

Tetanus Port

Tetanus

(บาดทะยัก)



Tetanus & Diphtheria
can prevent by vaccination

Diphtheria

(คอตีบ)



Tetanus

(บาดทะยัก)



Tetanus, also known as lockjaw, is a **serious but preventable** disease that affects the body's muscles and nerves.

It typically arises from a skin wound that becomes contaminated by a bacterium called *Clostridium tetani*, which is often found in soil.

Tetanus

(บาดทะยัก)

Most cases of tetanus follow a contaminated cut or deep puncture injury, such as a wound caused by stepping on a nail.

Another form of tetanus, **neonatal tetanus**, occurs in **newborns** who are delivered in unsanitary conditions, especially if the umbilical cord stump becomes contaminated



Tetanus

(บาดทะยัก)



SIGN AND SYMPTOMS

Tetanus often begins with muscle spasms in the jaw (called **trismus**), and can be accompanied by difficulty swallowing and stiffness or pain in the muscles of the neck, shoulders, or back.

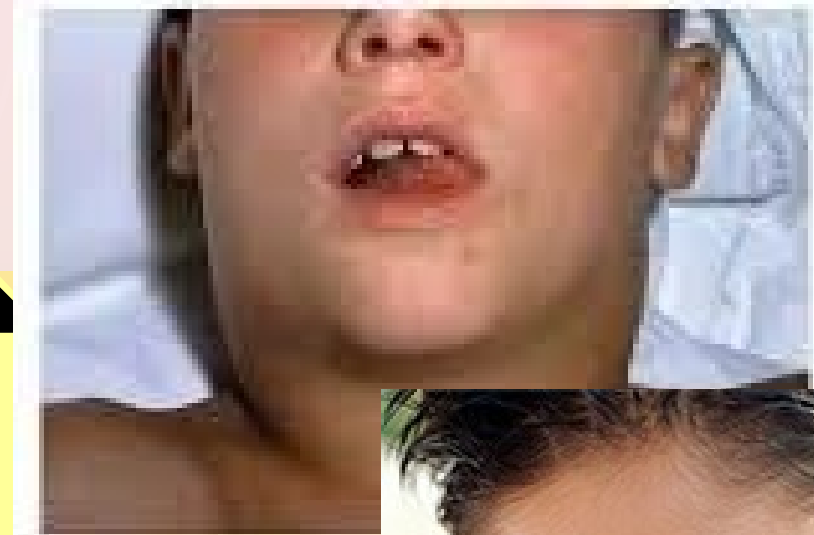
These spasms can spread to the muscles of the abdomen, upper arms, and thighs. The symptoms can occur anywhere from days to months after exposure to the bacteria.

Diphtheria is a serious bacterial infection usually affecting the mucous membranes of your nose and throat.

Diphtheria

(คอตีบ)

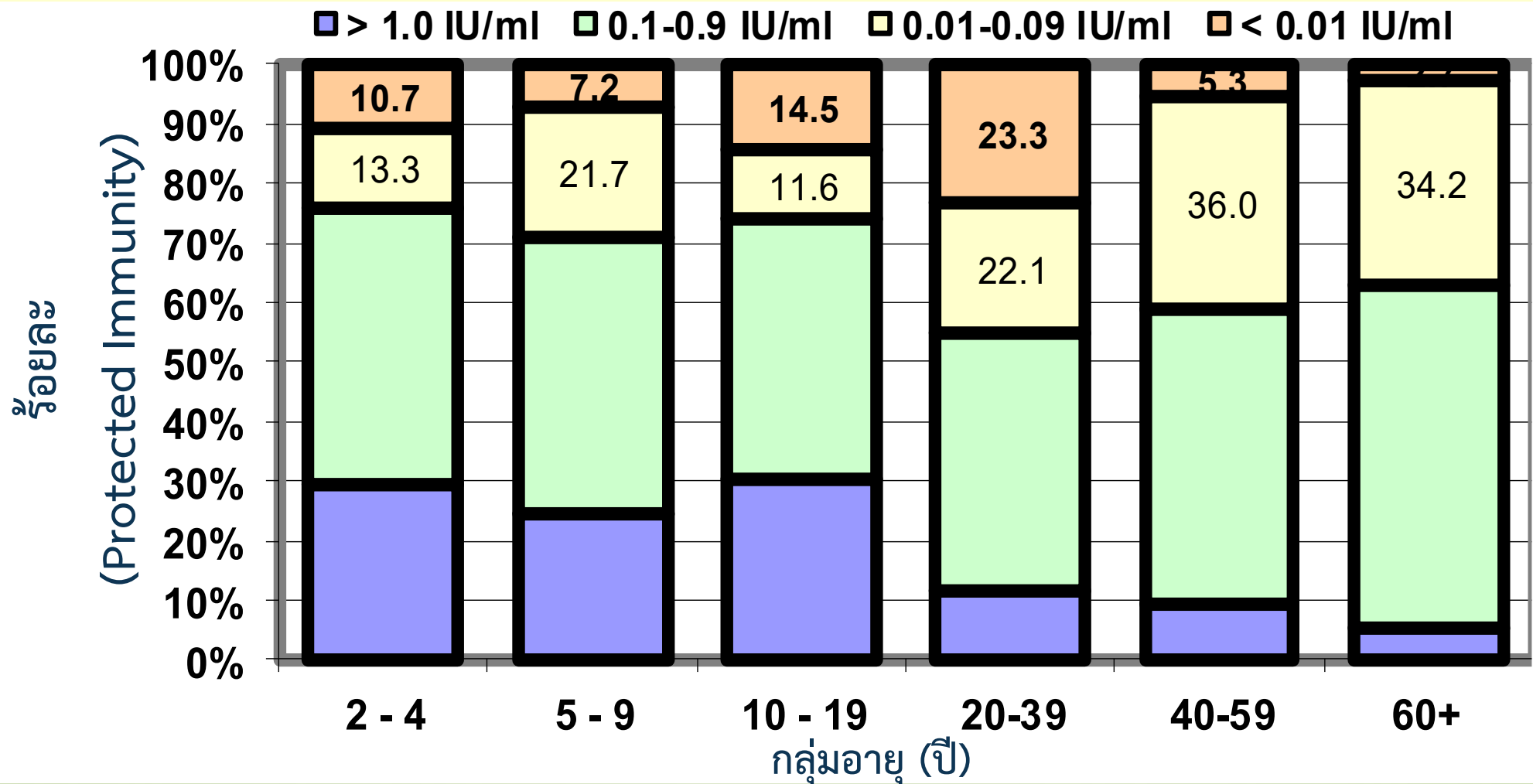
Diphtheria is spread (transmitted) from person to person, usually through respiratory droplets, like from coughing or sneezing. Rarely, people can get sick from touching open sores (skin lesions) or clothes that touched open sores of someone sick with diphtheria.



Diphtheria is an infection caused by the *Corynebacterium diphtheriae* bacterium

การศึกษา “สถานะของระดับภูมิคุ้มกันต่อโรคคอตีบของประชากร

อำเภอห้วยใหญ่ จังหวัดมุกดาหาร 2540” (447 ราย) พรศักดิ์ อยู่เจริญ และคณะ

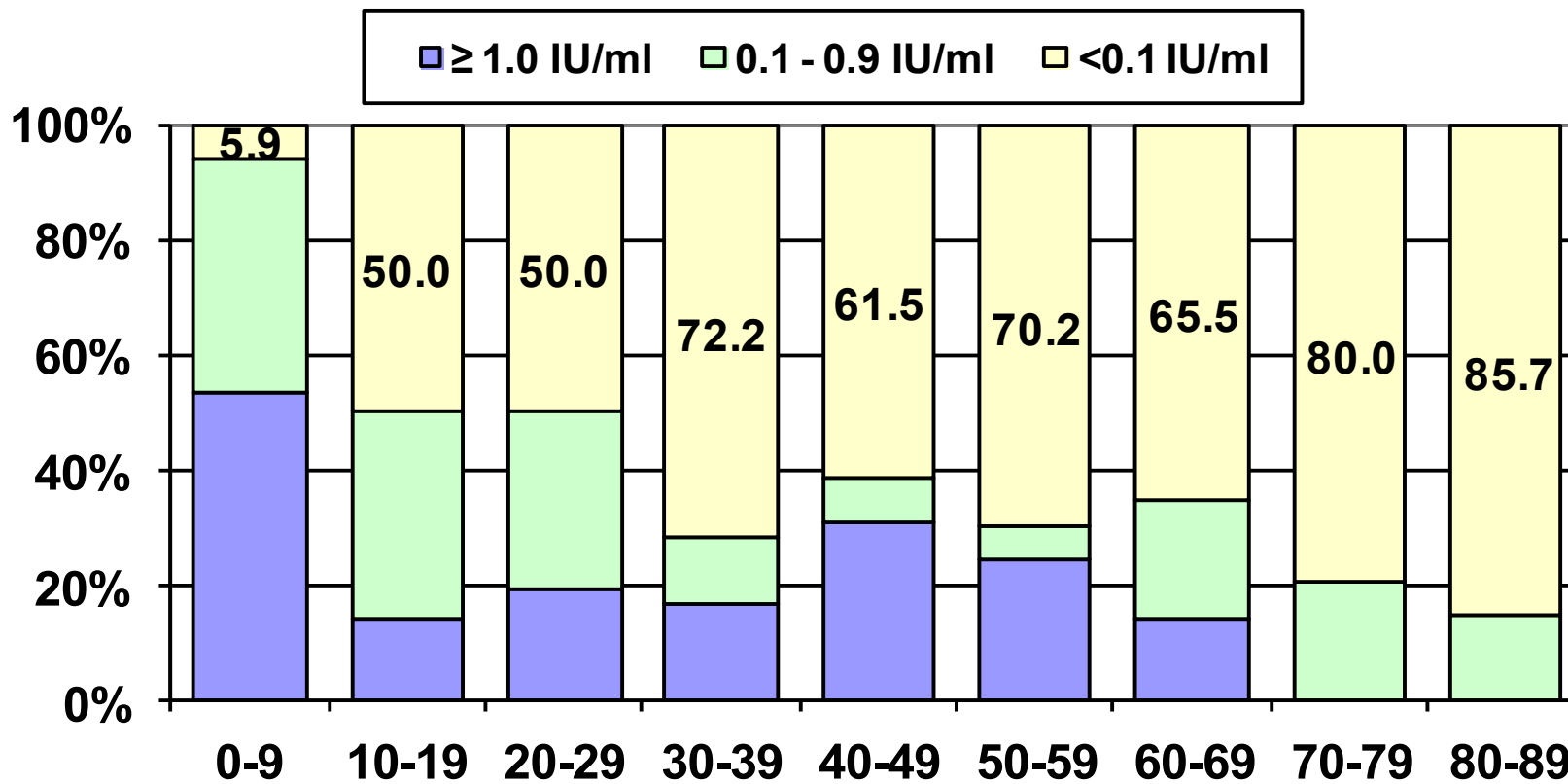


□ Titer < 0.1 IU/ml ระดับภูมิคุ้มกันที่ต่ำไม่สามารถป้องกันโรคคอตีบได้

กราฟแสดงร้อยละของระดับภูมิคุ้มกันต้านทานโรคคอตีบในประชากรจังหวัดเลย, อ.วังสะพุง และ อ.ด่านซ้าย ที่เกิดการระบาดปี 2555 จำนวน 213 ราย

■ Titer < 0.1 IU/ml ระดับภูมิคุ้มกันต้านทานที่ไม่สามารถป้องกันโรคคอตีบได้

ภูมิคุ้มกันต้านทานโรคคอตีบ (ร้อยละ)



กลุ่มอายุ (ปี)

If you have this health condition, talk to your healthcare professional about these vaccines

If you have this health condition,	Flu <i>Influenza</i>	Td/Tdap Tetanus, diphtheria, pertussis	Shingles <i>Zoster</i>	Pneumococcal		Meningococcal		MMR Measles, mumps, rubella	HPV <i>Human papillomavirus</i>		Chickenpox <i>Varicella</i>	Hepatitis A	Hepatitis B	Hib <i>Haemophilus influenzae type b</i>
				PCV13	PPSV23	MenACWY or MPSV4	MenB		for women	for men				
Pregnancy	Green	Green	Light Purple	Green	Blue	Blue	Blue	Light Purple	Green	Green	Light Purple	Blue	Blue	Blue
Weakened Immune System	Green	Green	Light Purple	Green	Blue	Blue	Blue	Light Purple	Green	Green	Light Purple	Blue	Blue	Blue
HIV: CD4 count less than 200	Green	Green	Light Purple	Green	Blue	Blue	Blue	Light Purple	Green	Green	Light Purple	Blue	Blue	Blue
HIV: CD4 count 200 or greater	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
Kidney disease or poor kidney function	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
Asplenia (if you do not have a spleen or if it does not work well)	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
Heart disease Chronic lung disease Chronic alcoholism	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
Diabetes (Type 1 or Type 2)	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
Chronic Liver Disease	Green	Green	Green	Green	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue

More Information: You should get flu vaccine every year.

You should get a Td booster every 10 years. You also need 1 dose of Tdap vaccine. Women should get Tdap vaccine during every pregnancy.

You should get shingles vaccine if you are age 60 years or older, even if you have had shingles before.

You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition.

You should get this vaccine if you did not get it when you were a child.

You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.

You should get Hib vaccine if you do not have a spleen, have sickle cell disease, or received a bone marrow transplant.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines

Recommended For You: This vaccine is recommended for you unless your healthcare professional tells you that you cannot safely receive it or that you do not need it.

May Be Recommended For You: This vaccine is recommended for you if you have certain other risk factors due to your age, health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.

YOU SHOULD NOT GET THIS VACCINE



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

If you are this age,

talk to your healthcare professional about these vaccines

If you are this age,	Flu <i>Influenza</i>	Td/Tdap Tetanus, diphtheria, pertussis	Shingles <i>Zoster</i>	Pneumococcal		Meningococcal		MMR Measles, mumps, rubella	HPV <i>Human papillomavirus</i>		Chickenpox <i>Varicella</i>	Hepatitis A	Hepatitis B	Hib <i>Haemophilus influenzae</i> type b
				PCV13	PPSV23	MenACWY or MPSV4	MenB		for women	for men				
19 - 21 years	Green	Green		Blue	Blue	Blue	Blue	Green	Green	Green	Green	Blue	Blue	Blue
22 - 26 years	Green	Green		Blue	Blue	Blue	Blue	Green	Blue		Green	Blue	Blue	Blue
27 - 49 years	Green	Green		Blue	Blue	Blue	Blue	Green			Green	Blue	Blue	Blue
50 - 59 years	Green	Green		Blue	Blue	Blue	Blue	Green			Green	Blue	Blue	Blue
60 - 64 years	Green	Green	Green	Blue	Blue	Blue	Blue				Green	Blue	Blue	Blue
65+ year	Green	Green	Green	Blue	Blue	Blue	Blue				Green	Blue	Blue	Blue

More Information:

You should get flu vaccine every year.

You should get a Td booster every 10 years. You also need 1 dose of Tdap. Women should get a Tdap vaccine during every pregnancy to protect the baby.

You should get shingles vaccine even if you have had shingles before.

You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition.

You should get this vaccine if you did not get it when you were a child.

You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.



Recommended For You: This vaccine is recommended for you **unless** your healthcare professional tells you that you cannot safely receive it or that you do not need it.



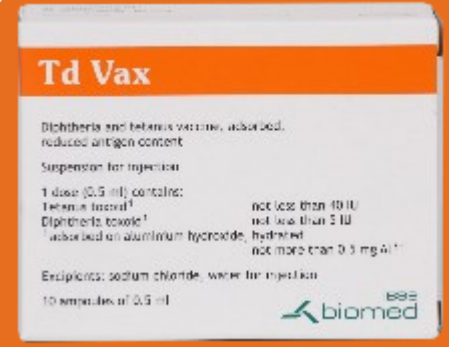
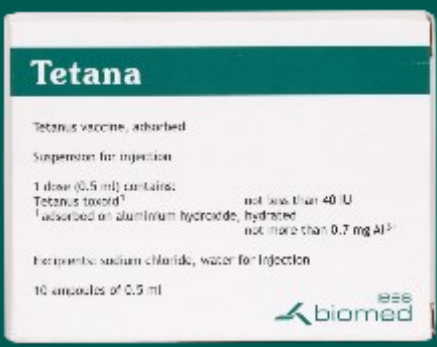
May Be Recommended For You: This vaccine is recommended for you if you have certain risk factors due to your health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.

If you are traveling outside the United States, you may need additional vaccines.
Ask your healthcare professional about which vaccines you may need at least 6 weeks before you travel.

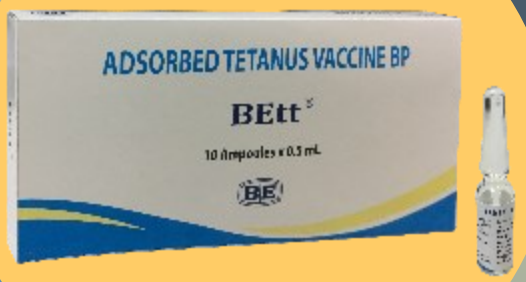
For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



Poland
Preservative Free



ราคาถูก



Biological E

India



CLINICAL AND EXPERIMENTAL VACCINE RESEARCH

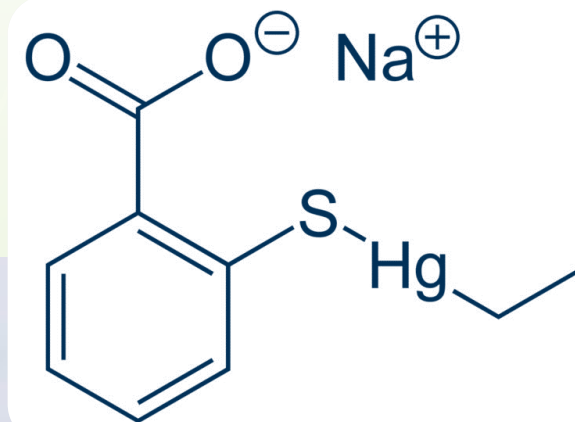
Table 1. Type of vaccine components

Components		Type
Active immunizing antigens and conjugating agents		Toxoids, live-attenuated viruses, killed viruses or portions of virus, viral proteins, carrier proteins and antigens
Culture media (protein/peptides)		Hen's egg, horse serum, murine and simian cells, kidney cells of dog, yeast
Additives	Antibiotics	Neomycin, chlortetracycline, gentamicin, streptomycin, erythromycin, kanamycin, polymyxin B, amphotericin B
	Preservatives	Thimerosal, 2-phenoxyethanol, phenol, benzethonium chloride
	Stabilizers	Gelatin, human serum albumin, amino acid mix, glutamate, glycine, monosodium glutamate, sucrose, lactose, sorbitol, ascorbic acid, phosphate, polysorbate 80/20, polygeline
	Adjuvants	Aluminum salts, MF-59, AS04 (deacylated monophosphoryl lipid A+ aluminum hydroxide)
	Inactivation residues	Formaldehyde, beta-propiolactone, formalin, gluteraldehyde
Contamination		Latex

Thimerosal in vaccine and preservative free Td formula



Thimerosal = Thiomersal = Preservative
(สารกันบูดในวัคซีน)



THE 4 TYPES OF HYPERSENSITIVITY REACTIONS



Considered to be related to vaccine constituents are listed in the following section

1. Allergic reactions to egg-related antigens
2. Mercury sensitivity to thimerosal-containing vaccine
3. Antibiotic induced allergic reactions
4. Hypersensitivity reactions to other vaccine component
(gelatin, yeast)



THIMEROSAL INFORMATION

THIMEROSAL INFORMATION

Thimerosal
vaccines
EMA/CPMP “
EMA/CPMP “not using Thimerosal in vulnerable groups such as infants, toddlers and pregnant women”
Thimerosal
Signif
DTP is licens
COI

The U.S. Public Health Service decided that as much mercury as possible should be removed from vaccines, and thimerosal was the only source of mercury in vaccines.

EMA/CPMP “not using Thimerosal in vulnerable groups such as infants, toddlers and pregnant women”

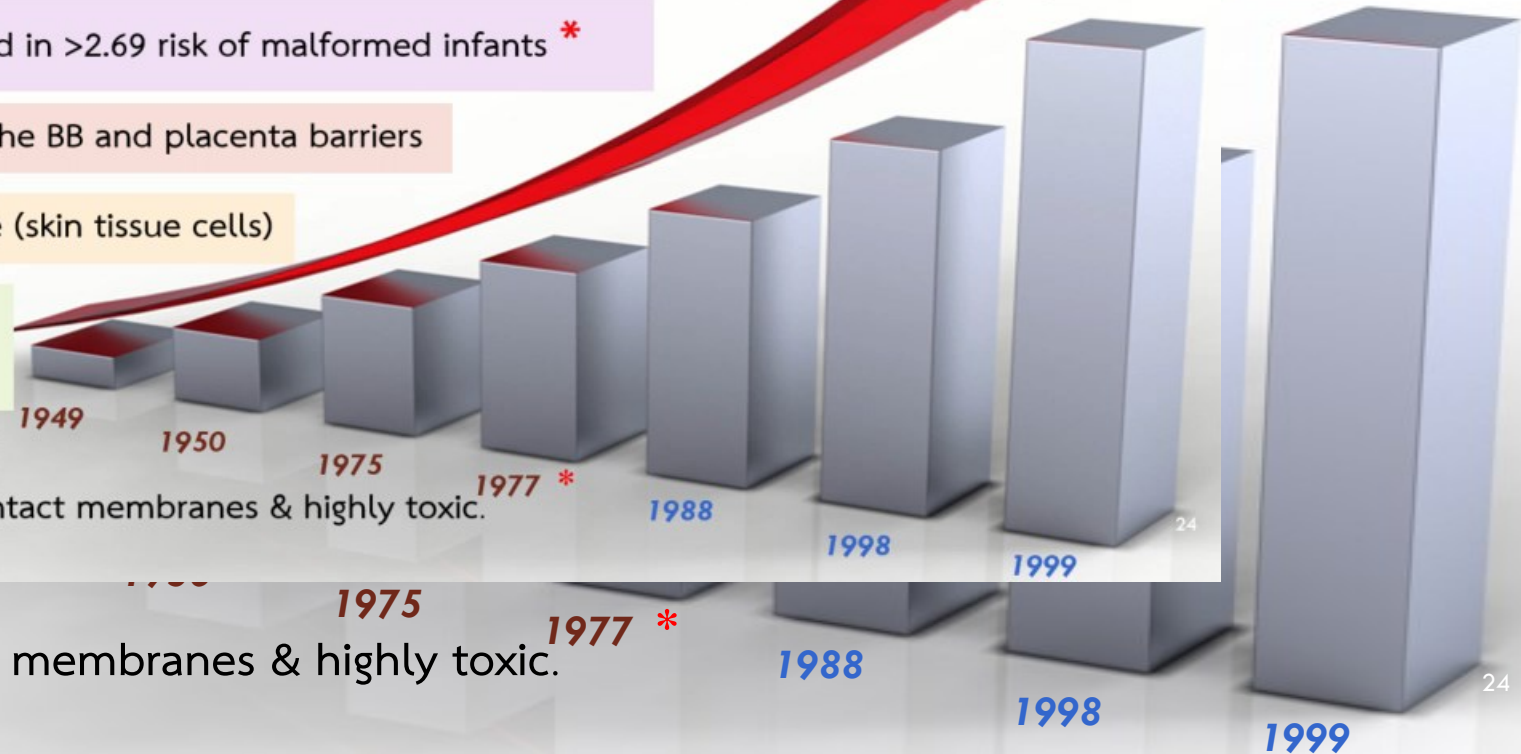
CDC recommends vaccine would contain 25 mcg of mercury from Thimerosal

Thimerosal in pregnant women resulted in >2.69 risk of malformed infants *

Found to cross the BB and placenta barriers

Significantly toxic to human tissue (skin tissue cells)

DTP is licensed for pediatric use in U.S. contain Thimerosal.



* Mercury readily penetrates intact membranes & highly toxic.

* Mercury readily penetrates intact membranes & highly toxic.

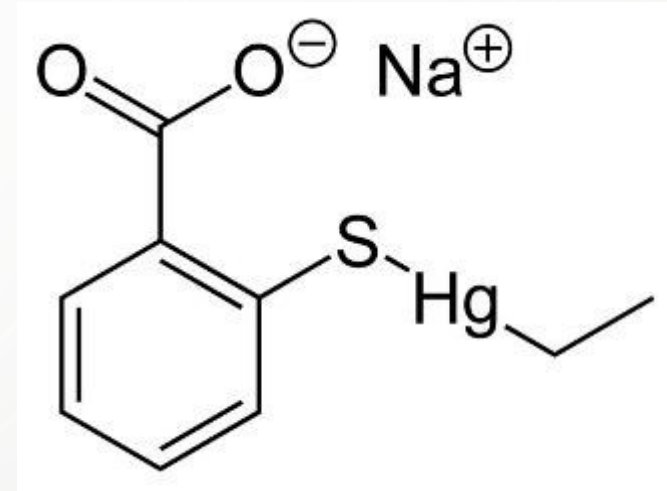
from



THIMEROSAL AS A PRESERVATIVE



One of the most widely used preservatives in vaccines



1929 : New mercury compound have antiseptic & antibacterial properties (Trade name Merthiolate /Eli Lilly)

1931 : Thimerosal is patented & would be used in vaccine.

USP 2004 : broad spectrum of pathogens concentration **0.001% - 0.01%**

Thimerosal approximately 50% mercury by weight

INTERESTING CASE REPORT

J infect Developing Countries 2007, 1(3):348-349

Apparent vaccine-thimerosal induced hypersensitivity myelodysplastic syndrome and pancytopenia

43 y admitted with history of Tetanus vaccination 1 month previously

↓ symptoms



→ developed

Swelling periorbital area

Spread to shoulder, arm and whole body



Periorbital cellulitis

↓ reported

General fatigue, malaise, noted a jaundiced appearance

Symptoms decreased in 1 month
(but not disappear)

↓ Referred to hospital (1 month later)

Facial swelling, flushing, jaundice, weakness, fatigue

↓ Examination

Normal : Physical exam, UA

Finding : WBC 2600, plt. 53,000, Hct 16%, MCV 60, Hb 4.2 , HAV IgG positive,
liver biopsy : non-specific hepatitis with myelodysplastic syndrome

Difficulty
Chest tight
Headache
Facial flu

Difficulty in breathing
Chest tightness
Headache
Facial flushing

Concluded that the symptoms probably resulted from toxic effects of thimerosal and that this was a case of vaccine-induced toxicity.

26 positive,
drome

INTERESTING CASE REPORT

J Infect Developing Countries 2007, 1(3):348-349

Apparent vaccine-thimerosal induced hypersensitivity myelodysplastic syndrome and pancytopenia

We suggest that considering the rapid development of symptoms following vaccination, *the thimerosal in the vaccine was responsible for bone marrow toxicity, resulting in pancytopenia and for hypersensitivity reactions including edema and dyspnea*

Most clinical studies on vaccine induced toxicity have been conducted on children, and *the presentation of this case should alert physicians in countries where adult vaccination campaigns are carried out to the possibility of thimerosal-induced toxicity.*



Key Points

- All vaccines routinely recommended for **children 6 years of age and younger** in the U.S. are available in formulations that **do not contain thimerosal**.
- Vaccines that **do not contain thimerosal as a preservative** are also **available for adolescents and adults**.
- Preservatives prevent microbial growth.
- A preservative is required in multi-dose vials of vaccines.

RECENT & FUTURE FDA ACTION



American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™



ร่วมกันจัดทำ Joint Statements : ขอความร่วมมือจากผู้ผลิตวัคซีน ในการลด หรือ ขจัด Thimerosal ออกจากตำรับวัคซีนให้เร็วที่สุดเท่าที่จะเป็นไปได้ (CDC 1999, CDC 2000)

VACCINE ADMINISTRATION



Primary vaccination: 0,1,6-12 months interval



Booster vaccination: 10 years



Vaccinate in the 2nd trimester of pregnancy

สำหรับการป้องกันบาดทะยักในทารกแรกเกิดที่ดีที่สุด

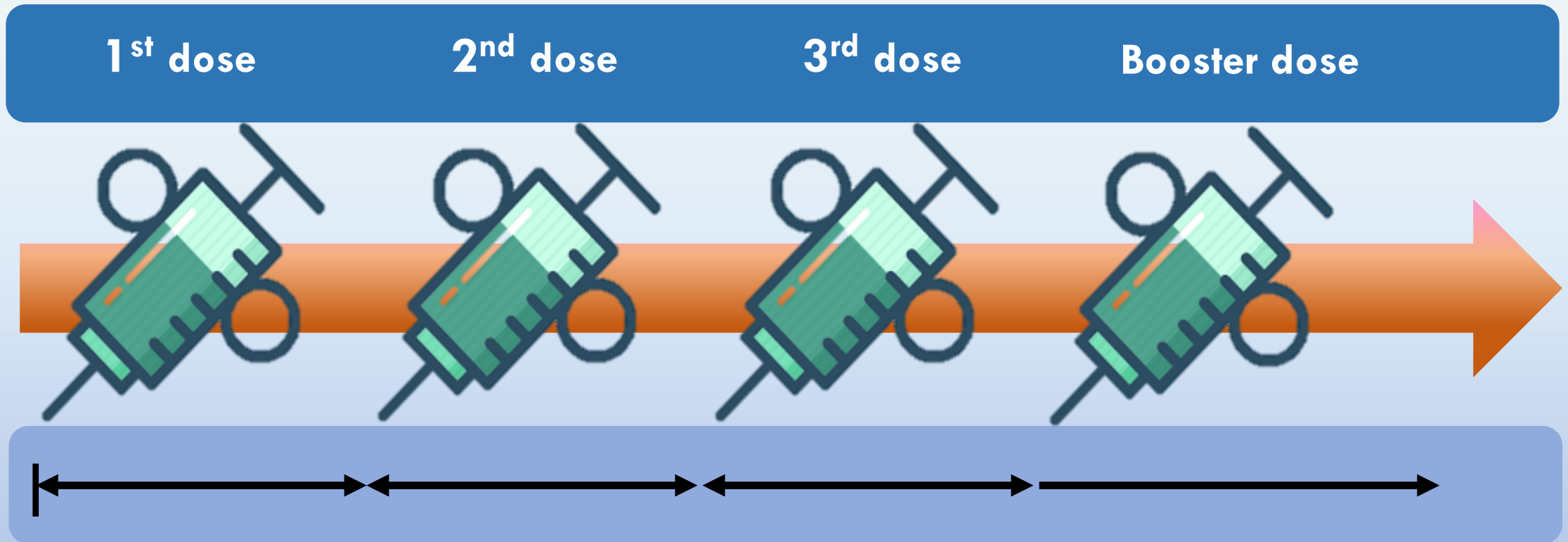
คือ การคลอดและตัดสายสะดือโดยถูกต้อง สะอาด ดูแลสะดือ และที่ได้ผลดีคือการให้ T แก่หญิงมีครรภ์

ในปัจจุบันจะแนะนำให้ T แก่หญิงวัยเจริญพันธุ์ 3 ครั้ง
2 ครั้งแรกห่างกัน 1 เดือน
ครั้งที่ 3 ห่างจากครั้งที่ 2 เป็นเวลา 6 เดือน
จะทำให้ระยะภูมิคุ้มกันอยู่ได้นาน 5-10 ปี

	ระยะห่างระหว่างโดส
T1-T2	อย่างน้อย 4 สัปดาห์
T2-T3	อย่างน้อย 6 เดือน



Schedule of Tetanus toxoid



4 weeks

6-12 months

10 years

IM : " 0 , 1 , 6 interval "



Package for new Mom



1	T	T	T
2	T	T	Td
3	T	Td	Td
4	Td	Td	Td
5	Td	Td	Tdap
6	T	Td	Tdap



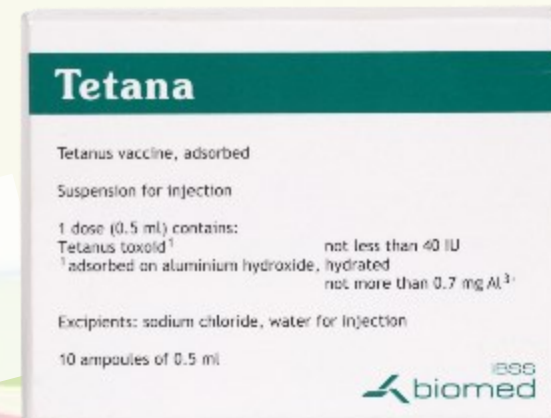
Tetanus Wound Management²

	Clean, Minor Wounds		All Other Wounds	
Vaccination History	TT/Td	TIG	TT/Td	TIG
Unknown or < 3 doses	Yes	No	Yes	Yes
3+ doses	Booster : 10 Yr since last dose	No	Booster : 5 Yr since last dose	No

Tetana

Suspension for injection ,

Tetanus vaccine, absorbed



PRESERVATIVE FREE!

IBSS BIOMED S.A.

Poland

Tetana



Suspension for injection. The vaccine is a milky, homogenous cream shade suspension.

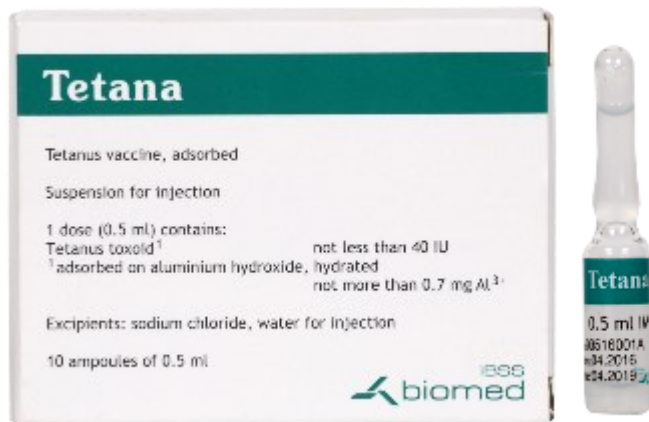
Components

1 dose (0.5 ml) contains:

- Tetanus toxoid not less than 40 IU
- adsorbed on aluminium hydroxide, hydrated not more than 0.7 mg of Al³⁺

European PIC/s GMP , Thai FDA
Cold chain system

Single dose vaccine

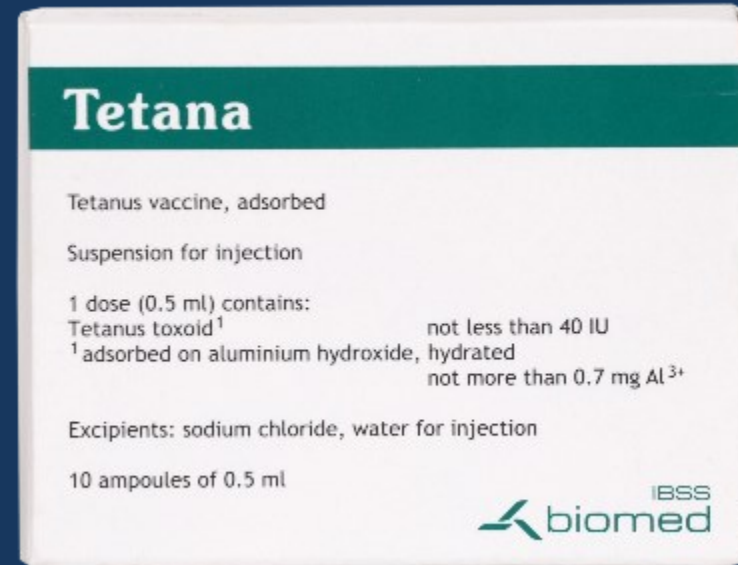


Tetana

Tetanus vaccine, adsorbed



To Increase Safety of Tetanus Vaccination
with *Preservative Free Vaccine*



Td Vax

Suspension for injection ,

Diphtheria and Tetanus vaccine absorbed,
reduced antigen content

PRESERVATIVE FREE !



IBSS BIOMED S.A.

Poland

Td Vax



Suspension for injection. The vaccine is a milky, homogenous, cream shade suspension.

Components

1 dose (0.5 ml) contains:

- Tetanus toxoid not less than 40 IU
- Diphtheria toxoid not less than 5 IU
- adsorbed on aluminium hydroxide, hydrated not more than 0.5 mg of Al³⁺



European PIC/s GMP , Thai FDA
Cold chain system

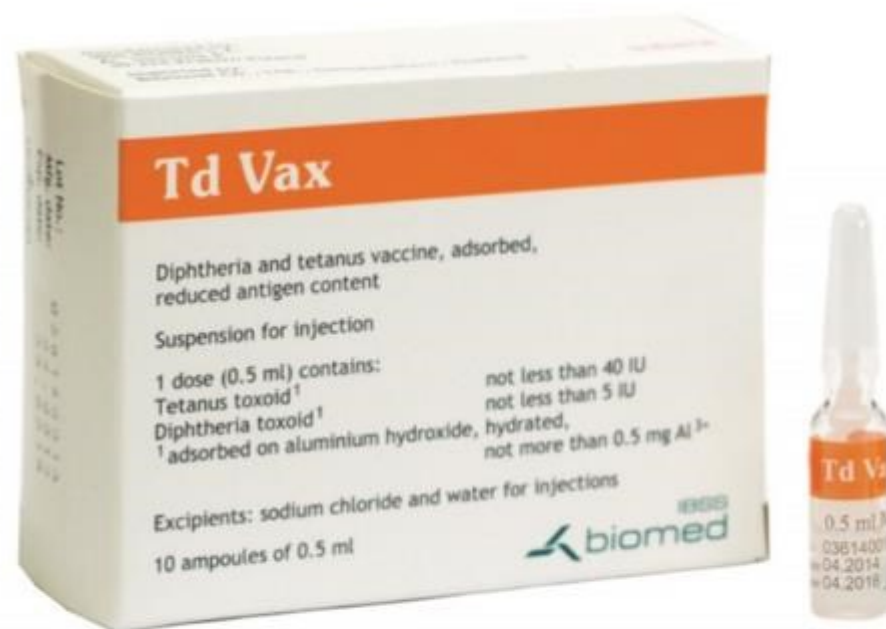
Single dose vaccine



ลูกน้อยปลอดภัยจากการติดเชื้อบาดทะยักหลังคลอด

วัคซีนรวมบาดทะยัก-คอตีบ

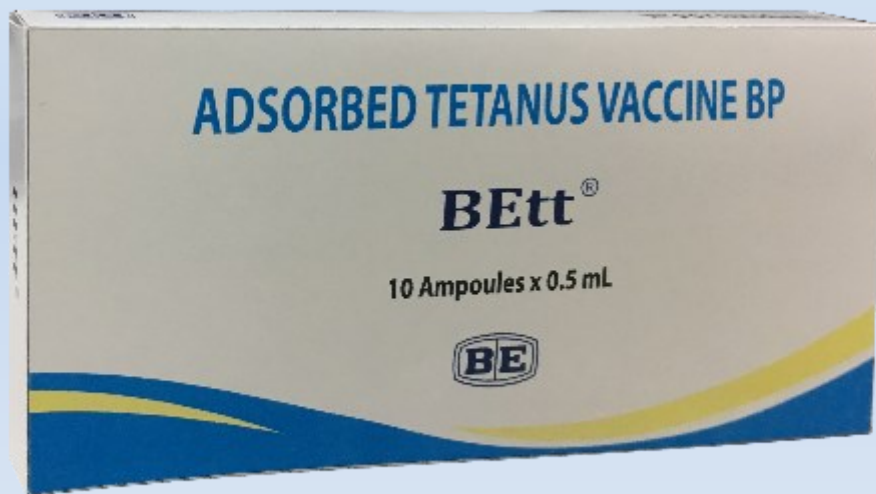
Td สูตร Preservative Free





BE tt[®]

Suspension for intramuscular injection.



Biological E india

Qualitative and quantitative composition

Each dose of 0.5 mL contains:

Tetanus Toxoid	≥ 40 IU
Adsorbed on Aluminium phosphate (AlPO ₄)	≥ 1.5 mg
Preservative: Thiomersal BP	0.01% w/v

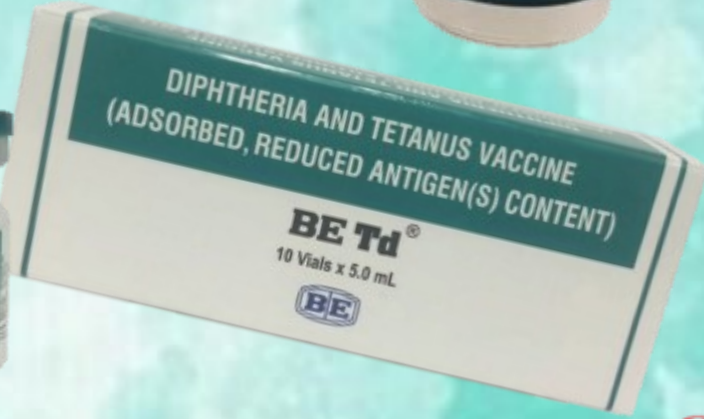
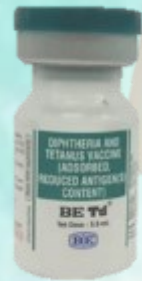
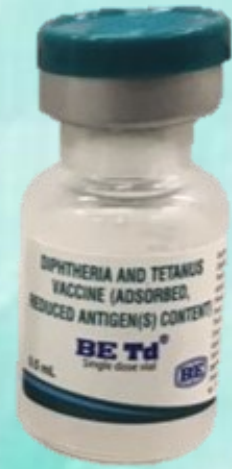
WHO GMP , Thai FDA
Cold chain system

Single dose vaccine

เก็บในตู้เย็นที่อุณหภูมิ 2 ถึง 8 องศาเซลเซียส
ห้ามแช่แข็ง ถ้าแช่แข็งให้ทิ้งวัคซีนทันที

BE Td®

Diphtheria and Tetanus vaccine
adsorbed, reduced antigen(s) content



Biological E india

BE Td[®]

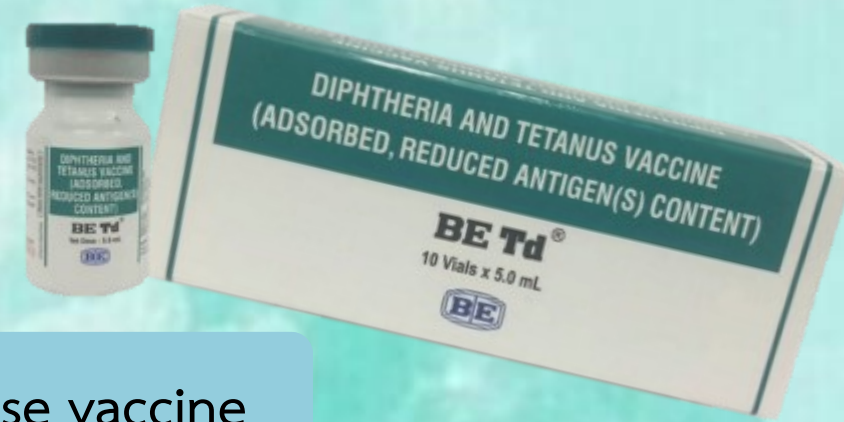
Components

Each dose of 0.5 mL contains:

Diphtheria Toxoid	2 Lf (≥ 2 IU)
Tetanus Toxoid	8.8 Lf (≥ 20 IU)
Adsorbed on Aluminium Phosphate (ALPO ₄)	≥ 1.5 mg
Preservative: Thiomersal BP	0.005% w/v

WHO GMP , Thai FDA
Cold chain system

Single dose & Multiple dose vaccine



Storage (Tetana, Td Vax, BE Td)

stored at a temperature between **2-8°C**

protected from light.

DO NOT FREEZE.

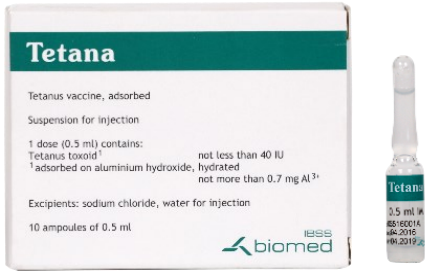


BE Td only!

Once opened, **multi dose vials of BE Td** from which one or more doses of vaccine have been removed during an immunization session may be used in subsequent immunization sessions for up to a **maximum of 4 weeks**, provided that all of **the following conditions are met:**

- The expiry date has not passed
- The vaccines are stored under appropriate cold chain conditions
- The vaccine vial septum has not been submerged in water
- Aseptic technique has been used to withdraw all doses.
- Vaccine Vial Monitor (VVM) has not reached the discard point.

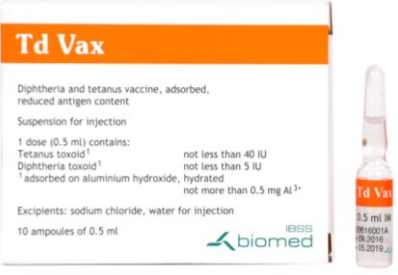



ตารางเปรียบเทียบวัคซีนป้องกันโรคบาดทะยัก



ชื่อการค้า	Tetana	BEtt [®]	Bio-TT [®]
ชื่อสามัญ	Adsorbed Tetanus Toxoid Vaccine	Adsorbed Tetanus Toxoid Vaccine	Adsorbed Tetanus Toxoid Vaccine
รูปภาพผลิตภัณฑ์			
เลขทะเบียน	1C 11/56 (B)	1C 15008/62 (NB)	1C 1/62 (B)
บริษัท/ประเทศผู้ผลิต	IBSS Biomed / Poland	Biological E. Limited / India	BioFarma / Indonesia
รูปแบบ	0.5 ml single dose / Amp	0.5 ml single dose / Amp	0.5 ml single dose / Amp
	ส่วนประกอบทางเคมี (ต่อ 0.5 mL/dose)		
Tetanus Toxoid	≥40 IU	≥40 IU	≥ 40 IU
Adsorbed on Aluminium phosphate	≤0.7 mg	≥1.5 mg	≥1.5 mg
Thimerosal Content	Preservative Free	0.05 mg / 0.01%	0.05 mg /0.01%

ตารางเปรียบเทียบวัคซีนป้องกันโรคบาดทะยัก และ คอตีบ



ชื่อการค้า	Td- Vax	BE Td	Diphtheria and Tetanus Vaccine Adsorbed	Bio-Td vaccine
ผู้ผลิต	IBSS Biomed(Poland)	Biological E	Serum Institute of India	BIO FARMA
รูปภาพผลิตภัณฑ์				
ผู้จัดจำหน่าย	Biogenetech	Biogenetech	Masu	Biolalys
		ส่วนประกอบทางเคมี (ต่อ 0.5 mL/dose)		
Tetanus toxiod	≥ 40 IU	≥ 20 IU (8.8 Lf)	≥ 40 IU (≥ 5 Lf)	≤ 7.5 Lf
Diphtheria toxoid	≥ 5 IU	≥ 2 IU (2 Lf)	≥ 2 IU (≤ 5 Lf)	≥ 2 Lf
Thimerosal	Preservative Free	0.005% (25 mcg)	0.005% (25 mcg)	0.005% (25 mcg)



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