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CASE SCENARIO OF MATERNAL DEATH

- 29 years old, Para 2 housewife, history of childhood asthma and Patent Ductus Arteriosus (PDA).
- Booked at POA 11 weeks, Weight 43.5kg at booking and BMI 20.1 kg/m². Her pregnancy progressed well and she was classified as NYHA class 1, had f/up in hospital and health clinic.
- She delivered in hospital @ 36 weeks POA, SVD, baby boy, 2.05 kg, at 11.36 am and was discharged on the next day. **Her delivery was not notified** to the health clinic.
- On day 4 postnatal, she presented to A&E district hospital around 12 m.n. C/o **fever, swelling both leg and slight body weakness**. Managed by the healthcare provider as viral fever and discharged after completed IV fluid.

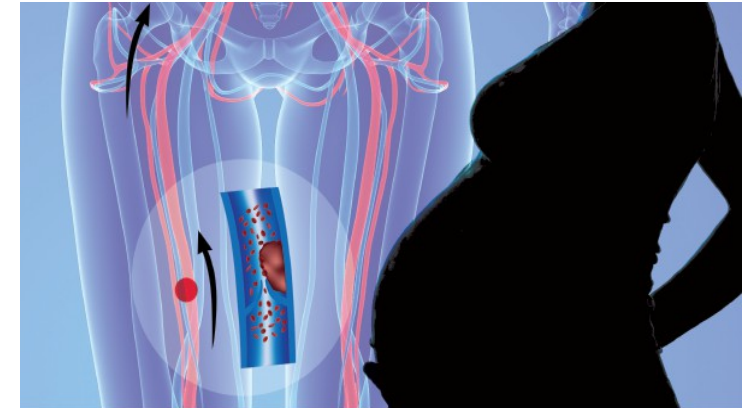
- Next day, midnight, her symptoms worsened; she complained of numbness, painful feet and feverish. She suddenly collapsed at home after came out from the toilet. She was not brought to the hospital since the family member did not see any sign of life. The family members and villagers confirmed death at 1 am. Burial was done on the same day and health clinic was only informed at 3pm.
- Cause of Death : **Massive venous thromboembolism secondary to DVT with underlying heart disease.**



Pregnancy & VTE & PE

***Venous Thromboembolism (VTE)** is a spectrum of disorders characterized by thrombosis in the venous circulation that cumulates often with a fatal sequel Pulmonary Embolism*

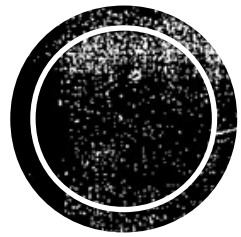
***Pulmonary embolism(PE)** caused by blockage in the pulmonary artery, the blood vessel that carries blood from the heart to the lungs. This blockage is potentially life-threatening because it can prevent blood from reaching the lungs.*



ILLUSTRATION/PAUL JUSTRICH PHOTOS shutterstock.com







- Pregnancy and the postpartum state increase the risk of VTE by 4-6 times (*West et al 2012*)
- Pulmonary embolism is one of the leading causes of **direct** maternal deaths in many developed nations including Malaysia



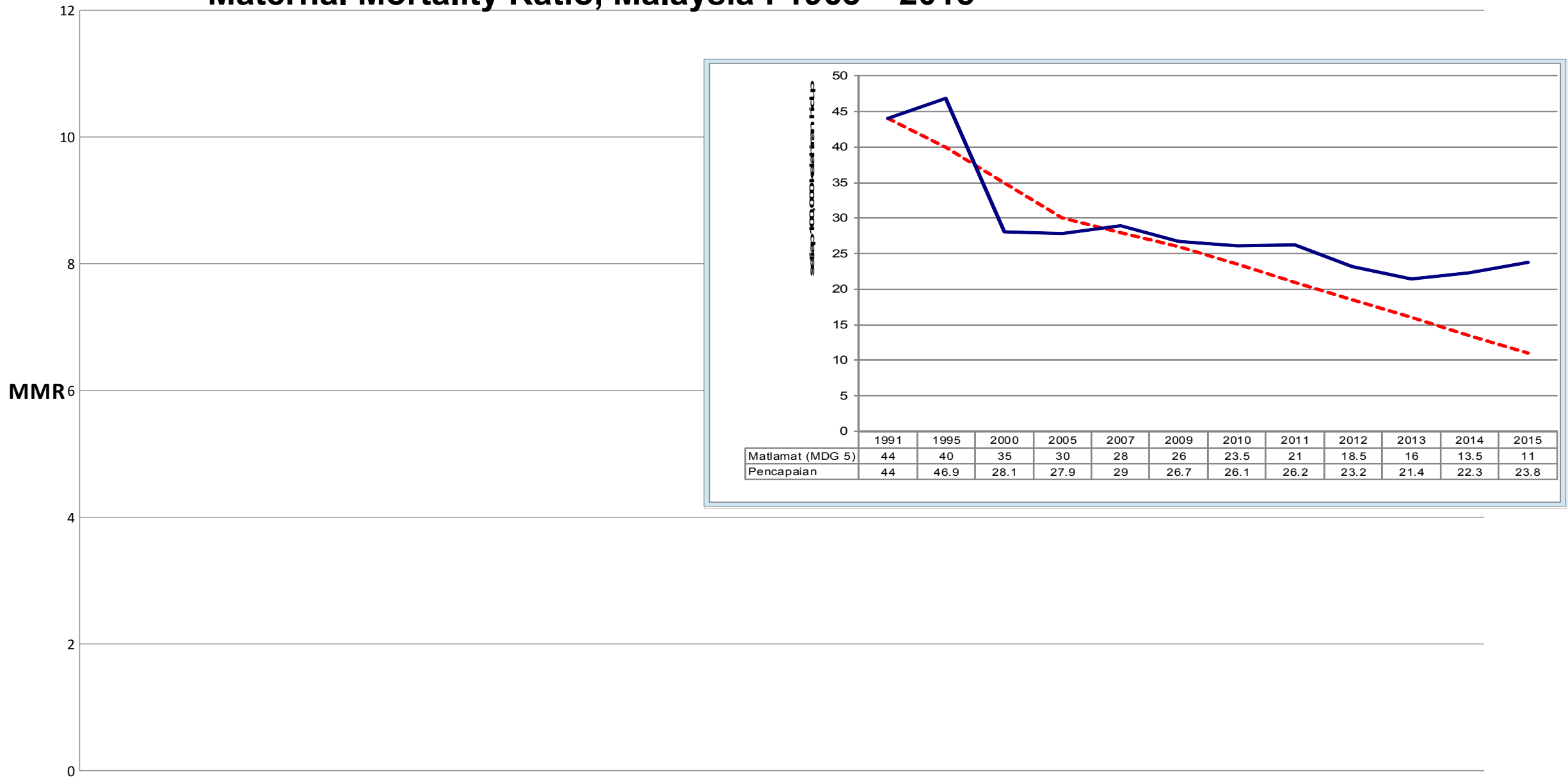


- Mental Death & Political Islamism.
- Malaysia scenario.

MDG 5 : Improve Maternal Health

Targets	MDG Indicators	Baseline	Target (2015)	Latest achievement	Remarks
TARGET 5.A : Reduce by three-quarters between 1990 and 2015, the maternal mortality ratio	5.1 Maternal Mortality ratio	44 per 100,000 LB (1991)	11 per 100,000 LB	23.8 per 100,000 LB (2015) 1	
	5.2 Proportion of birth attended by skilled health	74.2% (1990)	95%	99% (2016p)2	
TARGET 5.B : Achieve, by 2015, universal access to reproductive health	5.3 Contraceptive prevalence rate	54.6% (1994)	Increasing trend	52.2% (2014) 3	
	5.4 Adolescent birth rate	28 births per 1000 adols	Decreasing trend	12 births per 1000 adolescent (2015) 1	
	5.5 Antenatal care coverage (1st visit)	78% (1990)	90%	95%(2016p)2	
	5.6 Unmet need for family planning	24.5 % (2004) (baseline)	Decreasing trend	13.4% (2014) 3	

Maternal Mortality Ratio, Malaysia : 1963 – 2015



CLASSIFICATION PREGNANCY RELATED DEATH (DIRECT, INDIRECT AND FORTUITOUS) MALAYSIA : 2001 – 2015



number of cases	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Direct	172	120	123	120	142	121	135	137	138	124	120	108	117	120	118
Indirect	32	25	23	27	18	32	22	23	55	46	33	37	24	31	38
Fortuitous	112	106	90	111	95	94	101	107	101	103	113	97	97	126	118
Total	316	251	236	258	255	247	258	267	294	273	266	242	238	277	274

Source of data : 2001 – 2011 : Reports on the Confidential Enquiries into Maternal Deaths in Malaysia

2012 – 2015 : Family Health Development Division, MOH



6 common CAUSES OF MATERNAL DEATH IN MALAYSIA : 1997 – 2015

P.Sepsis

Med.Condition

Pul.Embolism

Amniotic FE

HDP

PPH

Causes	1997 to 1999	2000 to 2002	2003 to 2005	2006 to 2008	2009 to 2011	2012 to 2014	2015
PPH	125	124	87	90	76	60	16
HDP	80	49	50	61	68	41	11
Amn Fluid Embolism	50	43	40	43	32	28	11
Pul. Embolism	18	37	39	39	37	41	24
Med. Cond	113	75	63	68	137	90	31
Puerp. Sepsis	14	18	9	9	15	8	0

Source of data : 1997- 2011 : Reports on the Confidential Enquiries into Maternal Deaths in Malaysia
2012– 2015: Family Health Development Division, MOH



Maternal Deaths due to Obstetric Embolism : Malaysia 2006 – 2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Pulmonary Embolism	9	7	23	12	15	10	13	12	15	24
Amniotic Fluid Embolism	9	17	17	11	15	6	9	10	9	11
Total	18	24	40	23	30	16	22	22	24	35

Source:
 Report On Confidential Inquiries Into Maternal Deaths In Malaysia: 2006-2011
 Family Health Development Division: 2012 – 2015

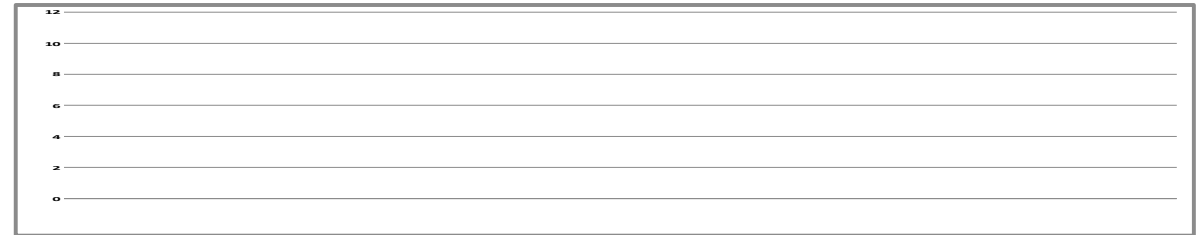


Top 5 Causes of Maternal Deaths , Malaysia ; 2008 – 2015(citizens and non-citizens legal)

CAUSES	2008		2009		2010		2011		2012		2013		2014		2015	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Associated Medical Conditions	24	18	51	33.1	46	31.5	37	28.5	40	32.8	30	27.8	27	22.9	31	25.0
Obstetric Embolism	40	30	23	14.9	30	20.5	16	12.3	22	18.0	22	20.4	24	20.3	35	28.2
Postpartum Hemorrhage	26	19.5	20	13	11	7.5	19	14.6	15	12.3	11	10.2	13	11.0	16	12.9
Hypertensive Disorders in Pregnancy	14	10.5	18	11.7	25	17.1	25	19.2	18	14.8	11	10.2	12	10.2	11	8.9
Obstetric Trauma	5	3.8	4	2.6	10	6.8	12	9.2	4	3.3	7	6.5	8	6.8	2	1.6
<i>Denominator – total maternal deaths of all causes</i>																



Maternal Death Cause-Specific MMR : Malaysia 2001 – 2015



Maternal death due to pulmonary embolism : global perspectives

Country		Trend	Year
Australia	9.5% of all maternal death	<ul style="list-style-type: none"> • 2nd leading cause of direct maternal death • 6th leading cause of death 	2008-2012
New Zealand	3.4% of all maternal death	<ul style="list-style-type: none"> • 4th leading cause of direct maternal death • 7th leading cause of maternal death 	2006-2013
United Kingdom	8.3% of all maternal death	<ul style="list-style-type: none"> • 1st leading cause of direct maternal death 	2012-2014
Ireland	10.6% of all maternal death	<ul style="list-style-type: none"> • 1st leading cause of direct maternal death 	2009-2014
United States of America	9.2% of pregnancy-related death	<ul style="list-style-type: none"> • 2nd leading cause of direct maternal death • 6th leading cause of all pregnancy-related death 	2011 - 2013
Japan	7% of all maternal death	<ul style="list-style-type: none"> • 3rd leading cause of direct maternal death • 5th leading cause of maternal death 	2010 - 2013




... and
Clinical Outcome
Programme

MBRRA
Mothers and Babies
Health and Confidentiality

**Confidential Maternal
Death Enquiry in Ireland**

Report for the Triennium 2009 - 2011

... and
Clinical Outcome
Programme

Saving Lives, Improving Mothers' Care

Surveillance of maternal deaths in the UK 2001-13 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiry into Maternal Deaths and Morbidity 2009-13

December 2015

August 2012



Limitation:

- Lack of data on VTE morbidity – detection, diagnosis, reporting
- VTE deteriorates rapidly & associated with high mortality
- The importance of post mortem must be strengthened to ascertain diagnosis of VTE/PE for suspected deaths / unknown

VTE &
Mortality
death
Malaysia
data



Cause-Specific MMR for Pulmonary Embolism : Malaysia 2001 – 2015



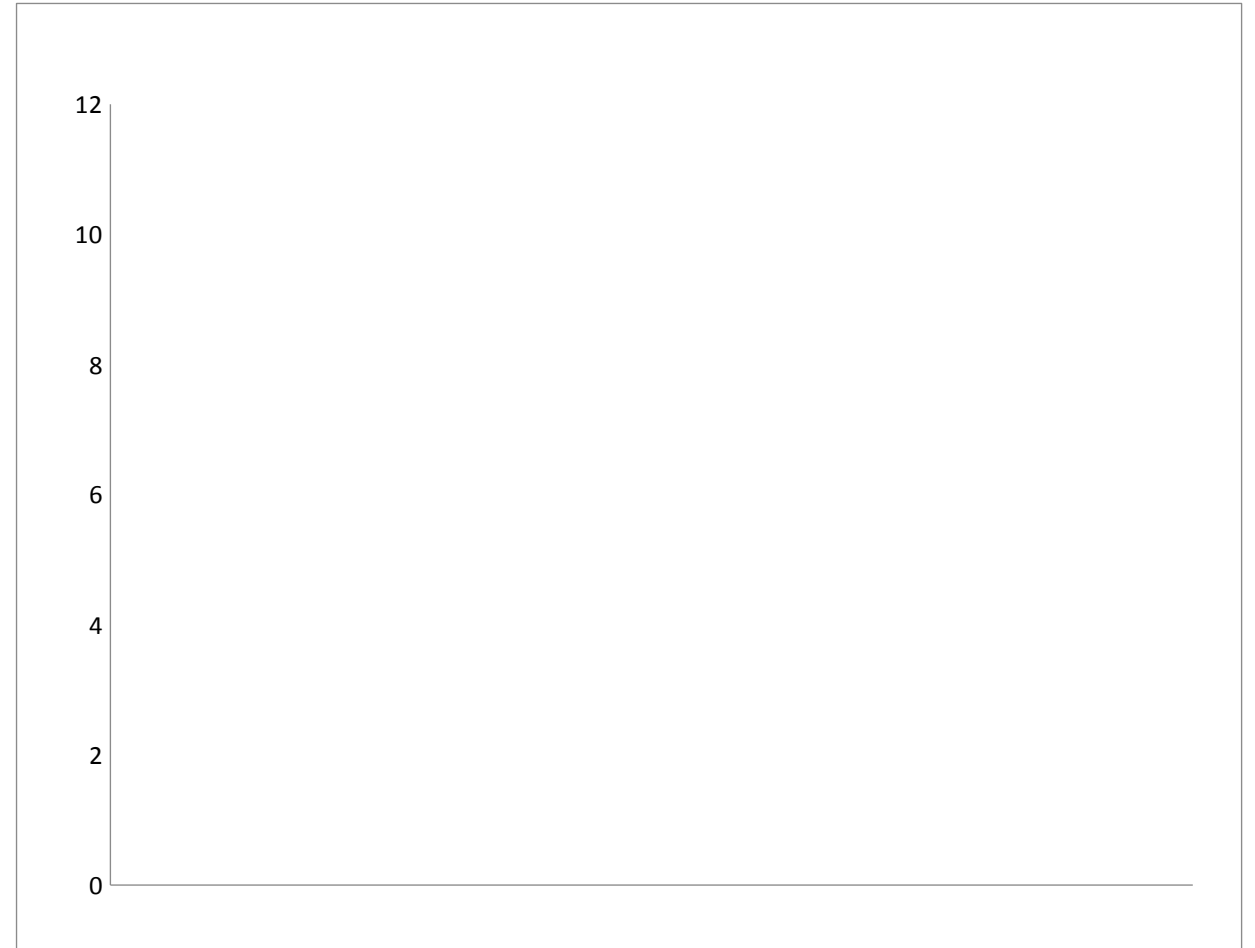
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Pulmonary Embolism (no. of deaths)	11	13	16	9	14	9	7	23	12	15	10	13	12	15	24

Source:

Report On Confidential Inquiries Into Maternal Deaths In Malaysia: 2006-2011
Family Health Development Division: 2012 – 2015



Maternal Deaths due to PULMONARY Embolism BY STATE; 2010 – 2015 (total, n= 89)



Pulmonary Embolism Deaths : Malaysia 2010-2015

(N=89 cases)

Age group

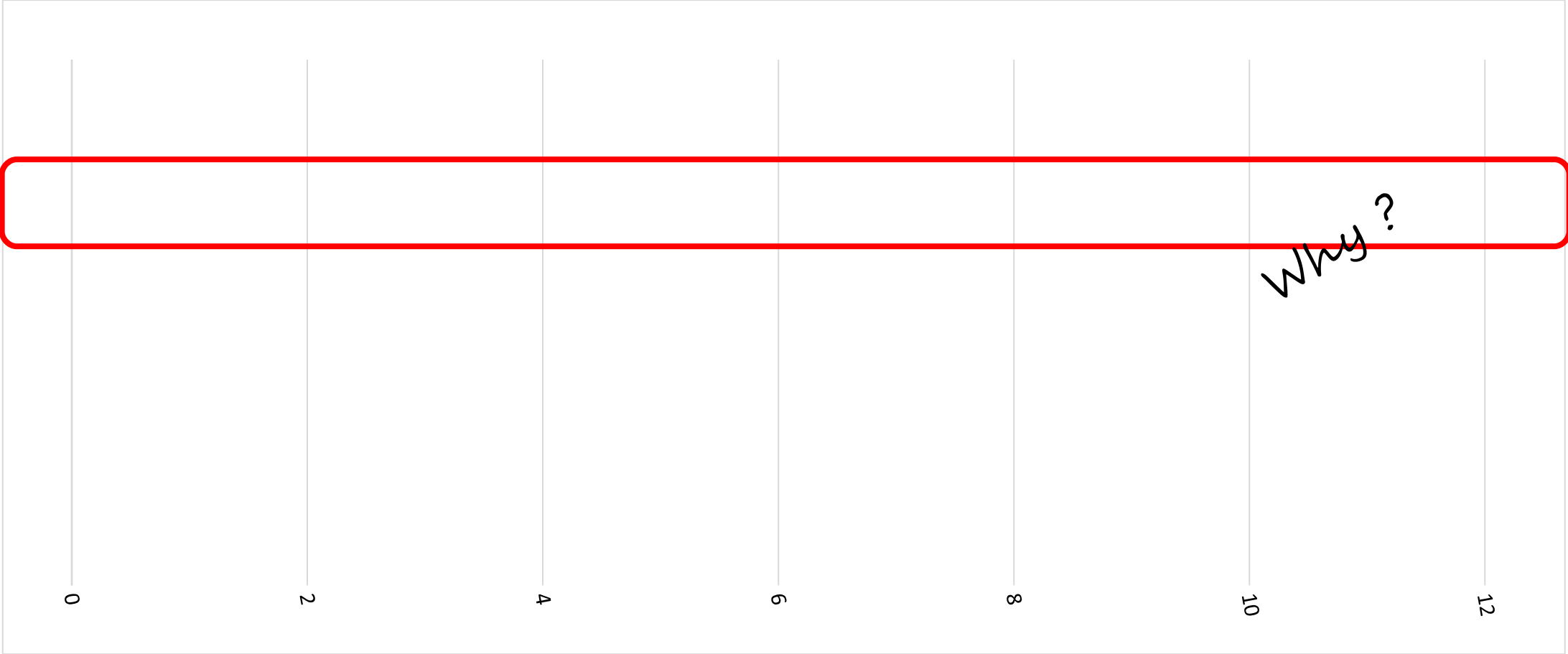
	n	Ratio per 100,000 LB according age group
19 yrs and below	2	1.79
20-29 yrs	31	2.05
30-39 yrs	46	2.27
40-49 yrs	10	8.06

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	n	Ratio per 100,000 LB by ethnic grps
Malay	69	3.64
Chinese	3	0.67
Indian	4	2.63
Bumiputra Sabah	4	1.79
Bumiputra Sarawak	3	2.21
Orang Asli	1	2.36
Others	5	2.71



Pulmonary Embolism by Place of Death : Malaysia , 2010-2015 (N = 89)



Pulmonary Embolism
Death by Phase of
Pregnancy : Malaysia
2010-2015 (n= 89
cases)

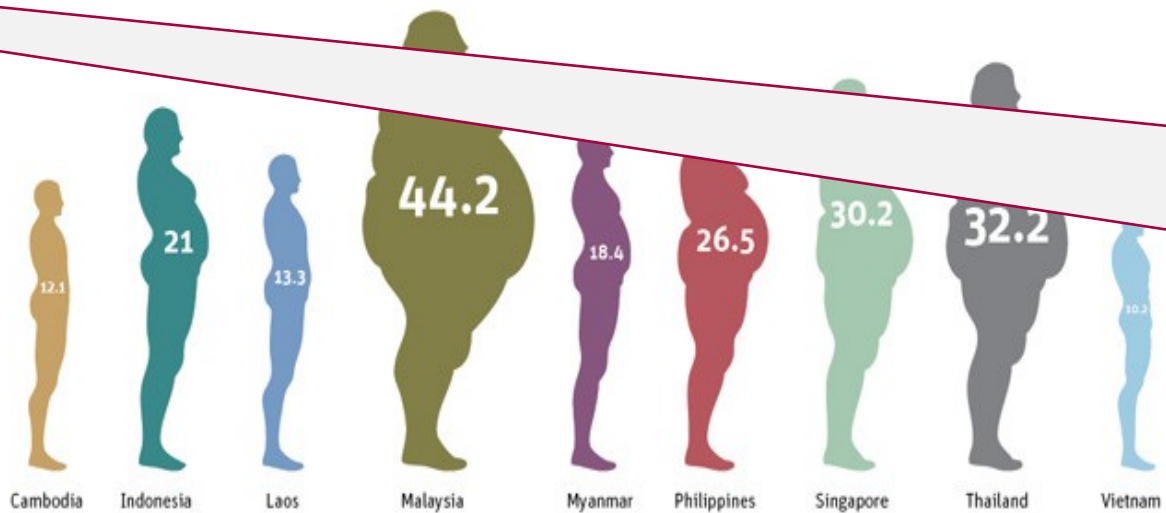


Risk Factors Identified among maternal deaths due to Pulmonary Embolism : Malaysia 2010-2015 (n=89)



OVERWEIGHT POPULATIONS IN SOUTHEAST ASIA

Overweight prevalence (%) for adults of both sexes (BMI of > 25 kg/m²)



Source: WHO Non-Communicable Diseases Country Profiles, 2011

The prevalence of obesity in Malaysia has increased from 4.4% in 1996 to 14% in 2006, 15.1% in 2011 and 17.7 in 2015 - NHMS

49% of Malaysian women are obese" - The Lancet

According to a new study published last month by The Lancet, Malaysia was rated heavyweight at 45.3% of its population, followed by South Korea (33.2%), Pakistan (30.7%) and China (28.3%) - reported in the Star, 16th June 2014

Obesity a big problem now in Malaysia

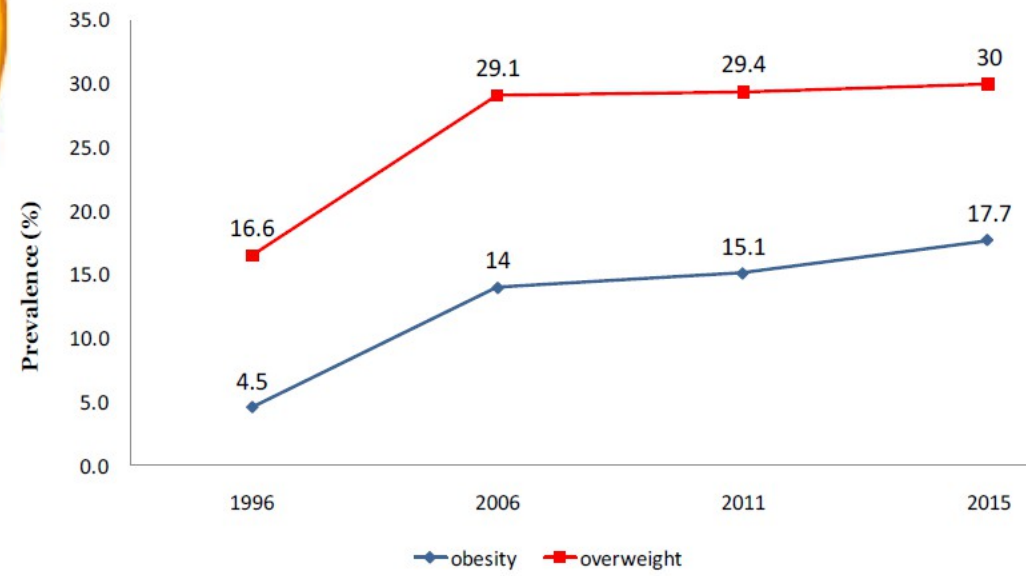
Increasing number of IVF pregnancies

With teen smokers on the rise, Health Ministry seeks to ban cigarette counters

More women are starting their family later...IV drug abuse



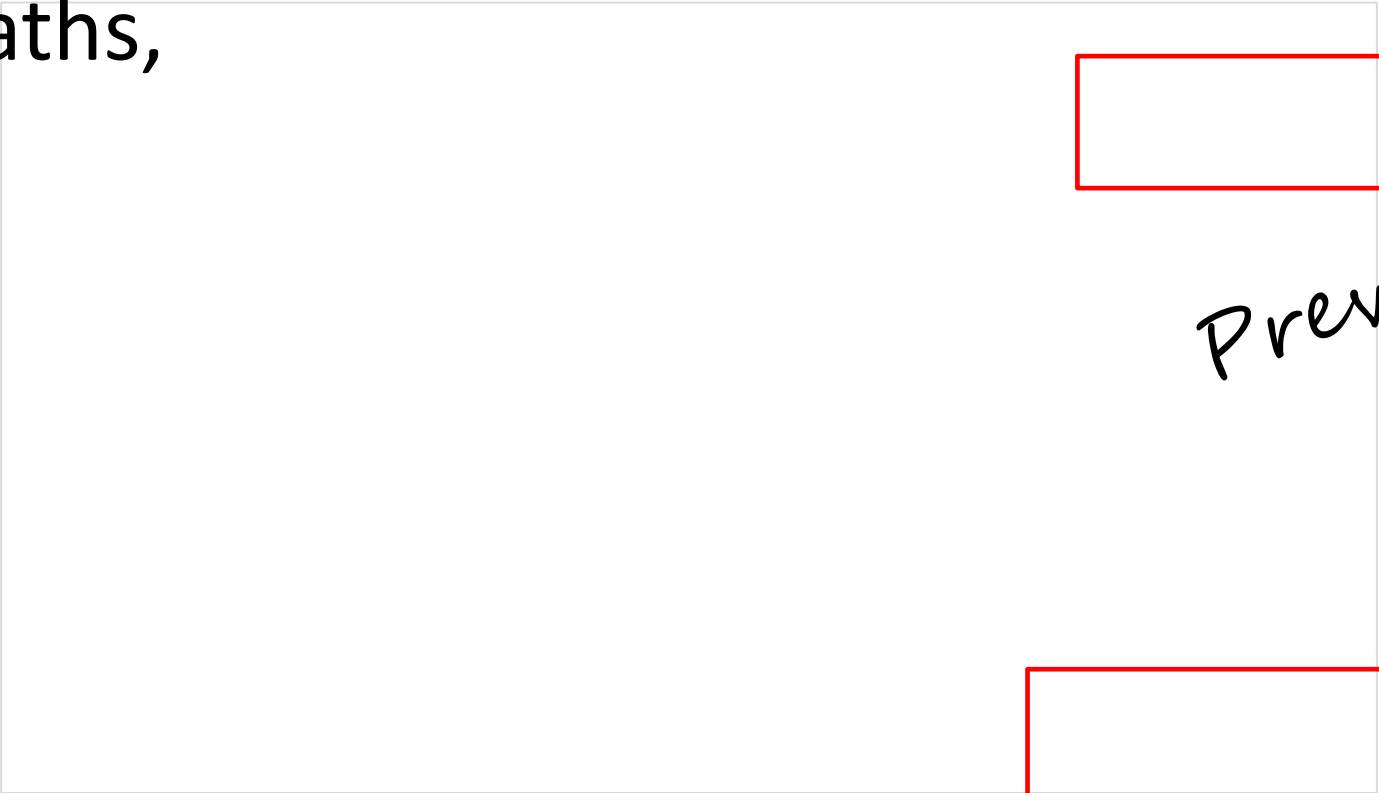
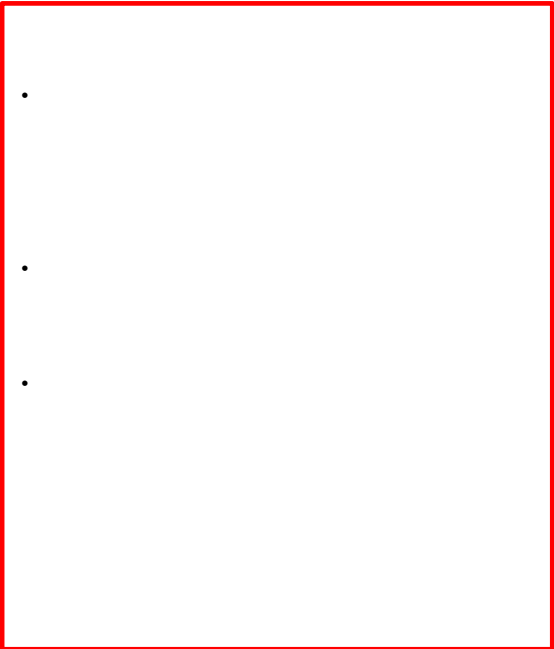
Trend of Overweight and Obesity, ≥18 Years NHMS (1996, 2006, 2011 & 2015)



Percentage of Identifiable Risk/s among Pulm. Embolism Deaths (N=89)



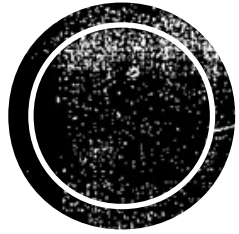
Percentage of cases by duration from delivery till death (postpartum deaths, n= 58)



Preventable!!!



What we have done, so far ?



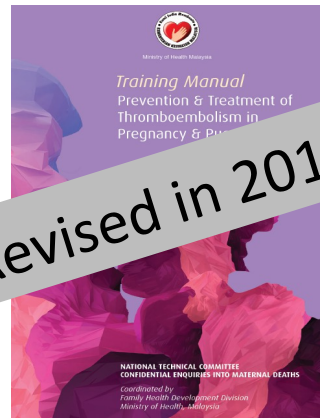
Initiatives to prevent VTE/PE in Pregnancy



CPG and Manuals

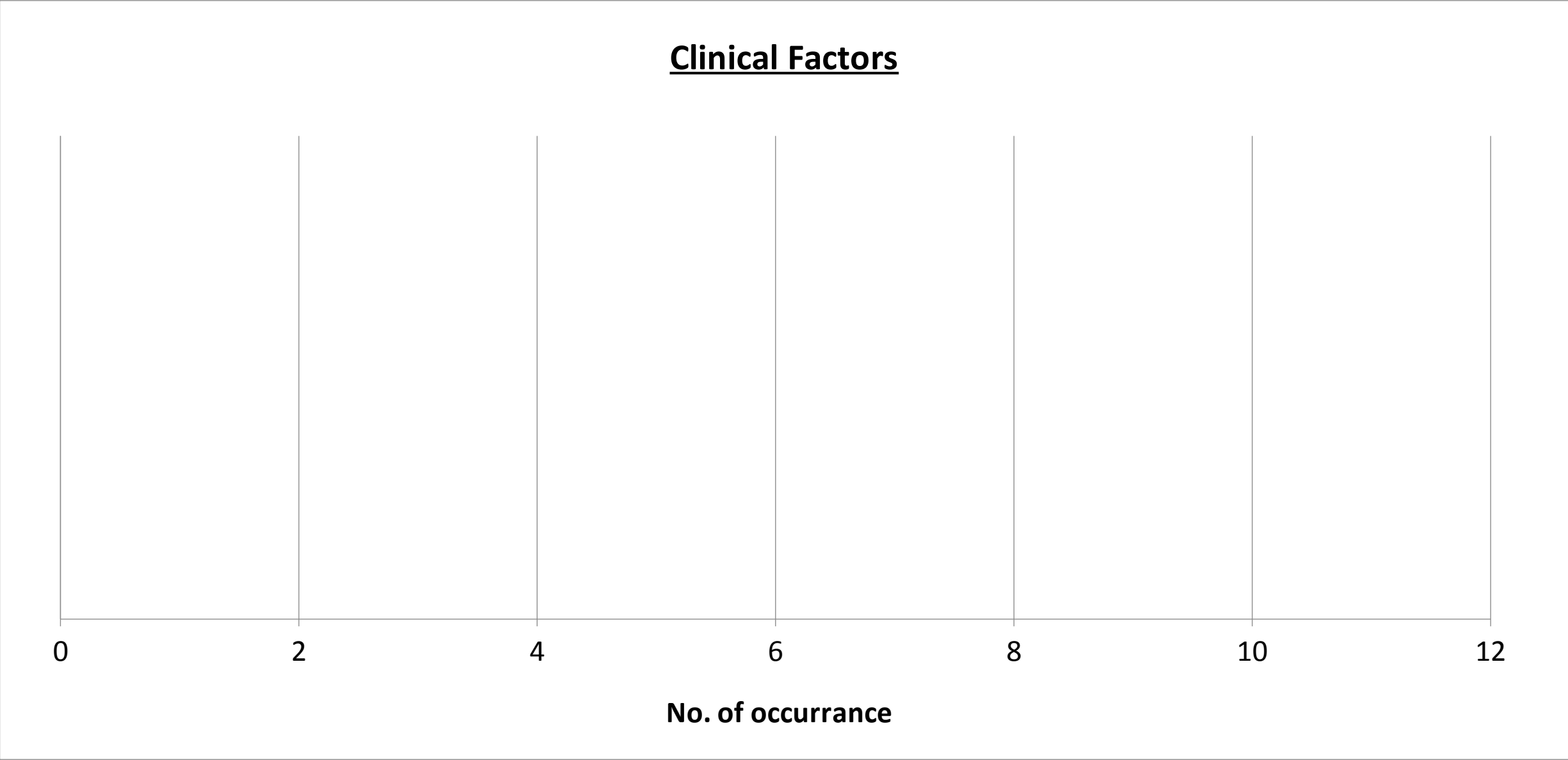
Available at <http://fh.moh.gov.my/>

Revised in 2016-2017



Analysis of Maternal Deaths caused by Pulmonary Embolism : Malaysia, combination of cases in 2013 & 2014

Clinical Factors



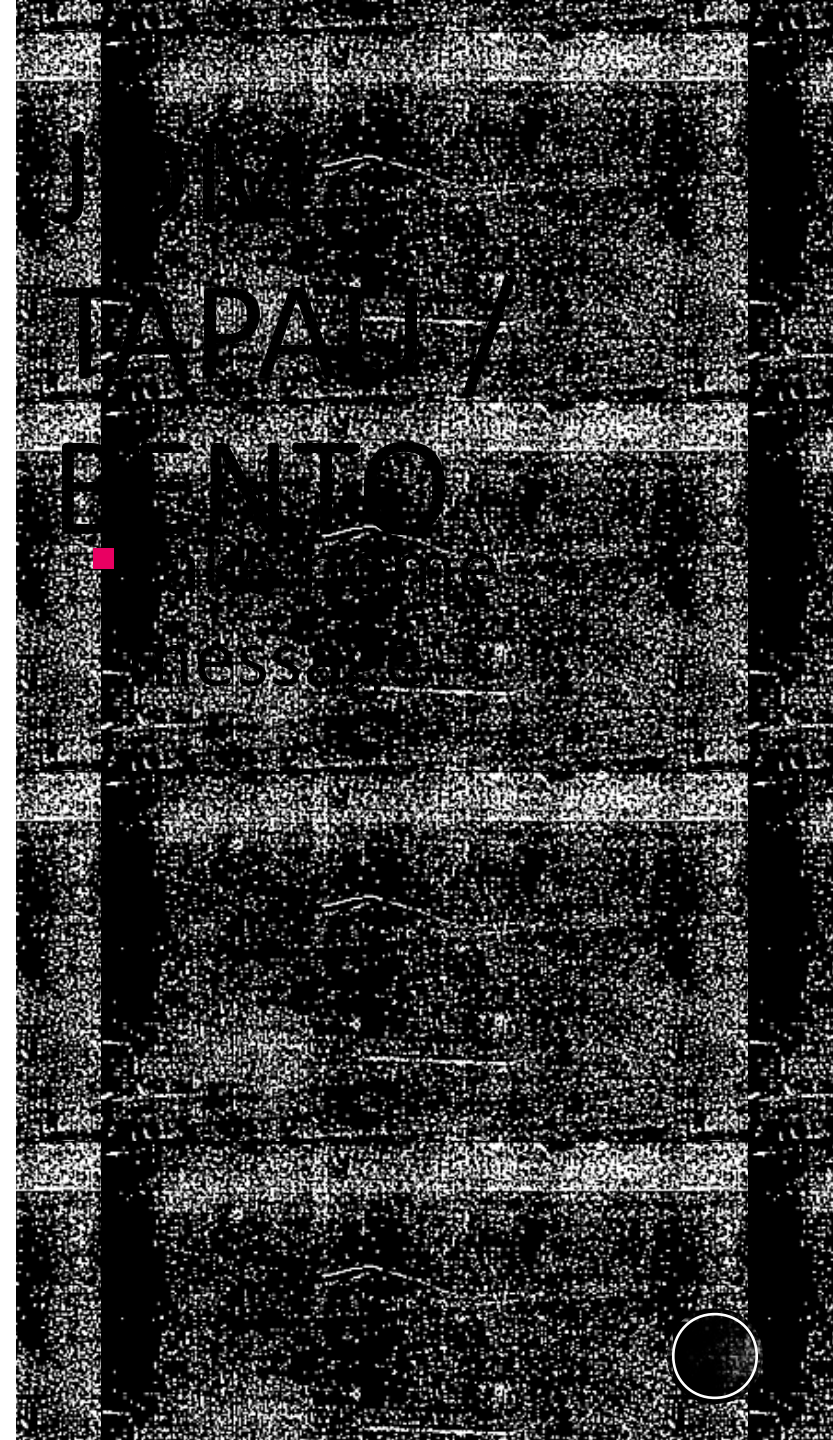
Suboptimal Care & Challenges identified (based on CEMD)



VTE & PE in Pregnancy: what is next?



- VTE in Pregnancy is PREVENTABLE
- Keep updated and adhere to guidelines
- Ensure continuation of care + medications at primary care / home i.e :
thromboprophylaxis – check the compliance
- Non-pharmacological methods – keep mobile, keep hydrated well, mechanical methods
- Always ASK for the symptoms and CHECK the signs of VTE
- Good collaboration public health & hospital & patients/family



THANK YOU

