

## PREVENTION OF TYPE 2 DIABETES MELLITUS

### KEY QUESTIONS

Prof. Dr. Pradeep Krishna Shrestha

Department of Medicine, TUTH  
Institute of Medicine

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Source: Gorkhapatra 2059-01-19 Thursday Page No 5



## Nepal

- Non Communicable Diseases Risk Factors Survey 2007/08 Nepal
- Prevalence of NCDs – A hospital based Study, 2010

## Non Communicable Diseases Risk Factors Survey 2007/08

- **The STEPS survey of non-communicable diseases risk factors** in Nepal was carried out from **January 2007 to August 2008**. Nepal carried out Step 1 and Step 2. Socio demographic and behavioral information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. The STEPS survey in Nepal was a population-based survey of **adults aged 15-64**. A multi-stage probability proportionate to size sampling design. Sample design was used to produce representative data for that age range in Nepal. A total of **4328 adults participated** in the Nepal's STEPS survey. The overall **response rate was 98.4%**. A repeat survey is planned for every five year.

### Prevalence of NCDs in Nepal A hospital based study 2010 Nepal Health Research Council

- Study was conducted in 31 health institutions (regional, sub-regional, zonal, medical colleges, specialized centers and central hospital) of Nepal
- 1901 cases were selected out of 3, 47,261 patients admitted to these hospitals in fiscal year 2065/66
- The number of cases selected from the health institutions ranged from 350 - 400.

### Prevalence of NCD Risk Factors among patients presenting to TUTH with DM2, Stroke and IHD\*

- Total cases = 241
- DM2= 135, Stroke (Ischemic) = 79, IHD 59

\* Raju Khanal, 2008, Prevalence of Preventable Risk Factors in Patients presenting to TUTH with Non-Communicable Diseases (NCDs)-Type 2 DM, Stroke and IHD

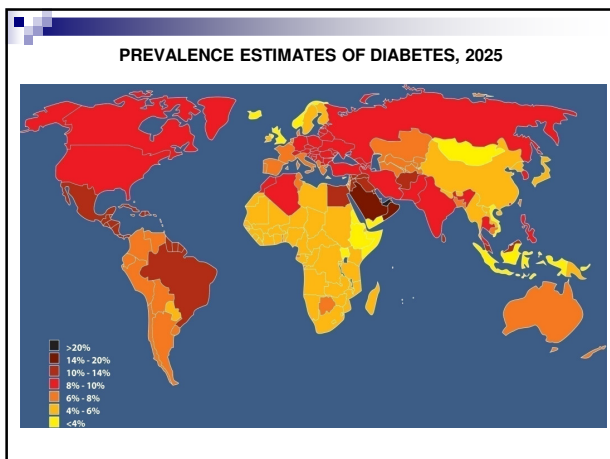
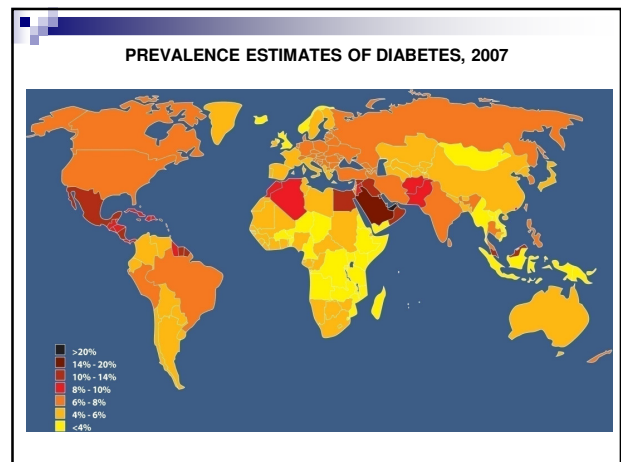
### Prevalence of NCD Risk Factors

	Total	Obesity	Tobacco	Alcohol	Low level of Physical Activity	HTN	Dyslipidemia	DM
DM2	135	130	69	28	97	69	124	
	%	96	51	21	72	51	92	
Stroke	79	46	49	18	33	59	65	22
	%	58	62	23	42	75	82	28
IHD	59	50	34	15	34	34	55	10
	%	85	58	25	58	58	93	17

### Inference

- High prevalence of NCD risk factors.
- Increasing NCD burden
- Level of awareness on early detection, control and prevention ?? On both sides.

## WHY IS PREVENTION OF TYPE 2 DIABETES A MUST?



### 1997 WHO Report

Year	1995	2000	2025
No of Diabetics ( in Millions )	124.7	153.9	299.1

- ✦ Unfortunately, the brunt of this increase will be borne by the **developing countries-200% & developed countries-45%**
- ✦ Many (1/2-1/3<sup>rd</sup>) Diabetics remain Undiagnosed
- ✦ Onset & progression of many of the long term complications of DM can be delayed, if not avoided, by early diagnosis & optimal management

# WHAT IS THE EVIDENCE THAT TYPE 2 DIABETES CAN BE PREVENTED OR DELAYED?

## Lifestyle Interventions Can Prevent Type 2 Diabetes Onset

- Several randomized trials have shown interventions (lifestyle, medications) can decrease rate of onset of diabetes
- **Lifestyle:** Da Qing, Finnish Diabetes Prevention Study, Diabetes Prevention Program
- **Medications:** Diabetes Prevention Program (metformin), The Stop-NIDDM (acarbose), DREAM (rosiglitazone), ACT-NOW (pioglitazone)

American Diabetes Association

# DO PREVENTION INTERVENTIONS HAVE SUSTAINED EFFECT???

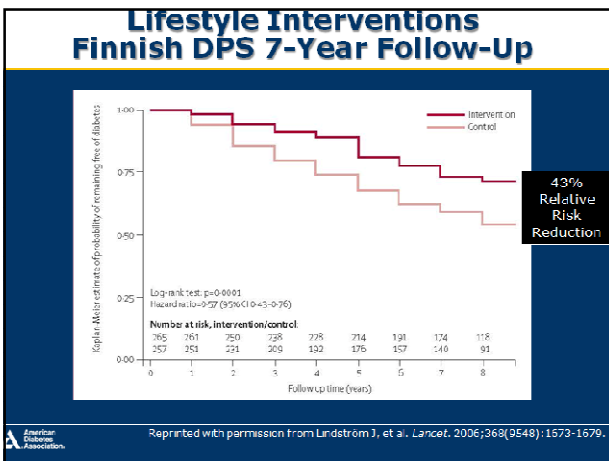
## Lifestyle Interventions Da Qing Study 20-Year Follow-Up

- Combined lifestyle intervention vs control
  - 51% lower incidence of diabetes during active intervention
  - 43% lower incidence over 20 years
  - 3.6 years fewer with diabetes

	Average Annual Incidence	20-Year Cumulative Incidence
Controls	11%	93%
Combined lifestyle intervention	7%	80%

Li G, et al. Lancet. 2008;371:1783-1789.

American Diabetes Association



## Lifestyle Interventions Summary

- Lifestyle intervention continues to have an effect; most drugs do not

Study	N	Intervention	Treatment	Risk Reduction	
<b>Lifestyle</b>					
Da Qing	IGT	577	Lifestyle	6 years 20 years	34% - 69%
Finnish DPS	IGT	523	Lifestyle	7+ years 7 years	58%
DPP	IGT	3324	Lifestyle	3 years	58%
<b>Pharmacologic</b>					
DPP	IGT	3324	Mellitinin	3 years	31%
DREAM	IGT	5260	Rosiglitazone	3 years	60%
STOP-NIDDM	IGT	1429	Acarbose	3 years	21%
ACT NOW	IFG	~600	Pioglitazone	3 years	81%

Diabetes Care. 1997;20:537-544; N Engl J Med. 2000;344:1113-1120; N Engl J Med. 2002;348:393-403; Diabetes Care. 2011;34:1265-1269; Lancet. 2002;359(9222): 2072-2077; N Engl J Med. 2011;364:1104-1115.

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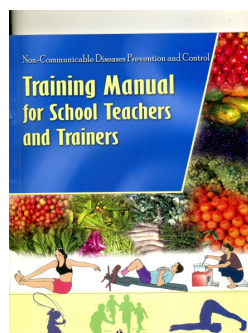
IS TYPE 2 DIABETES  
PREVENTION COST  
EFFECTIVE???

WILL DIABETES  
PREVENTION BEND THE  
CURVE OF THE  
EPIDEMIC???

- If 50% participated and incidence reduced by 50%, would result in 25% reduction in annual incidence of diabetes in the population with Pre-Diabetes.
- Would lower the increase in prevalence by 2050 to 1 in 4 (vs 1 in 3)

## Ways forward

- a) Target youths
- b) Target Communities
- c) Target care outlets



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