



# Emergency Contraception : An overview of recent results from research conducted by HRP/WHO

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*Geneva, January 2001*



“ Emergency contraceptives are methods which women can use after intercourse to prevent pregnancy.”

*(from Consensus Statement on Emergency  
Contraception, Bellagio, April 1995*



# METHODS USED FOR EMERGENCY CONTRACEPTION

- » HIGH-DOSE ESTROGENS (1963)
- » ETHINYLESTRADIOL/LEVONORGESTREL (1974)
  - DL-NORGESTREL: 100 µg ethinylestradiol  
0.5 mg levonorgestrel } x 2
- » LEVONORGESTREL: 0.75mg x 2 (1993)
- » MIFEPRISTONE : 10 mg (1999)
- » COPPER T 380: (1970's)



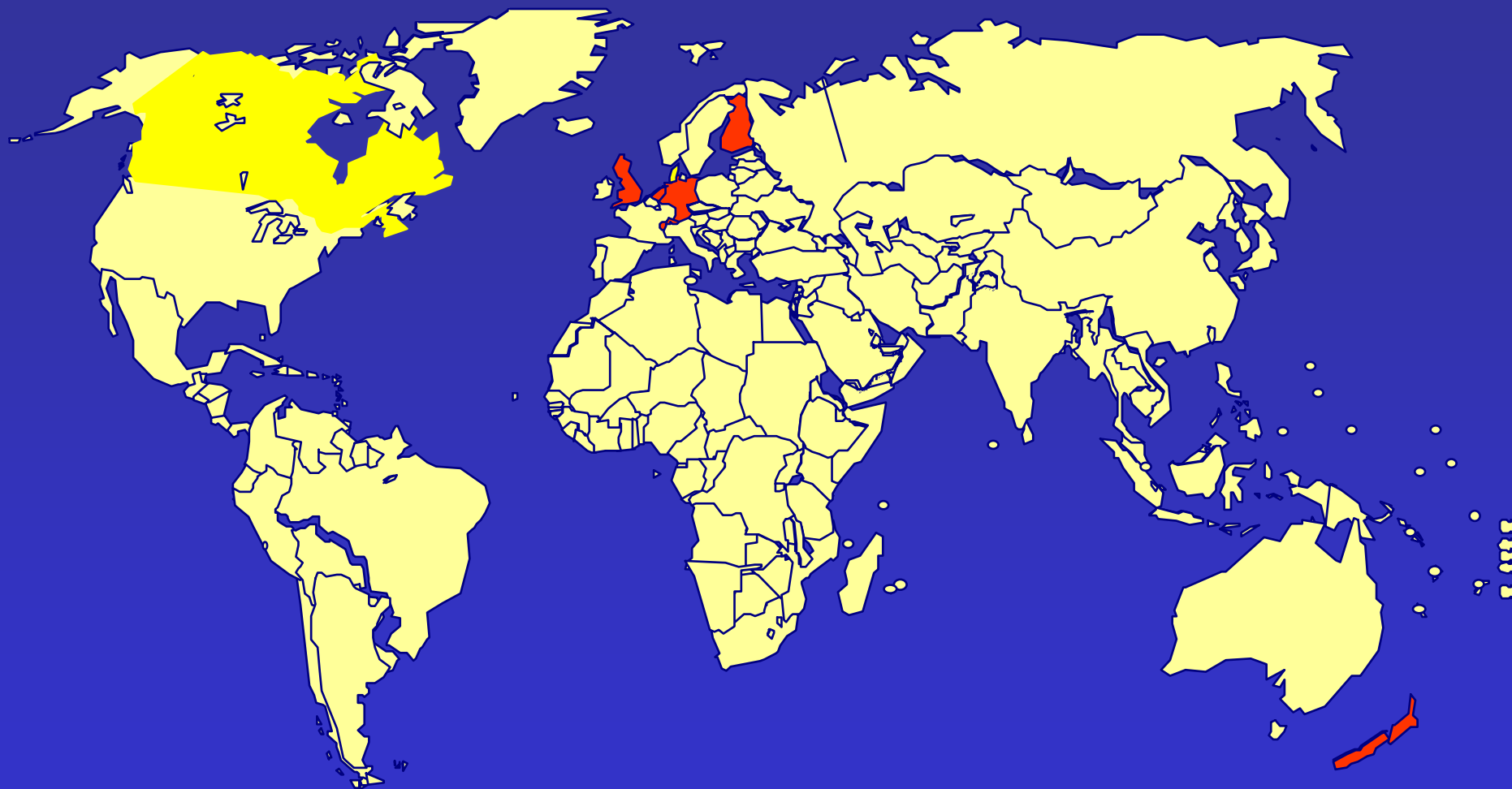
# Yuzpe Regimen

Formulation	Tablets per dose	Doses required
EE 50 µg + NG 0.50 mg or EE 50 µg + LNG 0.25 mg	2	2
EE 30 µg + NG 0.30 mg or EE 30 µg + LNG 0.15 mg	4	2

EE = ethinylestradiol    NG = norgestrel    LNG = levonorgestrel



# YUZPE REGIMEN BEFORE 1990's





# Effectiveness of Emergency Contraception

	Yuzpe regimen	IUD
Failure rate (no. of pregnancies per 100 cycles treated)	1.5	0.1
Effectiveness rate (no. of pregnancies prevented per 100 pregnancies expected)	75	99

*(from Trussell and Ellertson, 1995)*



# Recent Developments in Emergency Contraception

1. New treatment modalities
  - levonorgestrel
  - mifepristone
2. Increasing international awareness



# Efficacy of Emergency Contraception

## Levonorgestrel Yuzpe Regimen

Number of women treated	440	440
Number of women followed up	424	410
Number of pregnancies	12 (8)*	15 (9)*
Pregnancy rate	2.9% (2.4%)*	3.5% (2.7%)*

\* = values after excluding women who had further act(s) of intercourse  
(Ho and Kwan, 1993)





# Incidence of Side Effects after Emergency Contraception

## Levonorgestrel Yuzpe Regimen

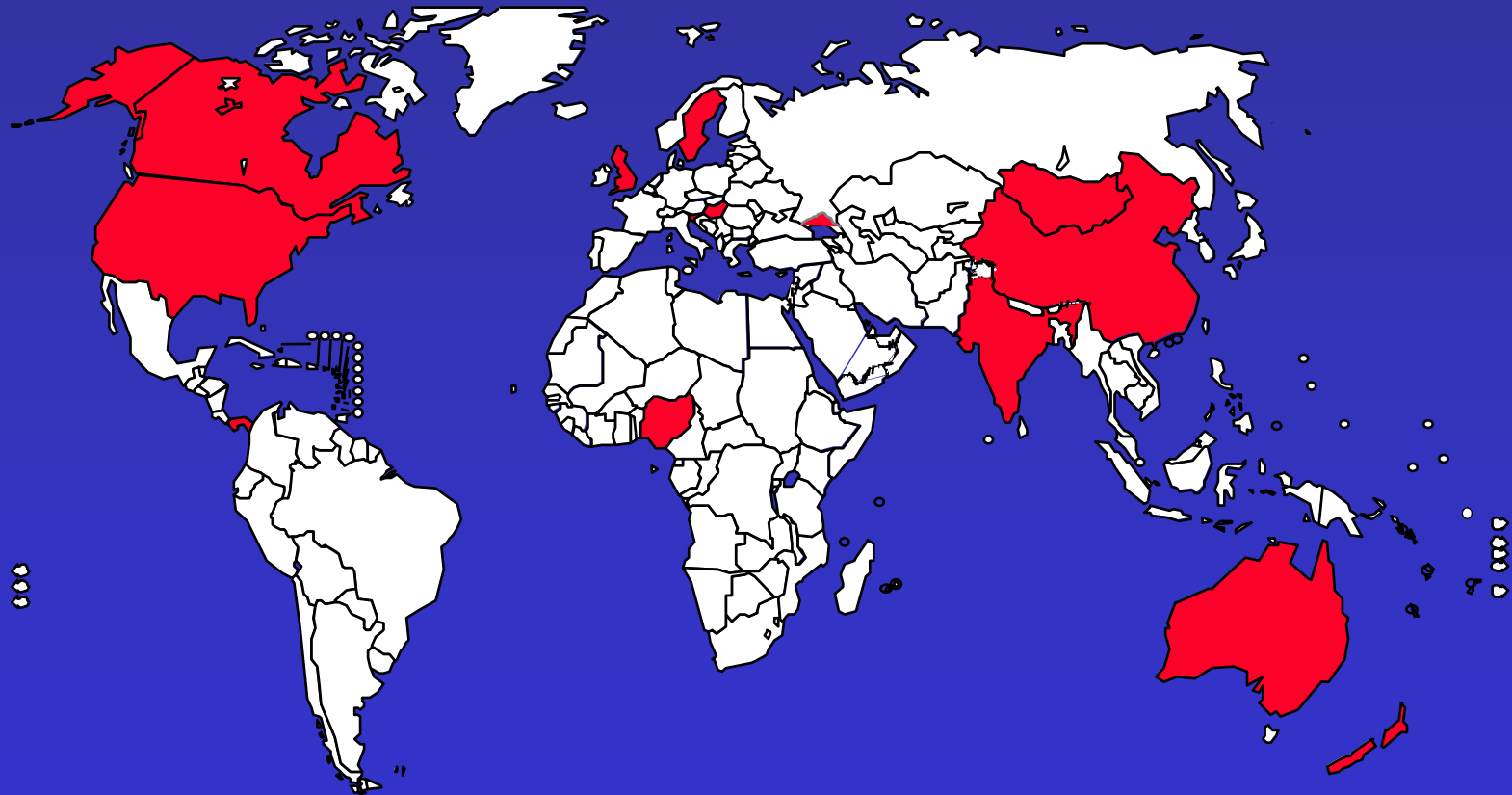
Nausea	66 (16.1%)*	197 (46.5%)*
Vomiting	11 (2.7%)*	95 (22.4%)*
Fatigue	98 (23.9%)*	156 (36.8%)*
Breast tenderness	65 (15.9%)	88 (20.8%)

\* = significant ( $p < 0.001$ ) between-group differences

(Ho and Kwan, 1993)



## Yuzpe vs LNG: participating countries



(WHO 1998)





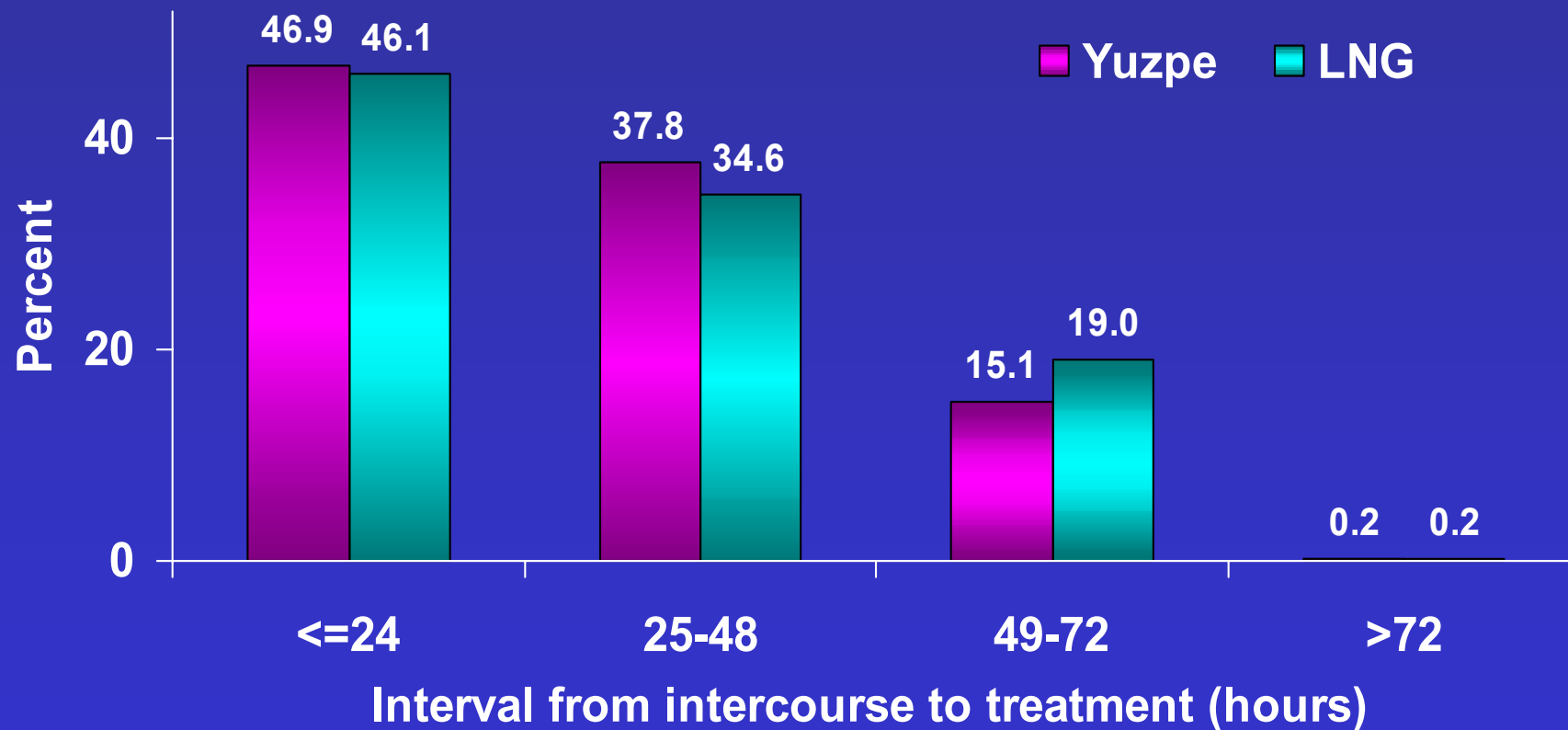
# Characteristics of women

Variable	Yuzpe (n=979)		LNG (n=976)	
	Mean	SD	Mean	SD
Age (years)	27.2	6.8	27.3	7.0
Weight (kg)	58.6	9.6	58.4	10.4
Height (cm)	162.8	6.5	162.9	6.4
BMI (kg/m <sup>2</sup> )	22.1	3.3	22.0	3.6
Cycle length (days)	28.8	2.5	28.9	2.4
Interval from estimated ovulation to intercourse (days)	-1.0	5.2	-0.9	5.0

(Lancet 1998; 352:428-433)



# Delay in taking emergency contraceptive





# Pregnancy rates

Group	Number of women	Observed pregnancies	Pregnancy rate (%)	95% CI
Yuzpe	979	31	3.2	(2.2, 4.5)
LNG	976	11	1.1	(0.6, 2.0)

Relative risk (RR) of pregnancy for LNG compared with Yuzpe:

RR	95% CI
0.36	(0.18, 0.70)

\*



# Efficacy: prevented fraction

Group Efficacy**	No. of women	No. of pregnancies			
		Observed	Expected*	(%)	95% CI
Yuzpe	979	31	72.0	57	(39, 71)
LNG	976	11	75.3	85	(74, 93)

\* Using modified Wilcox estimates of conception probabilities

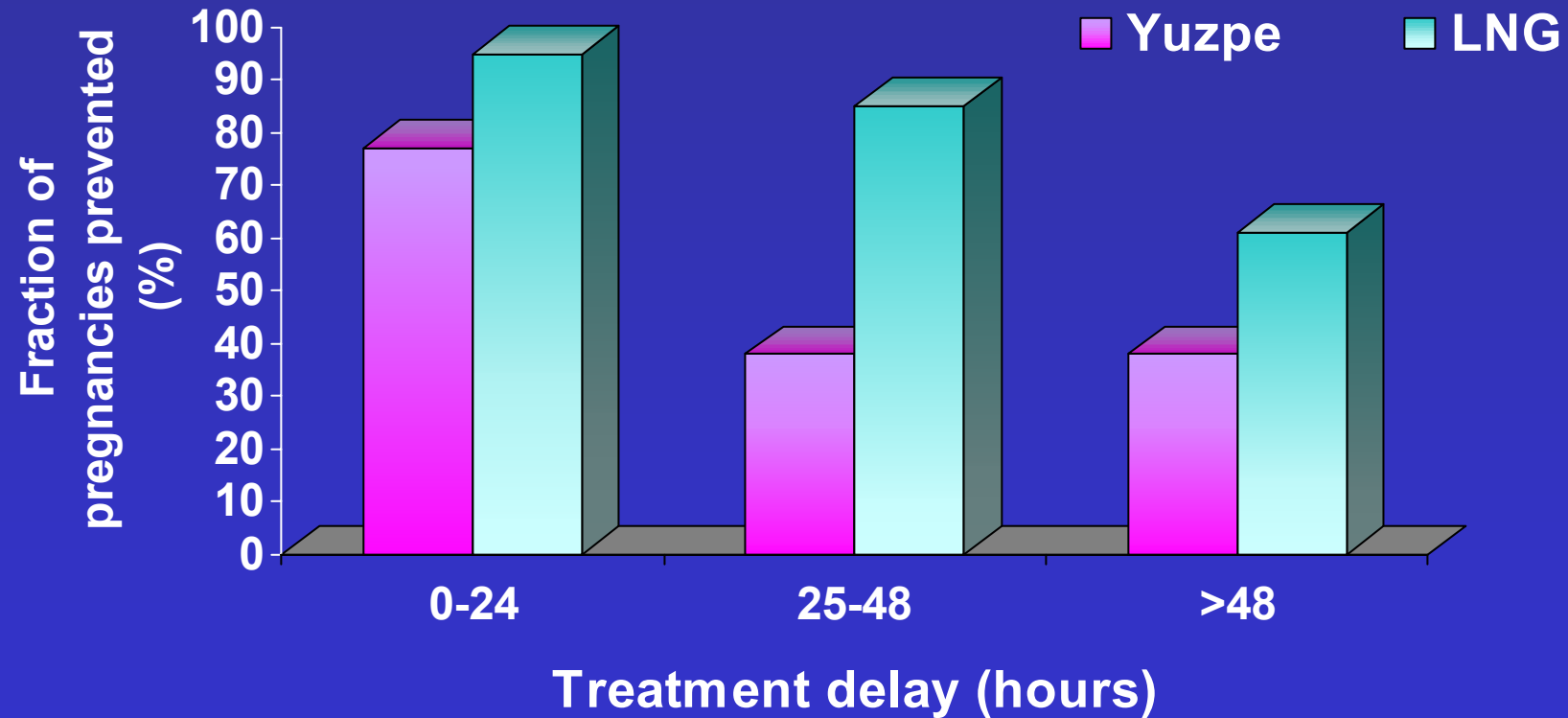
\*\* Prevented fraction

Ratio of standardized pregnancy rates of LNG with respect to Yuzpe:

Ratio	95% CI
0.34	(0.5, 0.69)

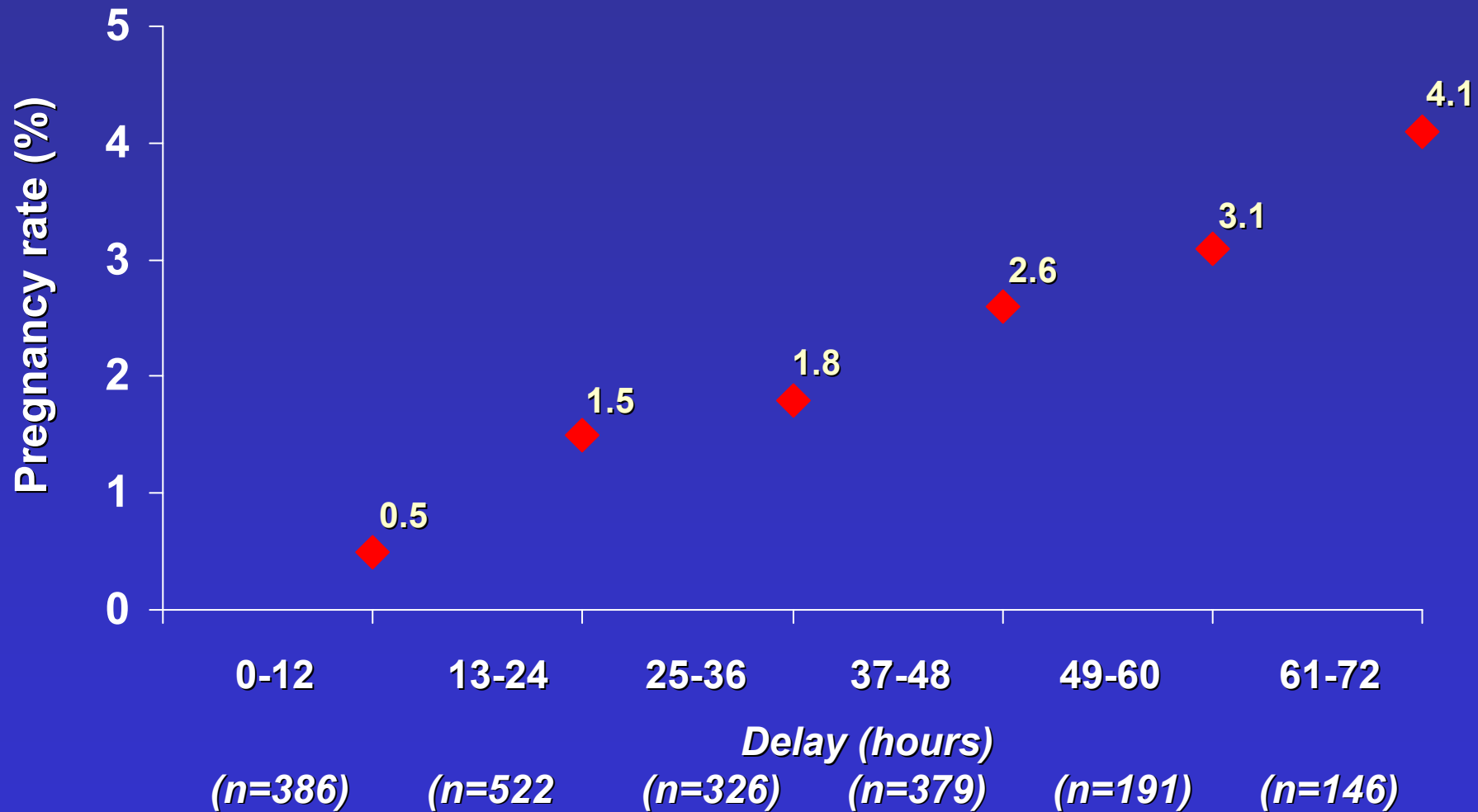


# Efficacy of emergency contraceptives





# Effect of delay on pregnancy rates







# Incidence of side-effects

Side effect	Yuzpe	LNG	p-value
	No. (%) of cases	No. (%) of cases	
Nausea	494 (50.5)	226 (23.1)	<0.01
Vomiting	184 (18.8)	55 (5.6)	<0.01
Headache	198 (20.2)	164 (16.8)	0.06
Dizziness	163 (16.7)	109 (11.2)	<0.01
Fatigue	279 (28.5)	165 (16.9)	<0.01

(WHO, 1998)



# Mechanism of Action

## (Yuzpe regimen; levonorgestrel)

- Do not cause abortion
- Precise mechanism in a particular case cannot be known and may depend on time in menstrual cycle when intercourse occurred and pills are taken
  - ovulation inhibition or delay
  - prevention of implantation
  - trapping of sperm in cervical mucus (?)
  - alteration in transport of sperm, egg or embryo (?)
  - inhibition of fertilization (?)

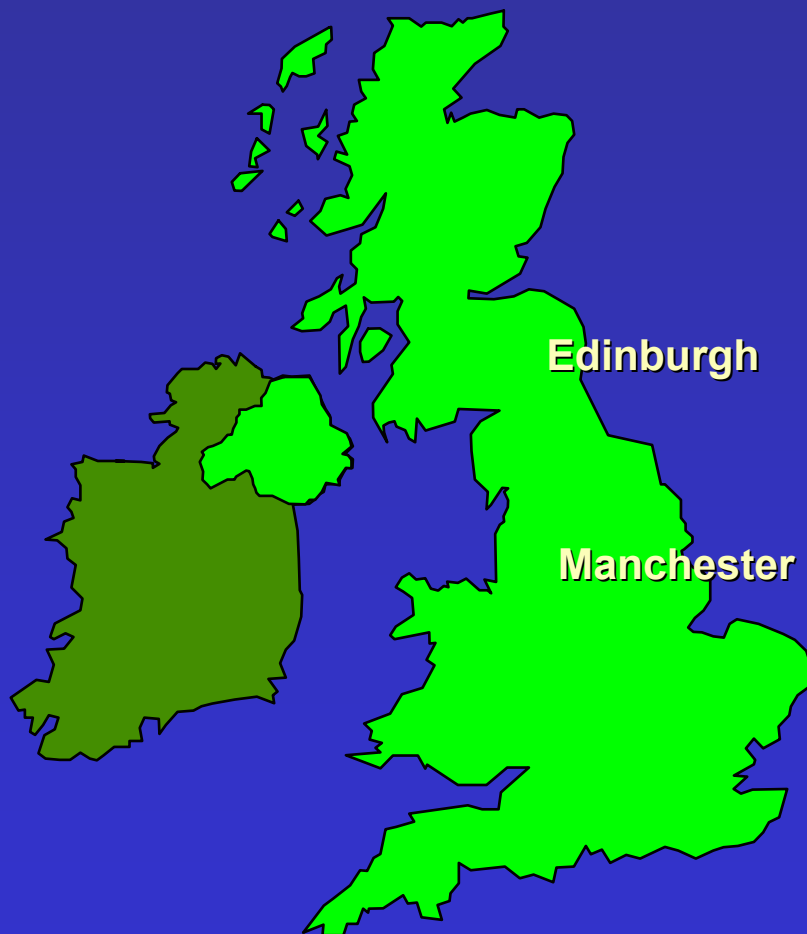


# Recent Developments in Emergency Contraception

1. New treatment modalities
  - levonorgestrel
  - mifepristone
2. Increasing international awareness



# MIFEPRISTONE IN EMERGENCY CONTRACEPTION (600 mg - 72 hours)





# Efficacy of Emergency Contraception

## Mifepristone Yuzpe Regimen

<i><b>Number of women treated</b></i>	<b>597</b>	<b>589</b>
<i><b>Expected number of pregnancies</b></i>		<b>35</b>
<i><b>Observed number of pregnancies</b></i>	<b>0 (3)</b>	<b>9</b>

(after Glasier et al., 1992 and Webb et al., 1992)



# EFFICACY OF THREE DOSES OF MIFEPRISTONE IN EMERGENCY CONTRACEPTION

Dose	Number of women	Number of observed pregnancies	Pregnancy rate	Number of expected pregnancies*	Efficacy (%)
10 mg	565	7	1.2	48	85
50 mg	560	6	1.1	43	86
600 mg	559	7	1.3	45	84
ALL	1684	20	1.2	136	85%

\* according to Trussell et al., Contraception 1998; 57:363-69



## SIDE-EFFECTS\* OF THREE DOSES OF MIFEPRISTONE IN EMERGENCY CONTRACEPTION

Side effect	10 mg (n=562)	50 mg (n=557)	600 mg (n=558)	p value **
Nausea	17%	15%	20%	NS
Vomiting	2%	1%	2%	NS
Headache	13%	14%	11%	NS
Dizziness	12%	10%	15%	NS
Fatigue	20%	21%	24%	0.06
Bleeding disturbances	18%	23%	36%	<0.01

\* *percentage rates (recorded for 7 days after treatment)*

\*\* *non-zero correlation between mifepristone dose and occurrence of side-effects*



## EFFICACY OF EMERGENCY CONTRACEPTION

Method	No. of women	No. of pregnancies	Pregnancy rate	Prevented pregnancies
Yuzpe	3834	77	2.0%	74%
IUD	> 8400	8	0.1%	99%
LNG (0.75 x 2)	1307	19	1.5%	84%
Mifepristone (10mg)	2038	24	1.2%	84%





# Ongoing WHO-supported Trials<sup>1</sup>

1. Comparison between 10mg and 25 mg of Chinese-made mifepristone (10-centre study in China; support also from Concept Foundation)
2. Comparison between 10mg of mifepristone 2 x 0.75 mg levonorgestrel and 1.5mg levonorgestrel (15 centres in 9 countries)
3. Effectiveness, side-effects, continuation rate of IUD insertion for emergency contraception (16-centre study in China)

<sup>1</sup> *All three trials include women up to 5 days after unprotected intercourse*



# Recent Developments in Emergency Contraception

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# Member Organisations of the Consortium for Emergency Contraception

- Concept Foundation
- International Planned Parenthood Federation (IPPF)
- Pacific Institute for Women's Health
- Pathfinder International
- Population Council
- Program for Appropriate Technology in Health (PATH)
- UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP)
- *Population Services International (PSI)*



“ The goal of the Consortium for Emergency Contraception is to broaden knowledge and availability of hormonal emergency contraception through model introduction strategies specifically designed to ensure safe, effective and appropriate patterns of emergency contraceptive use.”



# CONCLUSIONS

1. During the last few years important developments have occurred that bode well for a wider acceptance and use of emergency contraception.

Noteworthy in this context are:

- (i) the discovery of new treatments;
- (ii) the increasing international awareness.

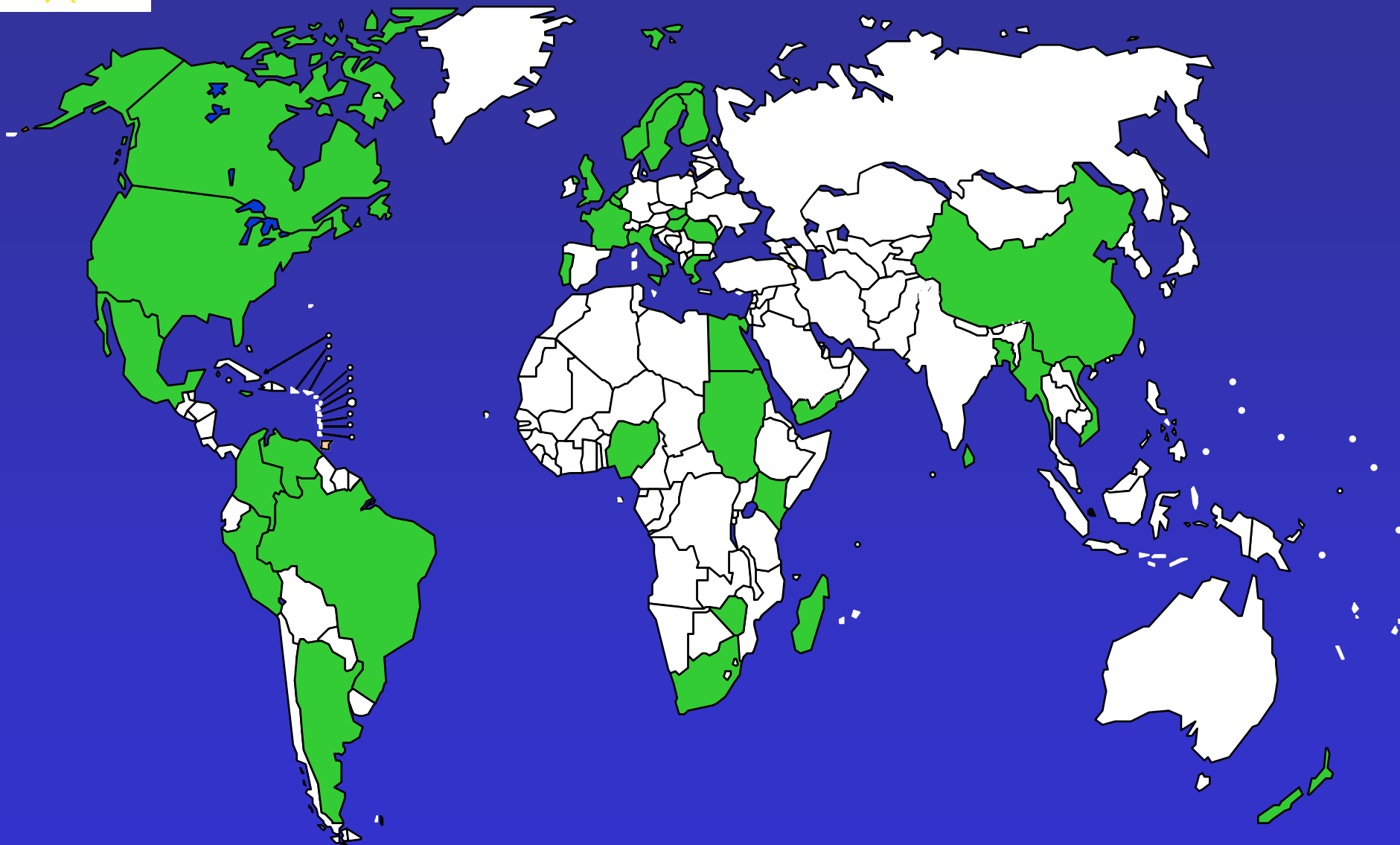


# CONCLUSIONS

2. Given the effectiveness of emergency contraception in preventing unplanned pregnancy, family planning programmes not yet offering this method should seriously consider doing so.



## Availability of levonorgestrel for emergency contraception (as of November 2000)





WHO WEB PAGE:  
[www.who.int](http://www.who.int)

RHR DEPARTMENT WEB PAGE:  
[www.who.int/reproductive-health](http://www.who.int/reproductive-health)

EC CONSORTIUM WEB PAGE:  
[www.path.org/cec](http://www.path.org/cec)

MY E-MAIL ADDRESS: [ezcurrae@who.int](mailto:ezcurrae@who.int)