



Innovative Medicines Initiative

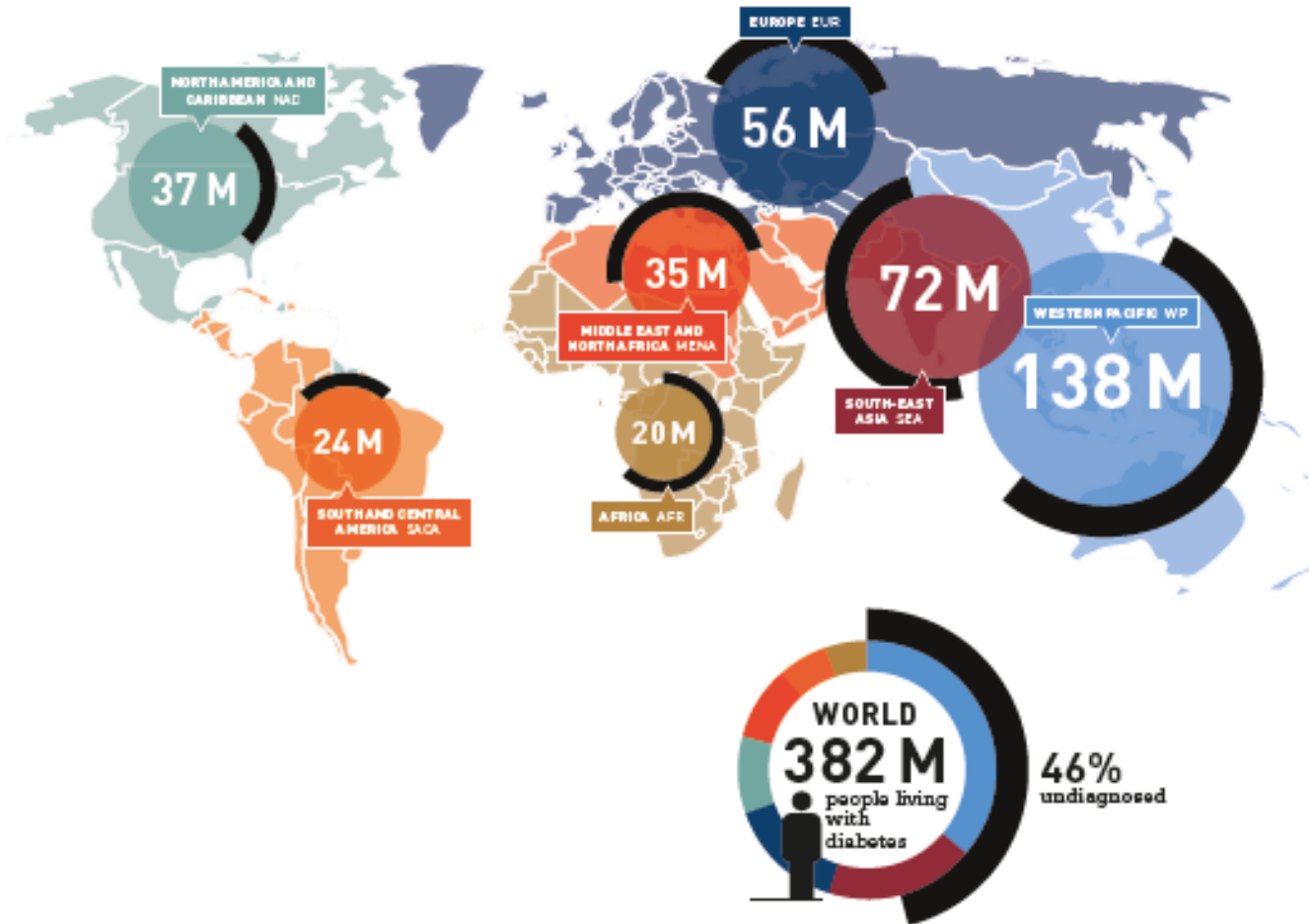
# Diabetes therapy of tomorrow: Beyond glycemc control

IMI JDRF Joint Symposium, Bruxelles, Belgium

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Philip J Larsen, Sanofi Diabetes

# Prevalence of Diabetes by IDF Region



# Diabetes comes in two major flavors with plenty of nuances

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- Type 1 diabetes (autoimmune disorder)

- Latent autoimmune diabetes of the adult (LADA) could be considered etiologically and therapeutically categorized as T1DM variant

- Type 2 diabetes (heterogeneous disease with strong heritability)

- Characterized by insulin resistance and impaired insulin secretion
- Often macrovascular disease at time of diagnosis



# But a person living with diabetes may find this classification of lesser relevance



**54 years<sup>1</sup>**

**Male, 83 - 85 kgs  
Overweight,**

**Blue collar laborer,  
No time for exercise**

**BMI > 25 kg/m<sup>2</sup>**

**HbA<sub>1c</sub> 8%<sup>2</sup>**



1. <http://www.cdc.gov/diabetes/statistics/us/index.htm> Accessed 16th April 2014.

2. Logue J et al. Diabetes Care 2013;36:887-893.



# Is not only worried about his HbA1c

Diminishment of Self  
Guilty, social stigma...

Lack of energy, irritability,  
erectile dysfunction

Blood pressure, Lipid,  
depression, CV issues

Only 14% meet glycemic, BP & Lipid Control

Underestimate  
the risk of complications



*Cost<sup>1</sup>*

...failure,  
self blame, alone

HCP threat,  
Bad connotation,  
Amputation ...

Hypoglycemia,  
Titration, fear of Mistake

... don't see  
the short term benefit

You don't cope with the disease ruling, your existence you want to live a normal life<sup>2</sup>

# Diabetes double the risk of dying compared to anyone at the same age<sup>1</sup>



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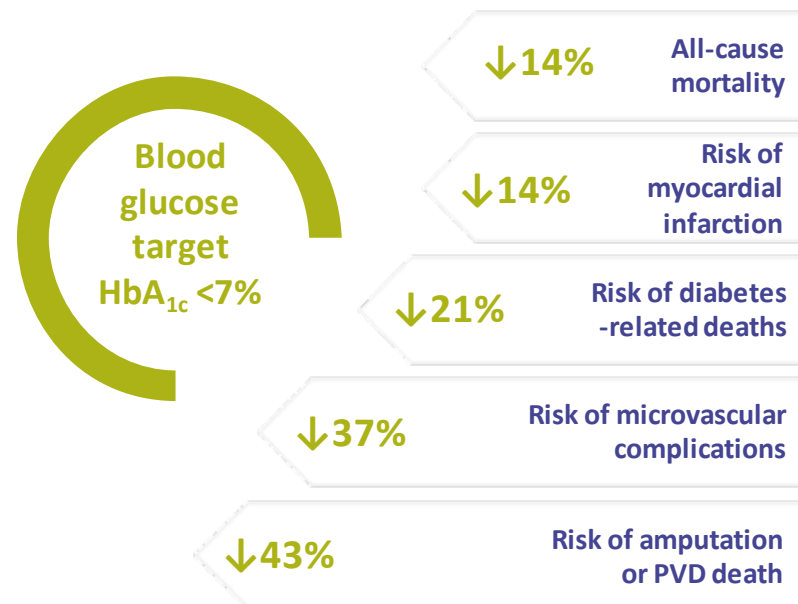
...Your physician will tell you to decrease your HbA1C<sup>2</sup>



World Health Organization

- 2 to 4 times higher risk for stroke
- 2 to 4 times higher risk for heart disease death
- 10 times more lower limb amputations
- Risk of blindness and kidney failure
- > 50% chance of dying from CV disease

Each 1% decrease in blood glucose levels reduces the risk of complications from diabetes (UKPDS)<sup>1</sup>



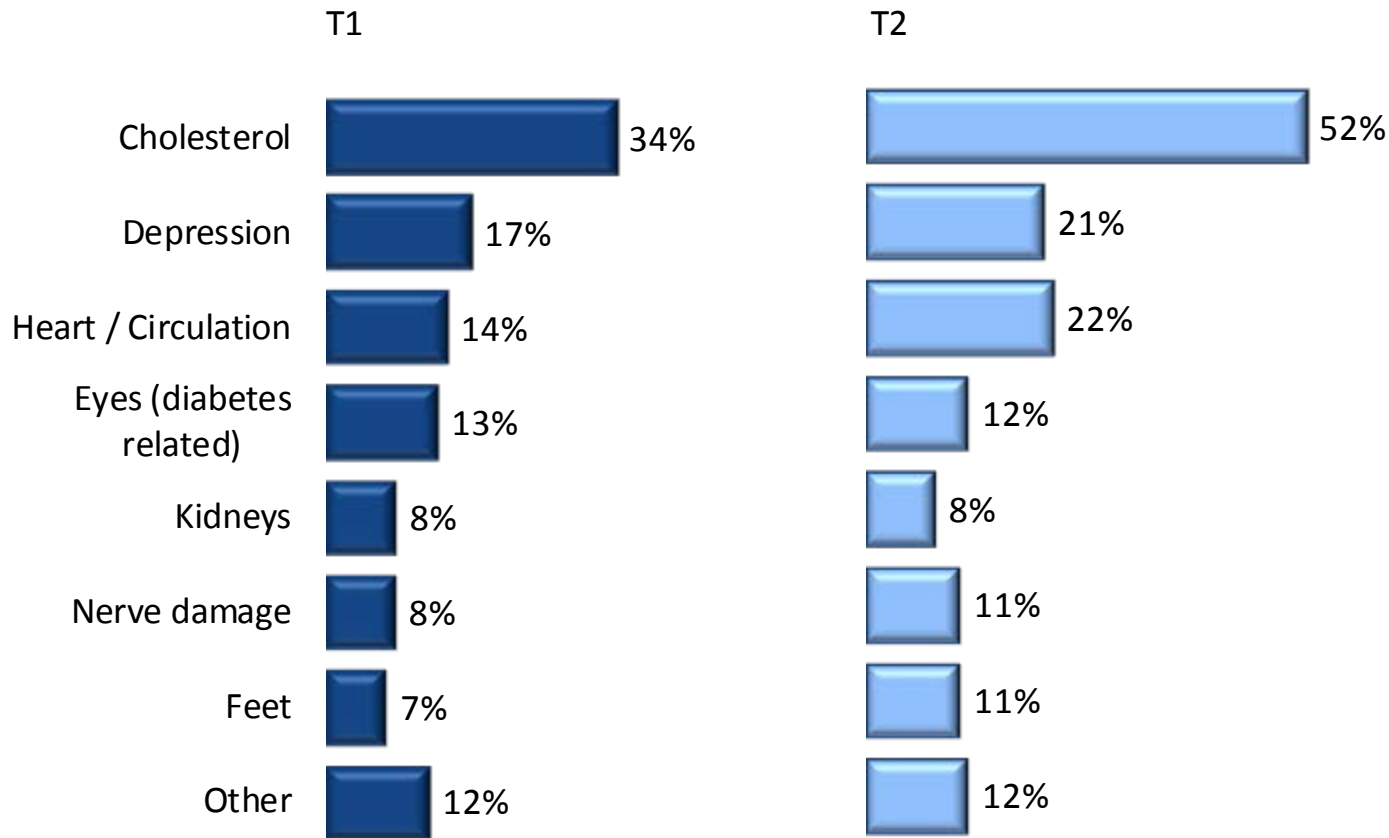
efpia

1. Risk of death among people with diabetes is twice that of people of a similar age without diabetes (1) 5 Million deaths WW

2. Stratton IM, et al. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study *BMJ* 2000; 321: 405-412..

# Diabetes care should not focus only on hyperglycemia

Complications are frequent



H400 Some people may experience other health complications while they are managing their diabetes. Please tell us if you are currently undergoing treatment or taking medications for any of the following.

• Base: respondents with type 1 (n=1,073)  
respondents with type 2 (n=3,504)

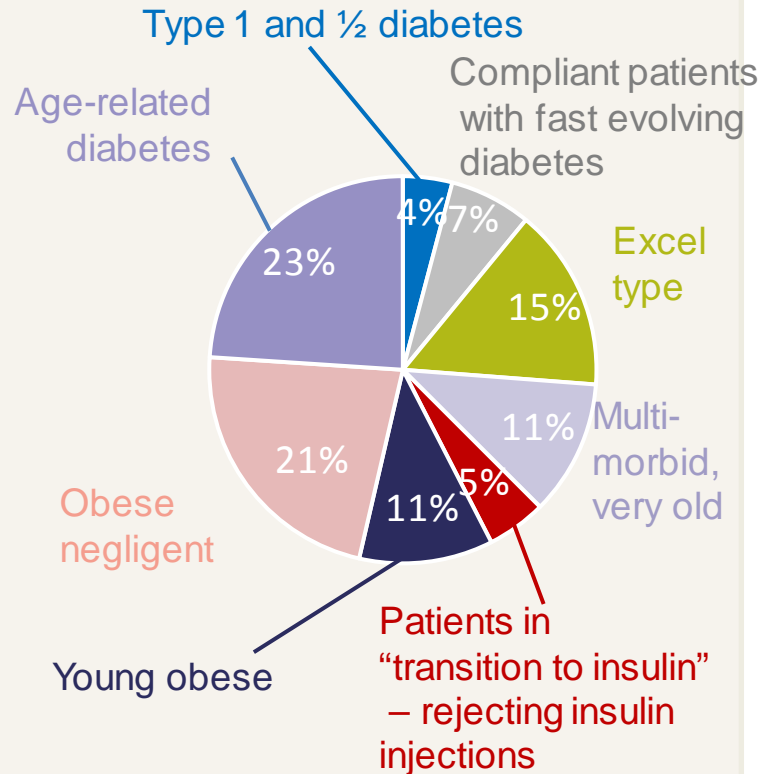


# THE PHYSICIAN- & PATIENT-ARCHETYPES



## Physician

### 8 Patient-Archetypes

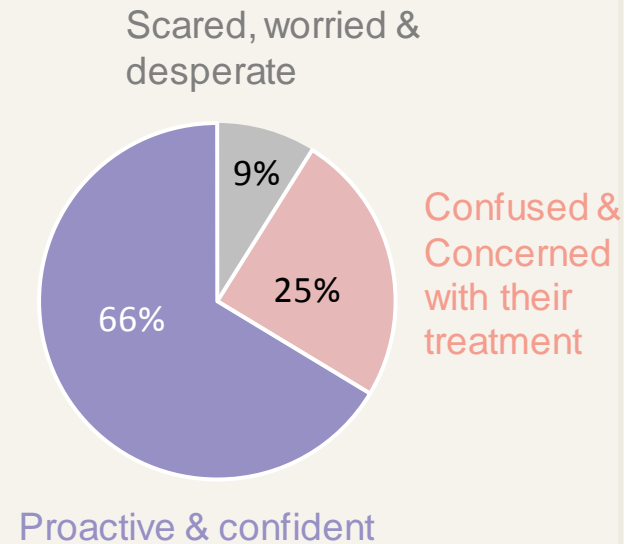


Base= Overall (n=1856)

\*T2D patients profiling, A+A, 2013, Base= Overall (n=1856)

## Patient

### 3 Patient-Archetypes



\*SANOFI AVENTIS Diabetic Patients GALLILEO panel I, November 2010  
Base= Overall (n=864)





# Diabetes pharmacotherapy is a step wise approach and falls in three categories



C

## Disease modification

Insulin sensitization,  $\beta$  cell regeneration, anti-inflammatory

B

## Glucose PLUS

Weight management

Macrovascular disease modification

BP, lipids, inflammation

Complications management (eg. renal)

A

## Glucose RIGHT

Insulins (various modalities)

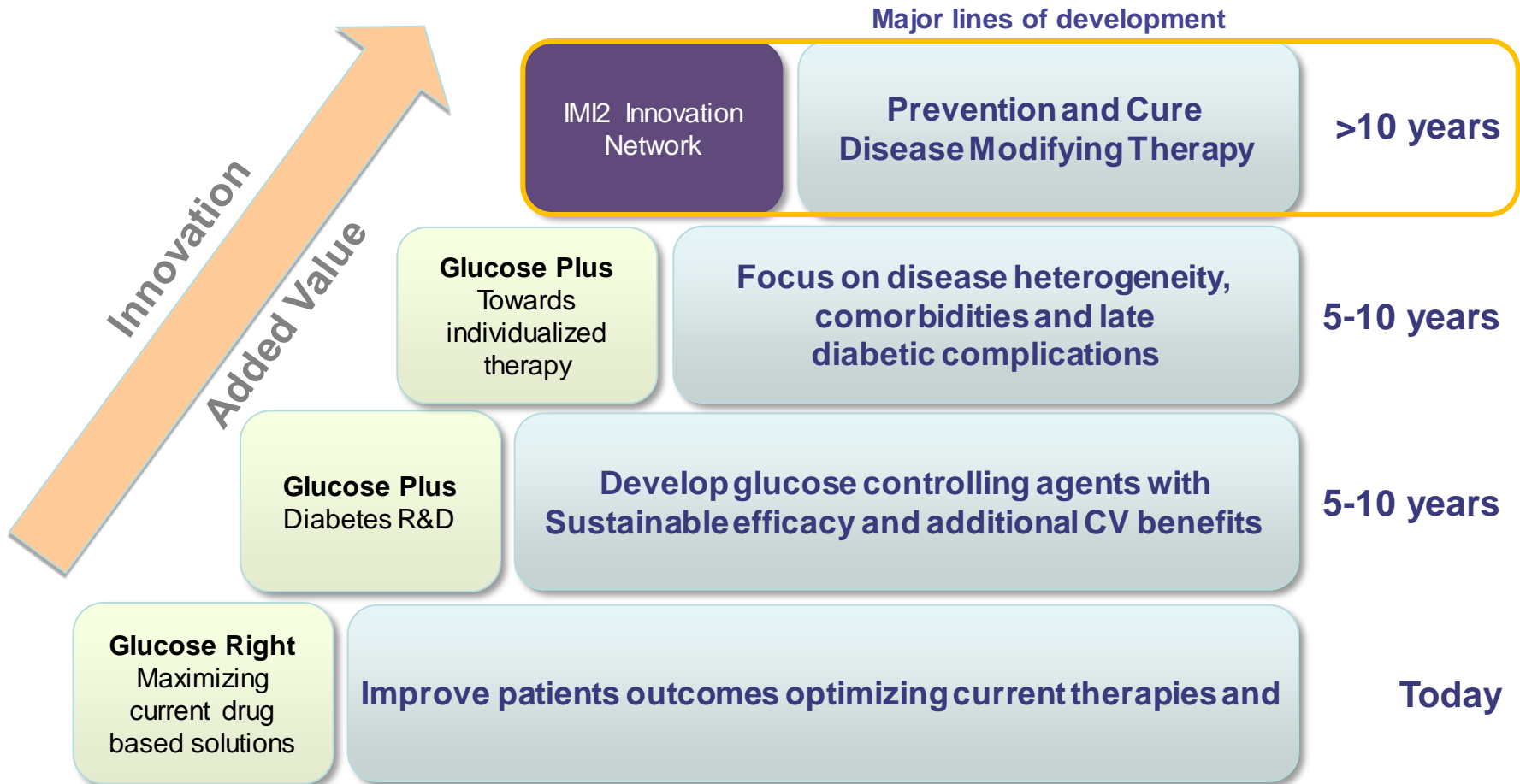
Non-insulin super efficacious drugs

Devices

Adherence improvers



# R&D efforts: Prevention and Cure is the ultimate goal but several short-term achievable goals will help ease the disease burden

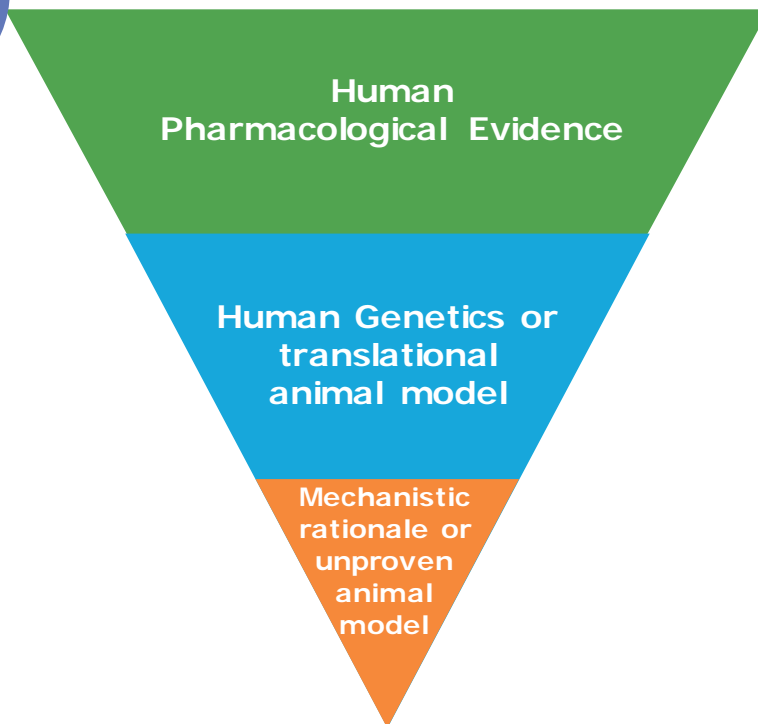


# The most important decision to make

## Choice of target & link to disease segment



*High Confidence*



*Low Confidence*

Truly innovative, GLP1 agonism example hereof

Must increase focus in this tier - PCSK9 the prototype

Unfortunately, the majority of the industry discovery portfolio is in this tier. Aim should be to improve translatability or deprioritize the effort



# Thank you

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efpia\*