

# Not “IF” but “WHEN”

Lifetime risk of diabetes in Singapore

Public Health Snippets Series

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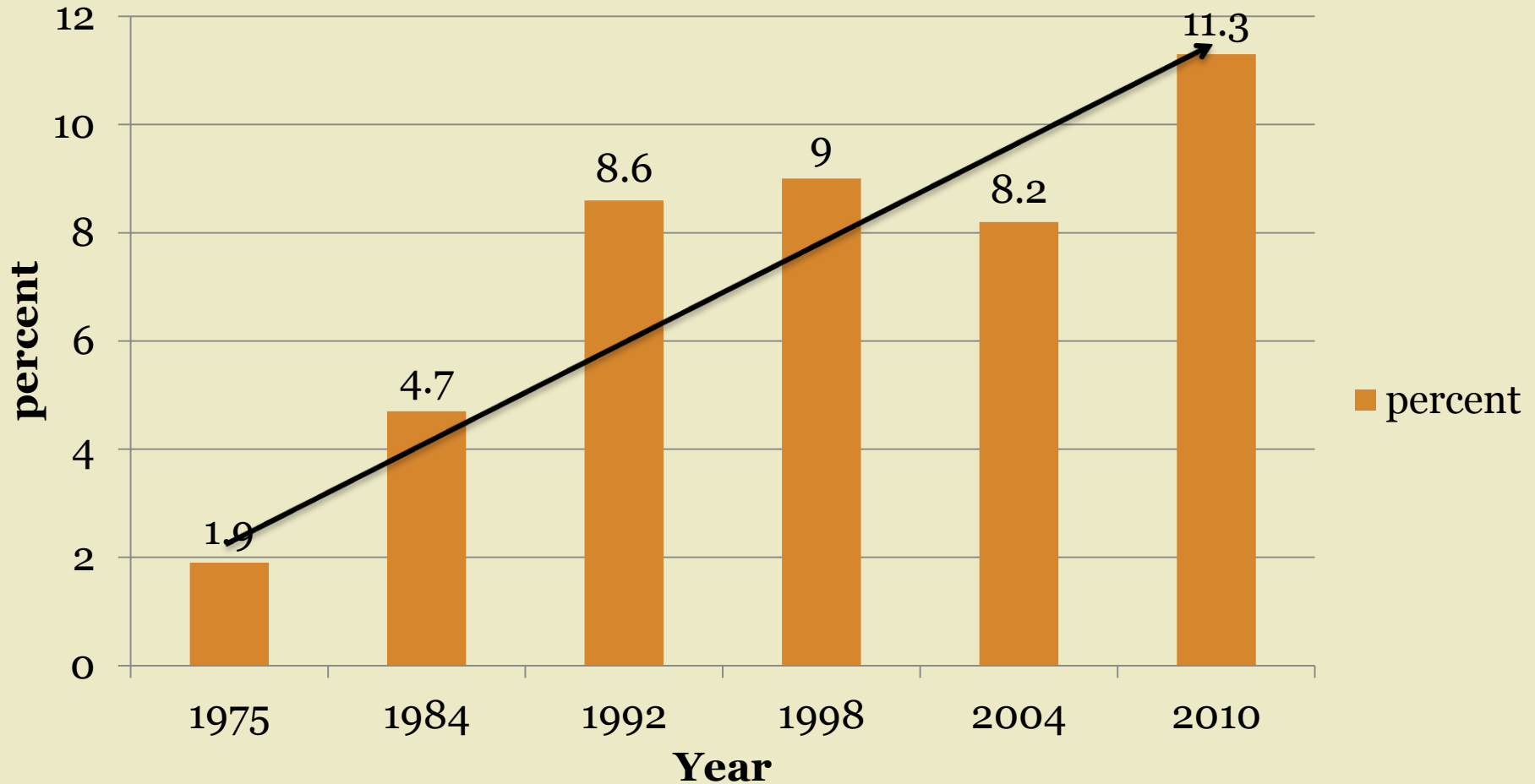


# What is diabetes?



- Diabetes simply means **too much glucose (sugar) in the blood.**
- This sugar comes from the food that we consume. For example: rice, pasta, cakes, dairy items, fizzy drinks etc.
- When we eat, our body digests the food and turns some of it into “blood glucose”. This “blood glucose” provides energy for our body.
- But to be able to use the blood glucose for energy, our body must have insulin.
- Insulin is the hormone that helps to bring down sugar in the blood and hence a deficiency results in high sugar levels in the blood or otherwise diabetes.
- **Type 2 diabetes is a condition where the body is insulin deficient or has resistance to the action of insulin**
- **Sometimes called a “lifestyle” disease as it is more common among people who do not exercise, have an unhealthy diet and are overweight.**

# Trend in T2DM in Singapore among adults aged 18-69 years old (pre NHS, NHS)



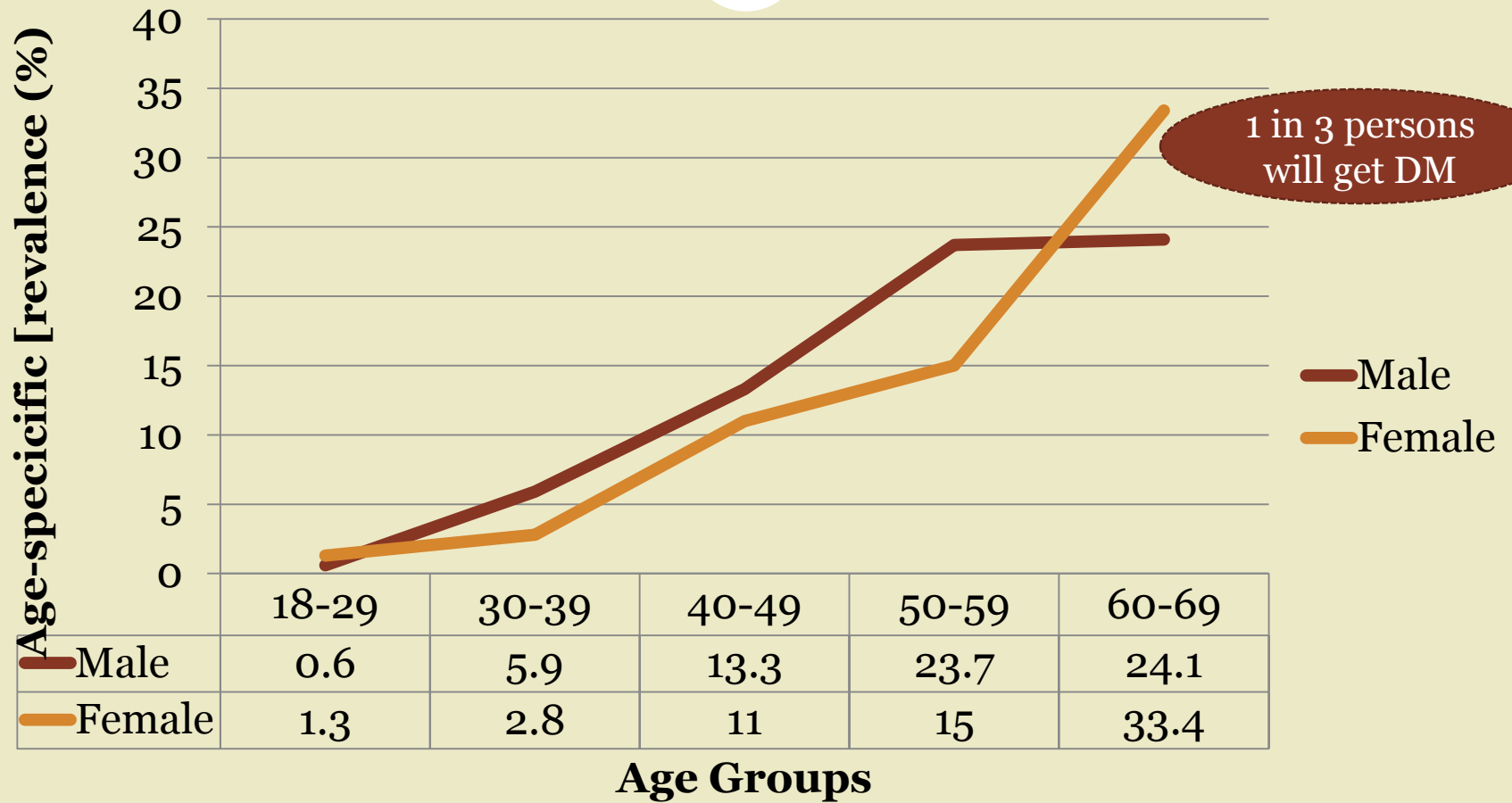
Source: National Health Survey, 1992, 1998, 2004, & 2010

# Age-specific prevalence



- 1 in 9 Singaporeans between the age of 18 to 69 years have diabetes (prevalence rate: 11.3%)
- However, this does not communicate the risk of contracting diabetes
- Age-specific prevalence is a more accurate measure of communicating the risk
- In general, prevalence of diabetes mellitus increases with age

# Age-Specific Prevalence



# Estimated life-time risk of developing diabetes



- One out of X number of people will get DM before age of 70

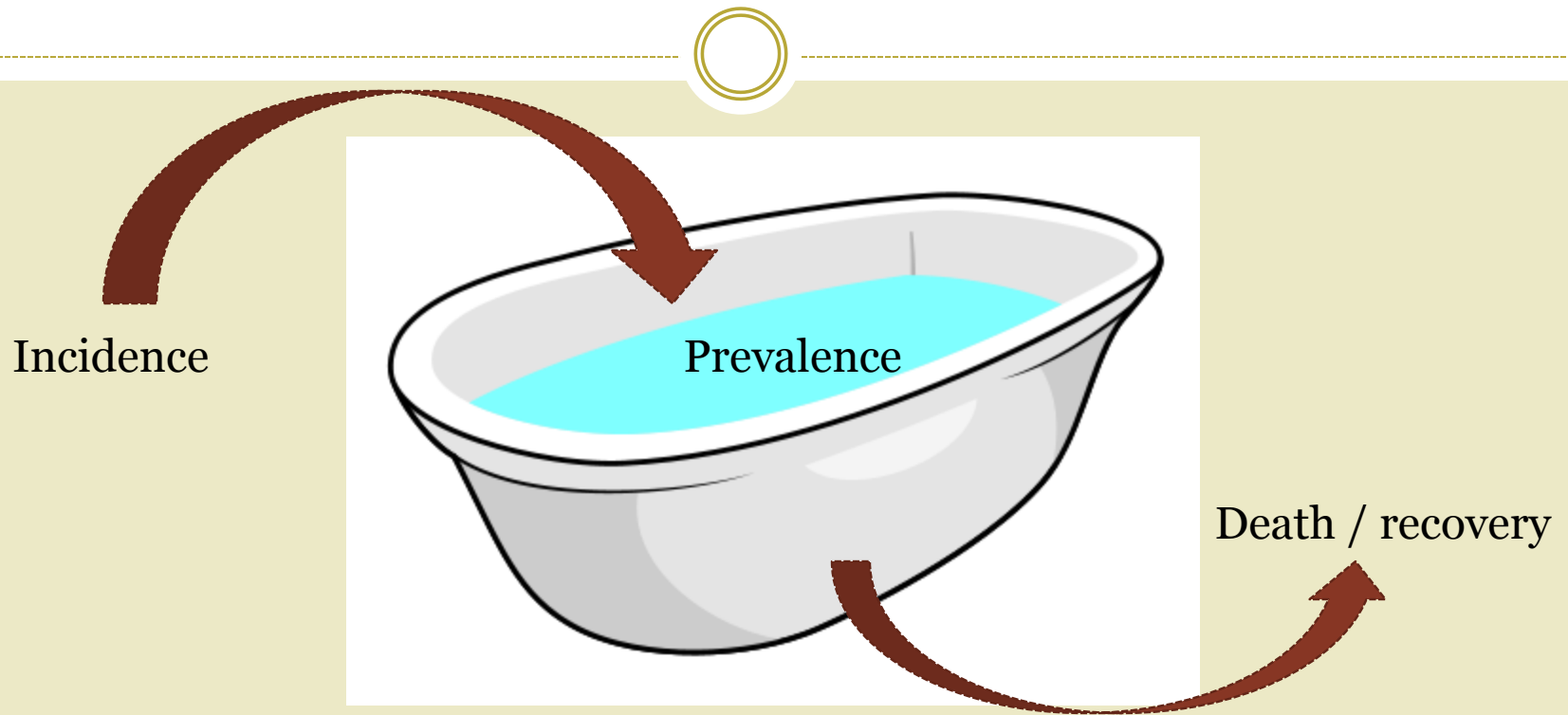
<b>Year Gender</b>	<b>1998</b>	<b>2004</b>	<b>2010</b>
<b>Male</b>	<b>5.05</b>	<b>4.74</b>	<b>3.17</b>
<b>Female</b>	<b>3.64</b>	<b>18.00</b>	<b>3.29</b>

# Shift from prevalence to incidence



- Prevalence rate communicates the total number of cases of disease in a population at a point in time.
- Eg. 11.3% of Singaporeans have diabetes in 2010.
- Incidence (rate of new cases into the future) is a measure of the number of new cases for a particular period of time. Can be used to communicate one's risk of contracting the disease.
- Eg. Last year, 14.45% of the females between the age group 60-69 contracted diabetes (appendix 2) → more accurate measure when thinking about the risks of contracting the disease

# Diagrammatic Illustration



- Incidence is the measure of the flow of water into the tub (new cases), while prevalence measures the proportion of the tub that is filled with water (prevalent cases). Prevalent cases can leave the prevalence pool by either recovery or death.



# Power of Prevention



- Economic implications → depress wages, earnings and productivity, increased disability etc.
- Complications of diabetes: Ischaemic Heart Disease – Heart attacks etc, strokes, most common cause of amputation of limbs, blindness etc.
- Although chronic diseases like diabetes are among the most common and costly of all health problems, they are also among the most preventable.
- The public health approach of primary prevention is considered to be the most cost-effective, affordable and sustainable course of action.

# Appendix 1

- Health alert: One in 3 will develop diabetes. (24, February 2012). *The Straits Times*, pB1.



**Headline:** Health alert: One in 3 will develop diabetes  
**Source:** *The Straits Times*, pB1  
**Date:** 24 February 2012

## Health alert: One in 3 will develop diabetes

11.3 per cent of those aged 18-69 already had the disease in 2010

By SALMA KHALK  
 HEALTH CORRESPONDENT

A TIME bomb is ticking here – and its name is Diabetes.

One in three Singaporeans will develop this condition by the time they are 69, making it one of the most pressing health issues here, said Professor Chia Kee Seng, the dean of the Saw Swee Hock School of Public Health.

“It is no longer a question of ‘if I will get diabetes’, but ‘when I will get diabetes,’” he said.

In fact, in 2010, 11.3 per cent of people aged 18 to 69 were already living with this condition, in which a high level of sugar in the blood can damage the organs. In 2004, it was 8.2 per cent.

The disease is fairly widespread among those aged 70 and above.

The 11.3 per cent figure earns Singapore the dubious honour of having one of the highest incidences of this illness among developed countries.

In Europe, it is generally around 6 to 9 per cent; worldwide, it is 8.5 per cent.

Dr Stanley Liew, an endocrinologist at Raffles Hospital, said the rise of diabetes here mirrors the rise in obesity from 6.9 per cent in 2004 to 10.8 per cent in 2010.

The reasons for concern are two-fold: ■ Diabetes worsens the older a population gets: On top of this, doctors here are seeing an earlier onset of the disease. In 2004, 8 per cent of those aged 40 to 49 had it; six years later, it had gone up to 12



Mr See Siew Kwee, who has kidney problems, being tended to by nurse manager Sivamani at the NKF Dialysis Centre. Up to 60 per cent of all kidney failures in Singapore are due to diabetes, a disease in which high blood sugar levels damage the organs. ST PHOTO: DESMOND WEE

per cent in that age group.

■ Diabetes causes a host of health complications ranging from blindness to kidney failure, poor circulation leading to limb amputations, heart attacks and strokes.

Associate Professor Tai E Shyong, who heads endocrinology at the National University of Singapore, said: “It’s a concern for most doctors, and indeed, for health-care organisations.”

Diabetes is the top cause of blindness here. It is also linked to two limb amputations a day and 60 per cent of kidney failures, up from 50 per cent a decade ago.

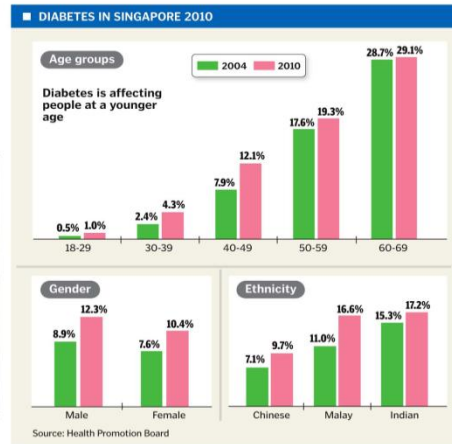
In 2009, 46.4 per cent of people who had their first heart attacks here were diabetic, said the Health Promotion Board (HPB). Internationally, the figure is 30

40 per cent, noted cardiologist Aaron Wong of the National Heart Centre.

Singapore’s high figure stems from the higher incidence of diabetes here, he added. A person with runaway blood-sugar readings stands the same risk of getting a heart attack as one who has already survived one attack.

Diabetics also have poorer recovery from heart attacks, as uncontrolled diabetes narrows the arteries, making it difficult to get enough blood to the heart following an attack.

Dr Goh Su-Yen, the head of endocrinology at Singapore General Hospital, added that diabetics are 50 per cent more likely to have a heart attack than someone without the disease.



Source: Health Promotion Board

ST GRAPHICS

Diabetics must control their blood sugar levels. Studies show that every percentage-point increase raises the risk of cardiovascular disease by 11 per cent.

Said Dr Goh: “If you already have diabetes, there is still plenty that can still be done to reduce the risk of developing complications.”

Proper and early treatment and screening for possible complications will cut overall risks of these complications.

Those about to develop the condition can avert it with 30 minutes of daily moderate exercise. This, with a 5- to 10-per-cent weight loss, can cut the risk by 58 per cent, she said.

More men than women here have the condition, with Indians almost twice as

likely to get it as the Chinese; it is also high among Malays.

Half the people with diabetes remain unaware of it. They are the ones in whom complications such as stroke and kidney failure will emerge in about a decade.

Dr Liew said: “Interventions to prevent and control diabetes are more cost-effective than treating patients after diabetic complications have occurred.”

Prof Tai said “significant efforts” are being made here to prevent diabetes, such as by encouraging people to eat right and exercise more.

“We know from clinical trials that if we get this right, we can reduce new cases by as much as half,” he said.

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# Appendix 2: Estimated Incidence (%)



	1998	2004	2010
<b>Male</b>	Incidence	Incidence	Incidence
18-29	0.23	<b>-0.10</b>	0.50
30-39	1.15	1.10	4.88
40-49	1.44	4.22	8.33
50-59	5.74	5.69	12.25
60-69	11.26	10.17	5.58
<b>Female</b>	Incidence	Incidence	Incidence
18-29	0.45	0.30	0.90
30-39	1.13	0.48	1.59
40-49	1.89	0.72	7.63
50-59	8.52	1.40	5.80
60-69	15.51	2.65	14.45

Source: National Health Survey, 1998, 2004, & 2010