Overview Diabetes 2015

Thanya Chetthakul MD
Bangkok Hospital Ratchasima
• Pathophysiology of DM
• Classification and Diagnosis of Diabetes
• Prevalence of Diabetes
• Progression of Diabetes
• What is Legacy effect?
• Management of Diabetes
How Glucose and Insulin Work Together

Insulin helps glucose move from the blood into your body’s cells. When insulin attaches to a cell, glucose enters the cell and can be used for energy. Glucose that is not used right away is stored in the cells for later use.
Insulin acts like a key

Sugar get into cell

Lower blood sugar to normal
When you have eaten:

**Alpha cells** do not signal the liver to make glucose

**Beta cells** make enough insulin to balance glucose from food
When you have not eaten:

- **Alpha cells** signal the liver to make glucose.

- **Beta cells** make enough insulin to balance the glucose released from the liver.
Beta Cells and Alpha Cells in Type 2 Diabetes

Alpha cells signal the liver to make glucose even though it is not needed.

Impaired beta cells cannot make enough insulin.

Fewer incret hormones are available to stimulate beta cells and alpha cells.
DIABETES MELLITUS

- Pathophysiology of DM
- **Classification and Diagnosis of Diabetes**
- Prevalence of DM
- Progression of Diabetes
- What is Legacy effect?
- Management of diabetes
Classification of Diabetes

- **Type 1 diabetes** (due to B-cell destruction. Usually leading to absolute insulin deficiency)
- **Type 2 diabetes** (due to a progressive insulin secretory defect on the background of insulin resistance)
- **Gestational diabetes mellitus** (GDM) (diabetes diagnosed in the second or third trimester of pregnancy that is not clearly overt diabetes)
- **Specific type of diabetes** due to other causes eg.
  - Genetic defect of B-cell function (MODY)
  - Endocrinopathy
  - Disease of exocrine pancreas (cystic fibrosis)
  - Drugs or chemical induce diabetes
Type 1 Diabetes

- Immune-Mediated Diabetes (90%)
- Idiopathic Diabetes
  - b-Cell Destruction, Usually Leading to Absolute Insulin deficiency
  - Prevalence 5-10%
  - Autoantibody present about 85-90%, such as islet cell autoantibodies, anti GAD, etc
  - Ketosis prone
  - Need insulin therapy
Low Rate of Autoimmune T1 DM in Asia

- Diagnosis rate of childhood T1DM was 2 per 100,000 person-years in Japan, compared to a diagnosis rate of 4-45 per 100,000 person-years in the European population.

- The age of presentation is generally older compared to that in Europeans, and a significant proportion have co-existing obesity, termed “Double Diabetes.”

- Anti-insulin auto-Ab are typically present only in 30-40% of patients with T1DM in Asia, compared to 70-80% in Western populations.

Type 2 Diabetes

- Individual who have insulin resistance and usually relative (rather than ) insulin deficiency
- Prevalence 90-95%
- Most but not all, patients with type2 diabetes are obese
- Ketoacidosis seldom occurs
- May not need insulin

ADA 2015
Pathogenesis of T2DM
The Ominous Octet

Islet $\beta$-cell
- Impaired Insulin Secretion

Decreased Incretin Effect

Islet $\alpha$-cell
- Increased Glucagon Secretion
- Increased HGP

Neurotransmitter Dysfunction

Decreased Glucose Uptake

Increased Lipolysis

Increased Glucose Reabsorption

WorldWIDE
Worldwide Initiative for Diabetes Education
Screening of DM
การแปลผลกระทบน้ำตาลในเลือด

<table>
<thead>
<tr>
<th>การวินิจฉัย</th>
<th>จตุAVORAR 8-12</th>
<th>หลังอาหาร 2 ชั่วโมง (มก./ดล)</th>
</tr>
</thead>
<tbody>
<tr>
<td>คนปกติ</td>
<td>น้อยกว่า 100</td>
<td>น้อยกว่า 140</td>
</tr>
<tr>
<td>เบาหวาน</td>
<td>เท่าหรือมากกว่า 126</td>
<td>เท่าหรือมากกว่า 200</td>
</tr>
</tbody>
</table>

ADA 2015
### Categories of increased risks for diabetes

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Fasting Plasma Glucose (mg/dL)</th>
<th>2-Hour Plasma Glucose (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;100</td>
<td>&lt;140</td>
</tr>
<tr>
<td>Pre-diabetes</td>
<td>100-139</td>
<td>140-199</td>
</tr>
<tr>
<td>Diabetes</td>
<td>≥126</td>
<td>≥200</td>
</tr>
</tbody>
</table>

**ADA 2015**
1. All adult who are over weight (BMI > 25 kg/m2 or 23 kg/m2 in Asian American) and have additional risk factors:
   - Physical inactivity
   - First- degree relative with diabetes
   - High risk race/ethnicity
   - Women who delivered a baby weighing > 9 lb or were diagnosed as GDM
   - Hypertension
   - HDL < 35 mg/dL and/or a TG > 250 mg/dL
   - Women with PCOS
   - A1C > 5.7%. IGT or IFG on previous testing
   - Other clinical conditions associated with insulin resistance
   - History of CVD
2. Testing should begin at age 45 years
3. Testing should be repeated at a minimum of 3- years interval
Acanthosis Negrigan
Criteria for diagnosis DM

1. A1C ≥6.5% (NGSP certified and standardized to the DCCT assay)
   
   OR

2. FPG ≥ 126 mg/dL (7.0 mmol/L) *Fasting = no caloric intake for at least 8 hr*

   OR

3. 2-h PG ≥ 200 mg/dL (11.1 mmol/L) using 75 g OGTT

   OR

4. Random PG ≥ 200 mg/dL (11.1 mmol/L) + *Patient with classic symptoms of hyperglycemia*

1,2,3 should be confirmed by repeat testing
How to repeat testing?

- The same test be repeated immediately using new blood sample
- If 2 difference tests (such as A1C and FPG) are both above the diagnostic, this also confirms the diagnosis
- If the patient has discordant result from the 2 different tests, then the test result that is above the diagnosis cut point should be repeated

The 2-h PG value diagnoses more people with diabetes more than A1C and FPG
**Categories of increased Risk for Diabetes (Pre-diabetes)**

<table>
<thead>
<tr>
<th>Impaired Fasting Glucose (IFG)</th>
<th>OR</th>
<th>Impaired Glucose Tolerance (IGT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPG 100-125 mg/dL (5.6-6.9 mmol/L)</td>
<td>OR</td>
<td>2-hrPG in 75-g OGTT 140-199 mg/dL (7.8-11.0 mmol/L)</td>
</tr>
<tr>
<td>A1C 5.7 -6.4%</td>
<td>OR</td>
<td></td>
</tr>
</tbody>
</table>

**For all tests**

Risk is continuous, extending below lower limit of range and becoming disproportionately greater at a higher ends of range

**ADA 2015**
A1C to predict progression of diabetes

Systemic review of 44,203 individuals from 16 cohort studies with FU 5.6 years

- A1C 5.5-6.0 % → 5-year incidence 9-25%
- A1C 6.0-6.5 → 5-year incidence 25-50% and relative risk 20 times higher when compared with A1C of 5.0%
- A1C was a stronger predictor of subsequent diabetes and cardiovascular even than FPG

ADA 2015
Screening of GDM

New Criteria VS Old Criteria
DIABETES MELLITUS

- Pathophysiology of DM
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- Progression of Diabetes
- What is Legacy effect?
- แนวทางการรักษาโรคเบาหวาน.
WORLD 592 M people living with diabetes in 2035

WORLD 382 M increase

AFR 109.1%
MENA 96.2%
SEA 70.6%
SACA 59.8%
WP 46%
NAC 37.3%
EUR 22.4%

International Diabetes Federation
Undiagnosed Diabetes

Number of people with diabetes (20-79 years), 2013

Proportion of cases of diabetes (20-79 years) that are undiagnosed, 2013

IDF 2013
Obesity prevalence is lower in Asia compared to the USA but diabetes prevalence is higher in Asia

I. Overweight and obesity prevalence in Asia and USA,

II. Type II diabetes prevalence in Asia and USA

Diabetes prevalence is higher at a comparatively normal BMI in Asian populations compared to Europeans.

Diabetes prevalence at a BMI of 23 kg/m² in men and women of different ethnicities compared to a European population.

SE Asian Have More Body Fat With The Same BMI

BMI
22.3  22.3

Body Fat
9.13%  21.2%

PREVALENCE OF DM IN THAILAND

3.2 MILLION
PEOPLE HAVE DIABETES TODAY¹

BY 2035 THIS FIGURE COULD RISE TO
4.3 MILLION¹

2000²  3.2  2013
2035  4.3
Prevalence of DM in Thais Aged >15 years from NHES

• Pathophysiology of DM
• Classification and diagnosis of Diabetes
• Prevalence of DM
• **Progression of Diabetes**
• What is Legacy effect ?
• แนวทางการรักษาโรคเบาหวาน.
บัตรฉลุย
กลุ่มเสียง
มาก

ปริมาณอินชูลิน

ภาวะต่ำอินชูลิน

ผิดปกติ
10–20ปี ก่อนเป็นเบาหวาน
เปรียบเทียบชุด

บัตรอลปกติ กลุ่มเลี้ยง เบาะแหวน

รป. ก่อนเป็นเบาะแหวน

ภาวะติดอินชูลน
บ้าตาปลูก
กลุ่มเสียง
เบาหวาน

ปรมาณอนชุลิน

เบาตาเสื่อมชุลิน

เมื่อเป็นเบาหวาน
Progression of DMT2

Pre- Diabetes

Normal BG  Abn. PPBG  Abn. FBG  DMT2  Complication

Macrovascular complications

Microvascular comp.
Beta cell deterioration in type 2 DM

SU = sulfonylurea; TZD = thiazolidinedione; MET = metformin

DIABETES MELLITUS

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- What is Legacy effect?
- แนวทางการรักษาโรคเบาหวาน.
**Conventional treatment**

**Intensive treatment**

Glucose similar
BUT CV events still higher

57% risk reduction in non-fatal MI, stroke or CVD death*

Cumulative incidence of non-fatal MI, stroke or death from CVD

Conventional treatment

Intensive treatment
Glycemic Control and Mortality in T1DM

- T1DM (1429 patients) from DCCT and EDIC study
- 6.5 years tight controlled
- Follow up 27 years
- All cause mortality in
  - intensive control group (HbA1c = 7.2%) = 43 patients
    HR = 0.67
  - Conventional group (HbA1c = 9.1%) = 64 Patients

DCCT/EDIC group. JAMA 2015, Jan;313(1): 45-53
Legacy Effect or Glucose Memory
UKPDS: intensive control reduces complications in type 2 diabetes


Copyright 1998 with permission from Elsevier.
| UKPDS: Risk Reduction: Glucose Control Study (After median 8.5 yr. post-trial follow-up) |
|----------------------------------------|---|---|---|
|                                       | 1997 | 2002 | 2007 |
| Any diabetes related end point        | 12%  | 10%  | 9%   |
|                                       | P=0.029 | P=0.033 | P=0.040 |
| Microvascular disease                 | 25%  | 28%  | 24%  |
|                                       | p = 0.009 | p = 0.001 | p = 0.001 |
| Myocardial infarction                 | 16%  | 14%  | 15%  |
|                                       | p = 0.052 | p = 0.042 | P=0.014 |
| All cause mortality                   | 6%   | 11%  | 13%  |
|                                       | p = 0.440 | p = 0.071 | P=0.007 |
Effect of immediate VS delayed Intensifications of Therapy on CV-outcome

20% increased CV-endpoints after 5 years due to a 6 months delay

Cohort-Study. retrospective

- Type 2 Diabetes
- > 1 year Diabetes Duration
- 1OAD

HbA1c > 7%

Intensification of Therapy

6 month Delay immediate

<table>
<thead>
<tr>
<th>CV-Risk after 6 years</th>
<th>Myocardial infarction</th>
<th>CV-Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months delay before 2nd OAD</td>
<td>+26%</td>
<td>+20%</td>
</tr>
<tr>
<td>6 months delay before addition of insulin</td>
<td>+26%</td>
<td>+21%</td>
</tr>
</tbody>
</table>

N = 110,543

Paul S et al 49th Annual meeting of EASD. Barcelona, Spain
Diabetologia 2013; 56 (suppl 1):s534;A1338
Mortality burden attributable to diabetes is greater in Asia Pacific than in North America/Caribbean

Deaths attributable to diabetes in adults aged 20–79 years of age, 2011

By IDF region: AFR, Africa; EUR, Europe; MENA, Middle East and North Africa; NAC, North America and Caribbean; SACA, South and Central America; SEA, South East Asia; WP, Western Pacific

IDF, International Diabetes Federation

Comparison of Complications in Asians

- **A Major Coronary Events**
  - P < 0.0001

- **B Major Cerebrovascular Events**
  - P < 0.0001

- **C Heart Failure**
  - P < 0.0001

- **D Peripheral Vascular Events**
  - P < 0.0001

- **E Nephropathy Events**
  - P = 0.0007

- **F All Cause Mortality**
  - P < 0.0001

Cumulative Incidence (%)

11,140 T2DM
ADVANCE study
Higher rate of renal complications, cerebrovascular cx

Years of Follow-Up

Thailand Diabetes Registry (2005)

> 9000 DM patients, mean age 59 years, mean duration of DM 10 yrs

Stroke
CHD
Foot(U/Amp)
DN(Cr>2)
DN
DR

Complications of DMT2 in Thailand

Many people with long-standing diabetes in Thailand experience serious complications:

- 7 in 10 experience nerve damage
- 1 in 10 experience foot ulcers
- 5 in 10 experience eye problems
- 1 in 10 risk to lose all vision

IDF 2013
DIABETES MELLITUS

- Pathophysiology of DM
- Classification and diagnosis of Diabetes
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- What is Legacy effect?
- **Management of Diabetes**
Ideal Goals of Diabetes Management

1. No symptoms attributable to diabetes
2. Prevention of acute complications
3. Prevention of long-term micro- and macrovascular complications
4. Provision of good quality of life
5. Life expectancy equal to nondiabetic individuals
Management of Diabetes Mellitus

- **Blood Glucose**
  - FPG 90-130 mg/dl
  - HbA1c < 7% ( < 6.5 % in new case or young patients)

- **BP**
  - < 140/90 mmHg
  - < 130/80 mmHg (young age)

- **Lipid**
  - According to risks

ADA 2015
Blood Glucose Control
Patient–Centered Approach

Management of Hyperglycemia in Type 2 Diabetes: A Patient-Centered Approach

Position Statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)

Diabetes Care Publish Ahead of Print, published online April 19, 2012
Approach to management of hyperglycemia:

- **HbA1c <6.5%**
  - Patient attitude and expected treatment efforts
  - Risks potentially associated with hypoglycemia, other adverse events
  - Disease duration
  - Life expectancy
  - Important comorbidities
  - Established vascular complications
  - Resources, support system

- **HbA1c 7.5-8.0%**
  - Highly motivated, adherent, excellent self-care capacities
  - Less motivated, non-adherent, poor self-care capacities
  - Low
  - Newly diagnosed
  - Long
  - Absent
  - Readily available
## Approach to management of hyperglycemia

Healthy eating, weight control, increased physical activity, and diabetes education

### Mono therapy

<table>
<thead>
<tr>
<th>Efficacy*</th>
<th>Hypo risk</th>
<th>Weight</th>
<th>Side effects</th>
<th>Costs*</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

### Metformin
- high
- low risk
- neutral/loss
- GI/lactic acidosis
- low

If A1C target not achieved after ~3 months of monotherapy, proceed to 2-drug combination (order not meant to denote any specific preference—choice dependent on a variety of patient-and disease-specific factors):

### Dual therapy†

<table>
<thead>
<tr>
<th>Metformin</th>
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<th>Metformin</th>
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</tbody>
</table>

#### Sulfonylurea
- high
- moderate risk
gain
- hypoglycemia
- low

#### Thiazolidinedione
- high
- low risk
gain
- edema, HF, fx
- low

#### DPP-4 inhibitor
- intermediate
- low risk
neutral
- rare
- high

#### SGLT2 inhibitor
- intermediate
- low risk
- loss
- GU, dehydration
- high

#### GLP-1 receptor agonist
- high
- low risk
- loss
- GI
- high

#### Insulin (basal)
- highest
- high risk
- gain
- hypoglycemia
- variable

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ADA. *Diabetes Care* 2015;38(suppl 1):S43.
Adapted with permission from Inzucchi SE, et al. *Diabetes Care* 2015;38:140-149.
Antihyperglycemic Therapy in Type 2 Diabetes

<table>
<thead>
<tr>
<th>Metformin +</th>
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<th>Metformin +</th>
<th>Metformin +</th>
<th>Metformin +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfonylurea</td>
<td>Thiazolidinedione</td>
<td>DPP-4 inhibitor</td>
<td>SGLT2 inhibitor</td>
<td>GLP-1 receptor agonist</td>
<td>Insulin (basal)</td>
</tr>
<tr>
<td>TZD</td>
<td>SU</td>
<td>SU</td>
<td>SU</td>
<td>SU</td>
<td>TZD</td>
</tr>
<tr>
<td>or DPP-4-i</td>
<td>or DPP-4-i</td>
<td>or TZD</td>
<td>or TZD</td>
<td>or DPP-4-i</td>
<td>or DPP-4-i</td>
</tr>
<tr>
<td>or SLGT2-i</td>
<td>or SLGT2-i</td>
<td>or SLGT2-i</td>
<td>or SLGT2-i</td>
<td>or GLP-1-RA</td>
<td>or GLP-1-RA</td>
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</tr>
</tbody>
</table>

If A1C target not achieved after ~3 months of dual therapy, proceed to 3-drug combination (order not meant to denote any specific preference—choice dependent on a variety of patient-and disease-specific factors):

If A1C target not achieved after ~3 months of triple therapy and patient (1) on oral combination, move to injectables; (2) on GLP-1-RA, add basal insulin; or (3) on optimally titrated basal insulin, add GLP-1-RA or mealtime insulin. In refractory patients consider adding TZD or SGLT2-i:

<table>
<thead>
<tr>
<th>Metformin +</th>
<th>Basal Insulin +</th>
<th>Mealtime insulin</th>
<th>or GLP-1-RA</th>
</tr>
</thead>
</table>

ADA. *Diabetes Care* 2015;38(suppl 1):S43.
Adapted with permission from Inzucchi SE, et al. *Diabetes Care* 2015;38:140-149.
# Approach to Starting and Adjusting Insulin in Type 2 Diabetes

## Basal Insulin
(usually with metformin +/- Other noninsulin agent)

- **Start:** 10 U/day or 0.1-0.2 U/kg/day
- **Adjust:** 10-15% or 2-4 U once-twice weekly to reach FBG target.
- **For hypo:** Determine and address cause; ↓ dose by 4 U or 10-20%

### If not controlled after FBG target is reached (or if dose >0.5 U/kg/day), treat PPG excursions with mealtime insulin. (Consider initial GLP-1-RA trial.)

### Add ≥2 rapid insulin injections before meals (“basal-bolus”)

- **Start:** 4U, 0.1 U/kg, or 10% basal dose/meal. If A2C <8%, consider ↓ basal by same amount.
- **Adjust:** ↑ dose by 1-2 U or 10-15% once-twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; ↓ corresponding dose by 2-4 U or 10-20%

### Change to premixed insulin twice daily

- **Start:** Divide current basal dose into 2/3 AM, 1/3 PM or ½ AM, ½ PM.
- **Adjust:** ↑ dose by 1-2 U or 10-15% once-twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; ↓ corresponding dose by 2-4 U or 10-20%

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ADA. *Diabetes Care* 2015;38(suppl 1):S46.
Adapted with permission from Inzucchi SE, et al. *Diabetes Care* 2015;38:140-149.
Treatment of Hypertension
Recommendations: Hypertension/
Blood Pressure Control

• Goals
  • People with diabetes and hypertension should be treated to a systolic blood pressure goal of < 140 mmHg. A
  • Lower systolic targets, such as < 130 mmHg, may be appropriate for certain individuals, such as younger patients, if they can be achieved without undue treatment burden. C
  • Patients with diabetes should be treated to a diastolic blood pressure < 90 mmHg. A
  • Lower diastolic targets, such as < 80 mmHg, may be appropriate for certain individuals, such as younger patients, if they can be achieved without undue treatment burden. B

ADA 2015
Treatment of Dyslipididemia
Recommendations: Dyslipidemia/Lipid Management

- Treatment recommendations and goals
  Intensify lifestyle therapy and optimize glycemic control for patients with: C
  - Triglyceride levels > 150 mg/dL (1.7 mmol/L) and/or
  - HDL cholesterol < 40 mg/dL (1.0 mmol/L) in men and < 50 mg/dL (1.3 mmol/L) in women
  - For patients with fasting triglyceride levels > 500 mg/dL (5.7 mmol/L), evaluate for secondary causes and consider medical therapy to reduce the risk of pancreatitis. C

ADA 2015
## Recommendations for Statin Treatment for People with Diabetes

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk factors</th>
<th>Recommended statin dose*</th>
<th>Monitoring with lipid panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40 years</td>
<td>None</td>
<td>None</td>
<td>Annually or as needed to monitor for adherence</td>
</tr>
<tr>
<td></td>
<td>CVD risk factor(s)**</td>
<td>Moderate or high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overt CVD***</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>40–75 years</td>
<td>None</td>
<td>Moderate</td>
<td>As needed to monitor adherence</td>
</tr>
<tr>
<td></td>
<td>CVD risk factors</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overt CVD</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>&gt; 75 years</td>
<td>None</td>
<td>Moderate</td>
<td>As needed to monitor adherence</td>
</tr>
<tr>
<td></td>
<td>CVD risk factors</td>
<td>Moderate or high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overt CVD</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

* In addition to lifestyle therapy.

** CVD risk factors include LDL cholesterol ≥ 100 mg/dL (2.6 mmol/L), high blood pressure, smoking, and overweight and obesity.

*** Overt CVD includes those with previous cardiovascular events or acute coronary syndromes.
## High-Moderate-and Low Intensity Statin Therapy

<table>
<thead>
<tr>
<th>High-Intensity Statin Therapy</th>
<th>Moderate-Intensity Statin Therapy</th>
<th>Low-Intensity Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily dose lowers LDL-C on average, by approximately ≥50%</td>
<td>Daily dose lowers LDL-C on average, by approximately 30% to &lt;50%</td>
<td>Daily dose lowers LDL-C on average, by &lt;30%</td>
</tr>
<tr>
<td>Atorvastatin (40†)–80 mg</td>
<td>Atorvastatin 10 (20) mg</td>
<td>Simvastatin 10 mg</td>
</tr>
<tr>
<td>Rosuvastatin 20 (40) mg</td>
<td>Rosuvastatin (5) 10 mg</td>
<td>Pravastatin 10–20 mg</td>
</tr>
<tr>
<td></td>
<td>Simvastatin 20–40 mg†</td>
<td>Lovastatin 20 mg</td>
</tr>
<tr>
<td></td>
<td>Pravastatin 40 (80) mg</td>
<td>Fluvastatin 20–40 mg</td>
</tr>
<tr>
<td></td>
<td>Lovastatin 40 mg</td>
<td>Pitavastatin 1 mg</td>
</tr>
<tr>
<td></td>
<td>Fluvastatin XL 80 mg</td>
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<tr>
<td></td>
<td>Fluvastatin 40 mg bid</td>
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<tr>
<td></td>
<td>Pitavastatin 2–4 mg</td>
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</tr>
</tbody>
</table>

2013 ACC/AHA Guideline, Cholesterol
Recommendations: Cardiovascular Disease (1)

- Screening
  - For asymptomatic patients, routine screening for CAD is **not recommended** because it does not improve outcomes as long as CVD risk factors are treated. A
Recommendations:
Cardiovascular Disease (2)

- Treatment (1)
  - To reduce risk of cardiovascular events in patients with known CVD, consider:
    - ACE inhibitor C
    - Aspirin* A
    - Statin therapy* A
  - For patients with a prior MI:
    - β-blockers should be continued for at least 2 years after the event. B
Recommendations: Nephropathy (2)

- Treatment (1)
  - An ACE inhibitor or ARB is not recommended for the primary prevention of diabetic kidney disease in patients who have normal blood pressure and a normal urine-albumin-to-creatinine ratio (UACR) (< 30 mg/g). B
  - Non-pregnant patient with modestly elevated urinary albumin excretion (30–299 mg/day) C or higher levels (> 300 mg/day): A
    - Use either ACE inhibitors or ARBs (not both)
Thank You for Your Attention