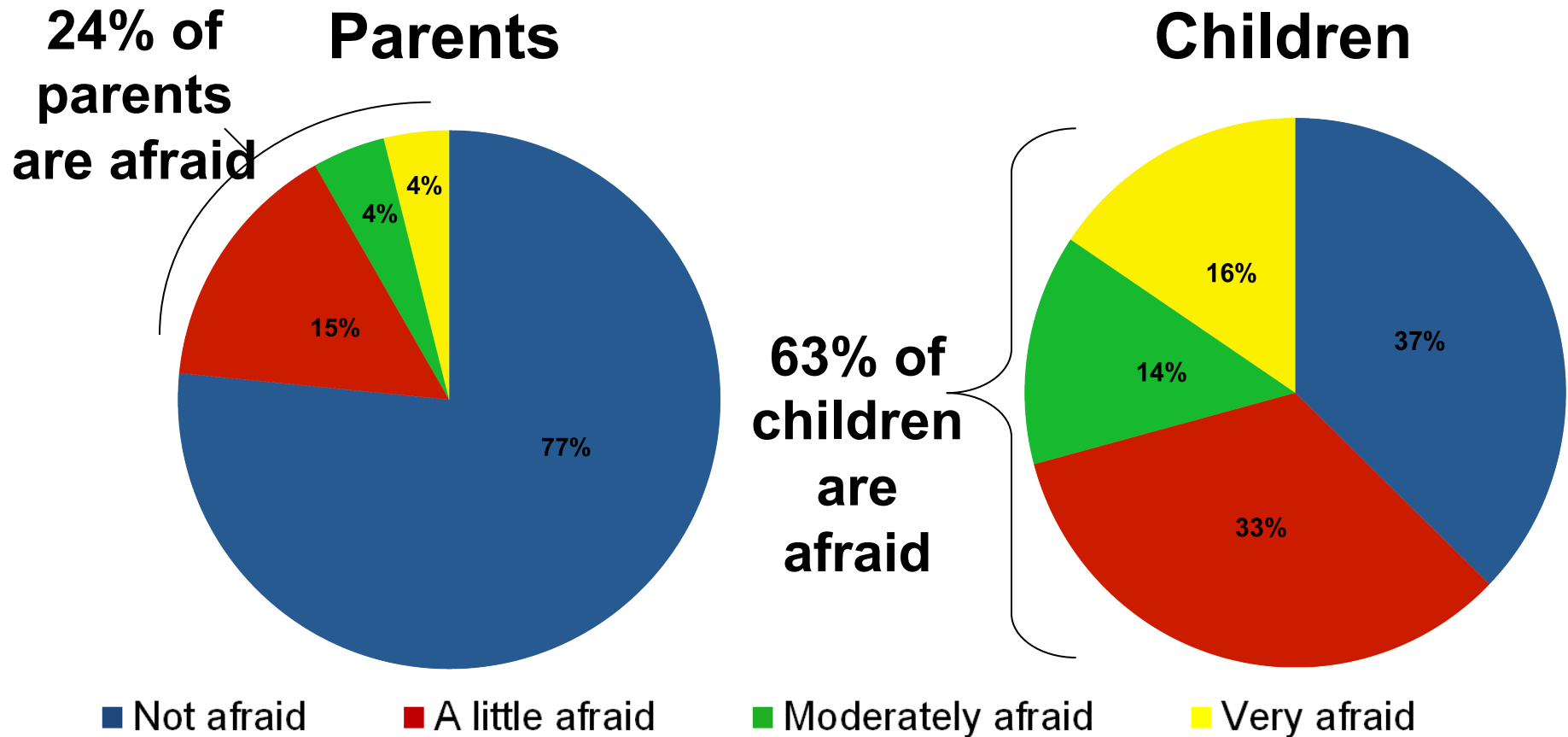
- **35%-45%** of parents are concerned with pain during childhood vaccinations
- **70%** of parents would be less anxious if vaccines were given in a non-painful way
- **85%** of parents say doctors/nurses should make vaccinations less painful
- **95%** of parents want to learn about reducing pain in their children

*Kennedy et al. Pediatrics 2011;127 suppl S92-99,
Taddio et al. Vaccine 2012 Jul 6;30(32):4807-12.*

Time Locked EEG Changes with Immunization



Prevalence of Needle Injection Fears - HIC



Taddio et al. Survey of the prevalence of immunization non-compliance due to needle fears in children and adults. Vaccine 2012 Jul 6;30(32):4807-12.

Vaccination Needle Injection Pain - LMIC

Unrecognized problem

- HCW; “unspoken” concern caregiver

Given many new immunizations being recommended for infants: “multi needles” concern



FSG photo
[http://www.fsg.org/
KnowledgeExchange/
Blogs/GlobalHealth/
PostID/374.aspx](http://www.fsg.org/KnowledgeExchange/Blogs/GlobalHealth/PostID/374.aspx)

Dudley et al South Africa*: 229 caregivers

Too many injections at one visit	1 injection	3 (1.31)
	2 injections	17 (7.42)
	3 injections	118 (51.53)
	More than 3 injections	78 (34.06)
	Uncertain	13 (5.68)

HCW reported

- 21% mothers seemed upset by 3rd injection
- 78% mothers unhappy with multiple shots

HCW themselves

- 50% thought too many shots at 3
- 41% were concerned about giving multiple shots

* Dudley et al. The acceptability of three vaccine injections given to infants during clinic visits in South Africa. A Report to the WHO Department of Immunization, Vaccines and Biologicals November 2014

Consequences of Needle Pain and Fear

➤ **Current and future procedures:**

- Higher pain perception, difficulty with procedure

➤ **Future health and social behaviours:**

- Non-compliance with health interventions

poor glycemic control diabetes;

poor treatment adherence in multiple sclerosis

- Avoidance – future vaccinations

impact on pregnancy, education, employment, travel

➤ **Health outcomes:**

- Higher morbidity and mortality

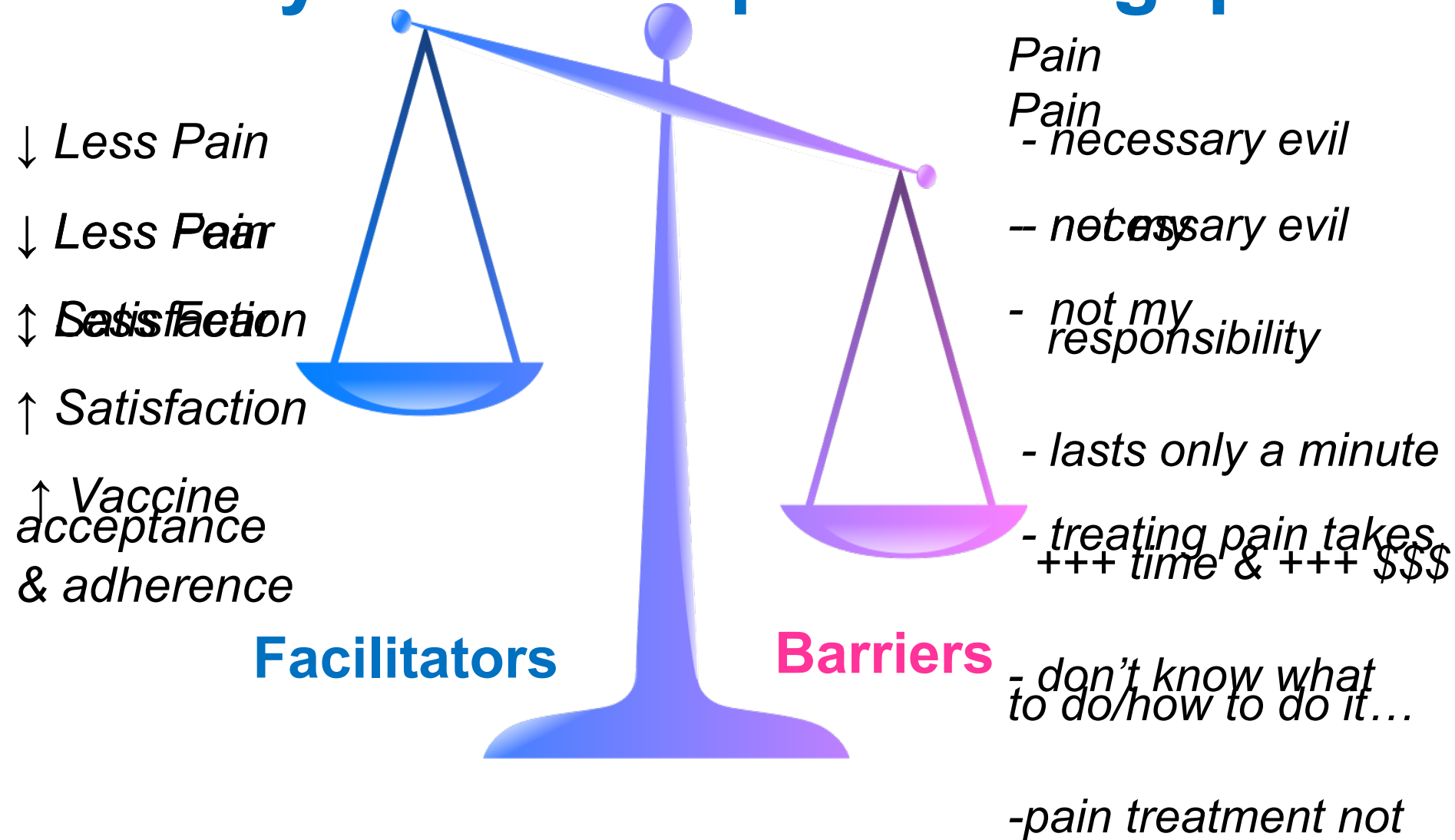
Armfield & Milgrom SAAD Dig. 2011;27:33-92011, Sokolowski CJ et al. Dent Clin North Am 2010;54(4): 731-44 Wright S et al. Aust Fam Physician 2009;38(3):172-6 2009 , Ann Mohr DC et al. Behav Med 2001;23(2):125-32.

Pain/Fear is a Barrier to Vaccination

Population	Prevalence
Parents	10%
Adolescents	20%
Adults	10%
Health Care Providers	10%

Taddio et al. Canadian Immunization Conference 2014 (abstract)

Why is there a vaccination care gap in



What *does* vaccination really look like?



What could vaccination look like?



**If used evidence based strategies
to mitigate pain at time of vaccination**