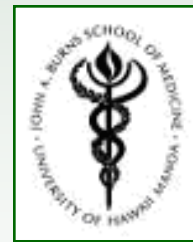




Module 1: Introduction to Diabetes



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Objectives

By the end of this module, students will know...

- What is diabetes?
- What are the symptoms of diabetes?
- What are risk factors of diabetes?
- What are the complications of diabetes?
- Who is diagnosed with diabetes?



What is Diabetes?

Diabetes

- Chronic disease
- Affecting insulin production and usage
- Key Players: Sugar and Insulin
- Without Diabetes:

Food —→ Sugar (Glucose) —→ Energy

- With Diabetes:

Food —→ Sugar (Glucose) ~~→~~ Energy



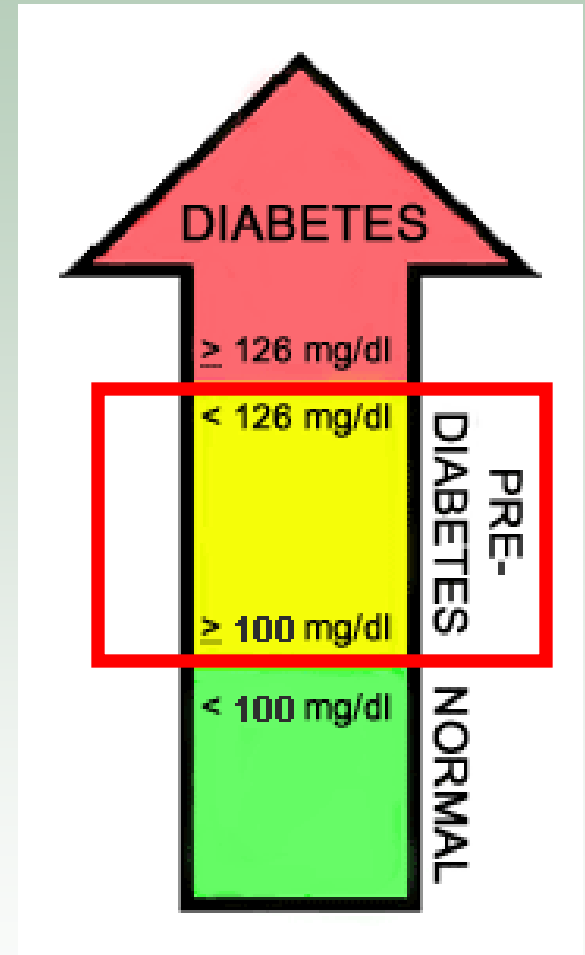


Types of Diabetes

- Pre-diabetes
- Type 1
- Type 2
- Gestational Diabetes

Pre-Diabetes

- Aka “borderline” diabetes, IFG or IGT
- Insulin resistance
- 100 mg/dl blood sugar > 126 mg/dl¹
- Lifestyle changes
- Type 2 diabetes is still preventable
- TAKE ACTION BEFORE DAMAGE IS DONE!!!



* Numbers for fasting glucose test*

Type 1 Diabetes

- Juvenile diabetes
 - Children or adolescents up to age 19
- Various causes
 - Autoimmune disease
- Hyperglycemia caused by insulin insufficiency
- Control mechanism
 - Insulin shots and pumps
- Thin body frame
- 5% of diabetics



Type 2 Diabetes

- 95% of diabetics, most common form
- Previously called adult onset diabetes
- Usually overweight
- Two things happen:
Insulin \uparrow + Resistance \uparrow = Insulin Resistance
- Hyperglycemia caused by insulin inefficiency
- Control = Diet + Physical activity + Medication



+



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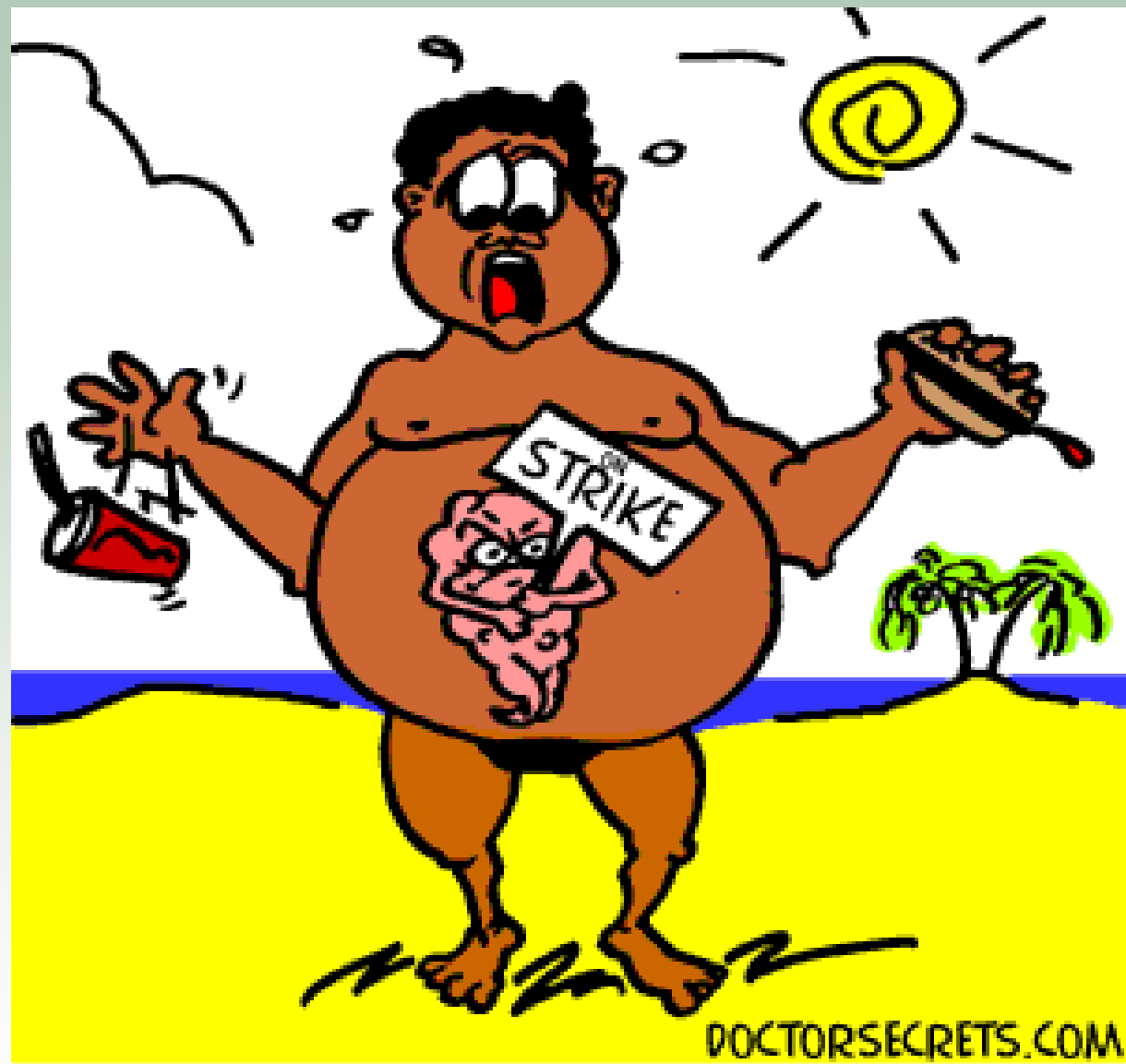
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Prevented
and
Controlled
Diabetes



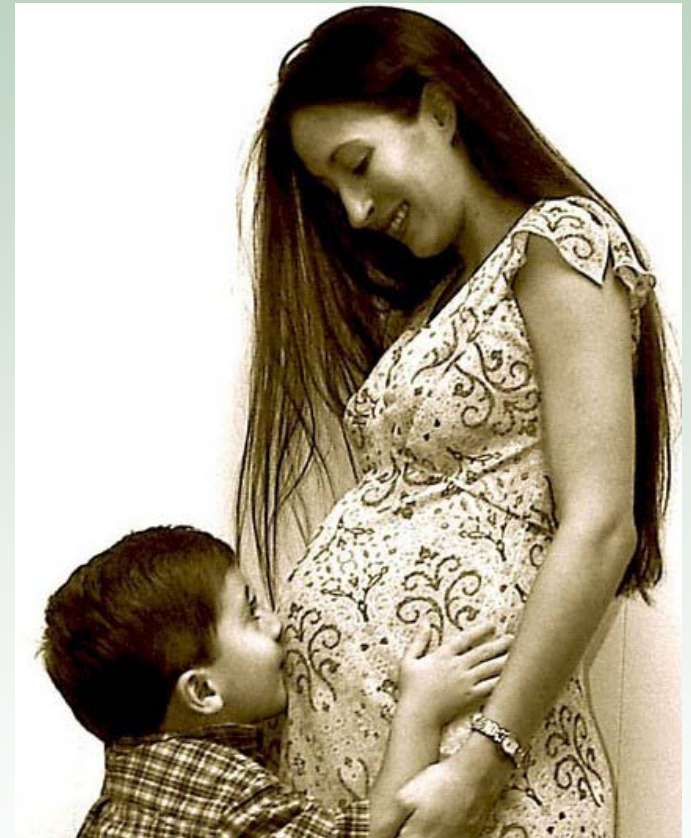
Differences Between Type 1 and Type 2 Diabetes

Characteristics	Type 1	Type 2
Age at onset	Children (usually before the age of 19)	Adults (usually after the age of 30)
Body weight	Thin	Usually overweight
Symptoms	Appear suddenly	Appear slowly
Insulin produced by body	None	Body does not respond properly to the insulin that is produced
Cause	Autoimmune disease	Lifestyle
Control	Inject insulin	Eating healthy, physical activity, losing weight, and maybe medication



Gestational Diabetes

- Develops during pregnancy
- Diagnosed between 24 – 28 weeks
- Increased risk for type 2 diabetes
 - 5% to 10% diagnosed within 1st year after pregnancy





What are Symptoms of Diabetes?

Symptoms of Type 1 Diabetes

- Recall: a juvenile disease
- Symptoms are dramatic
 - Appear suddenly



Symptoms of Type 2 Diabetes

- Recall: adult-onset diabetes; but now affects all ages
- Symptoms are often subtle
 - Appear slowly
 - Can remain undiagnosed for a long period of time





Symptoms of Diabetes: Overview

- Excessive eating (polyphagia)
- Excessive urination (polyuria)
- Excessive thirst (polydipsia)
- Fatigue
- Unexplained weight loss
- Poor wound healing
- Infections
- Altered mental status
- Blurry vision

Symptoms: Excessive Eating (Polyphagia)

- Increased insulin secretion
 - Caused by excessive blood sugar
- Insulin also triggers hunger response
- Increased insulin → increased hunger → increased eating
 - But gain very little weight
 - May even have weight loss



Symptoms: Polyuria and Polydipsia

- Excessive urination
 - Dumping of sugar (water) from the blood
 - Can lead to dehydration



- Excessive thirst (polydipsia)
 - Result of polyuria
 - Counteracted with thirst stimulus
 - Dilution & rehydration



Symptoms: Fatigue

- Glucose = fuel for the body
- No insulin = no glucose as fuel
- Metabolize fat
 - Requires more energy input
- Feel constantly tired & fatigued



Symptoms: Unexplained Weight Loss



- Unable to process eaten foods
- Normal or excessive eating pattern
 - Both lead to weight loss
- Dumping water and sugar in urine
 - Dehydration
 - Weight loss

Symptoms: Wound Healing & Infections



- Poor wound healing
 - High blood sugar impedes WBC function
 - Longer healing time
 - More frequent infections
 - Thickening of BV's
- Infections
 - Common infections result of suppression of immune system
 - Genital yeast infection, UTI's, skin infections
 - Indicator of poor control in known diabetic

Symptoms: Altered Mental Status

- Agitation, unexplained irritability, extreme lethargy, confusion
- Indicative of acute complications:
 - Diabetic Ketoacidosis (DKA)
 - Hyperosmolar hyperglycemia nonketotic syndrome (HHNS)
 - **BOTH OF THESE ARE SERIOUS AND VERY DANGEROUS. YOU NEED TO SEEK MEDICAL ATTENTION IMMEDIATELY!!**



Symptoms: Blurry Vision

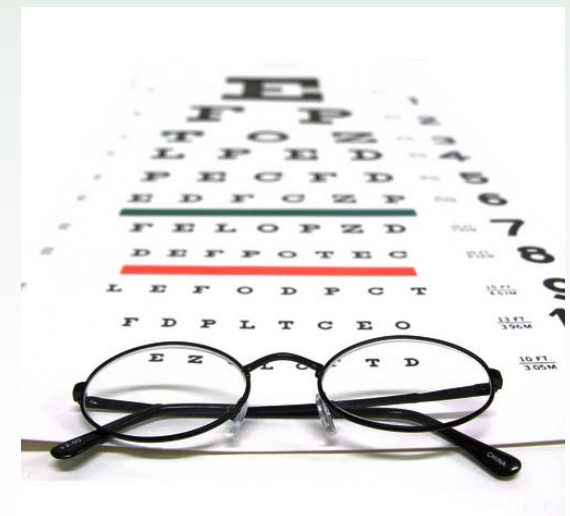
- Not specific for diabetes
- Associated with high blood sugar levels
 - Good indicator for undiagnosed diabetes



Normal Vision



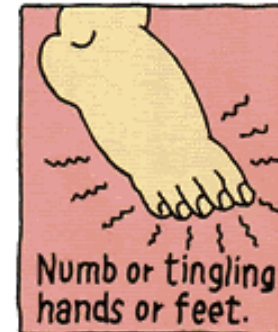
Vision with
Diabetic Retinopathy



Recall: Symptoms

DIABETES

KNOW THE SYMPTOMS





**What are the risk factors
of diabetes?**

Risk factors that cannot be controlled

- Family
 - Immediate member
- Ethnicity
 - Native Hawaiian, Pacific Islander, Filipino, Asian, Native American, Hispanic, African American.
- Age
 - Over 45 years of age



Risk factors that can be controlled

- Weight
 - Obese or overweight
 - Body mass index (BMI) greater than 30
- Diet
 - Unhealthy or healthy
- Lifestyle
 - Active or sedentary
- Stress
 - Management techniques





Complications of Diabetes



Complication of Diabetes

- **D**eath
- **A**mputations
- **K**idney disease
- **I**nfections
- **N**erve damage
- **E**ye disease

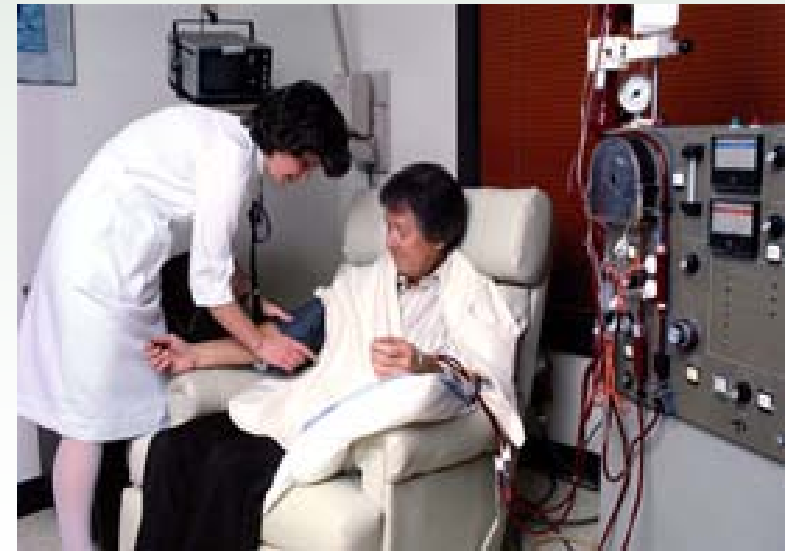
Amputations

- Wound occurs
 - Nerve damage – numbness
 - Infection occurs
 - Amputation
-
- Reduced blood flow
 - Loss of sensation
 - Do not smoke!



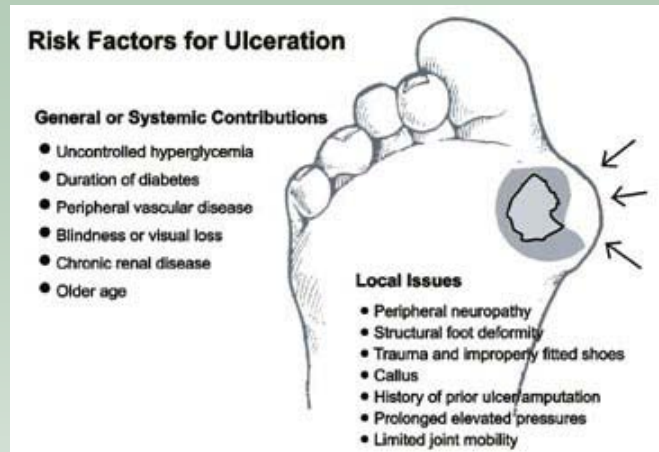
Kidney Disease

- 10% type 2 diabetics develop kidney disease
 - Can lead to kidney failure & end stage renal disease (ESRD)
- Kidneys cannot cleanse and filter blood
- Toxins buildup
- Dialysis



Infections

- Lead to infections:
 - Skin changes
 - Calluses
 - Foot ulcers
- Contribute to infections:
 - Artery disease
 - Nerve disease
- Result of infections:
 - Amputation



Preventive Foot Care Techniques⁹

Maintain good glycemic control through compliance with prescribed medication and diet recommendations.

Perform daily foot inspections, looking for any abnormalities, such as blisters, corns, calluses, or signs of redness.

Cleanse the feet daily with warm water and gentle soap. Do not soak the feet in hot water. Dry the feet well, especially between the toes.

If the skin is dry, apply lotion after washing, but do *not* apply it between the toes because it may promote fungal infections.

Examine the toenails at least once a week. Trim straight across the nail with a nail clipper. To prevent injury, do not attempt to cut around the corners or the side of the nails.

Do not attempt to remove corns or calluses without seeking advice from a physician or podiatrist.

Immediately treat any injuries to the foot or nail area, and seek medical attention if healing is not occurring.

Ensure that shoes fit properly. Always wear closed-toed shoes or slippers. Do not walk barefoot.

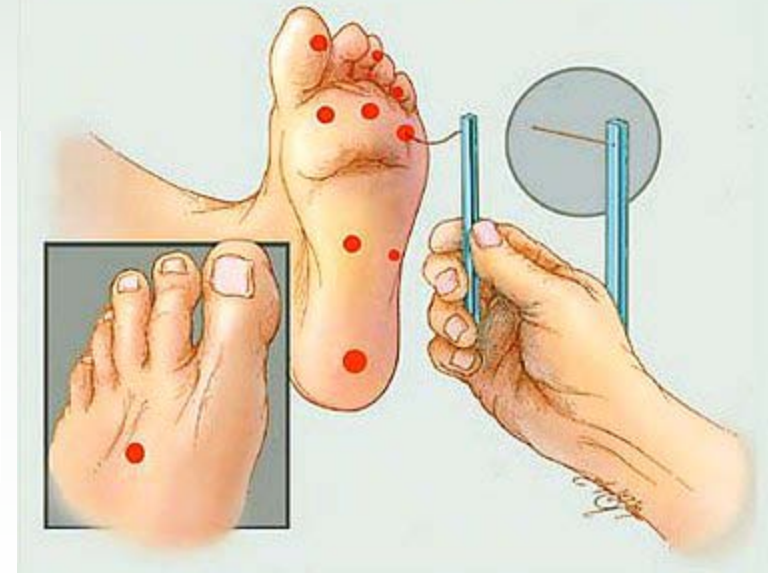
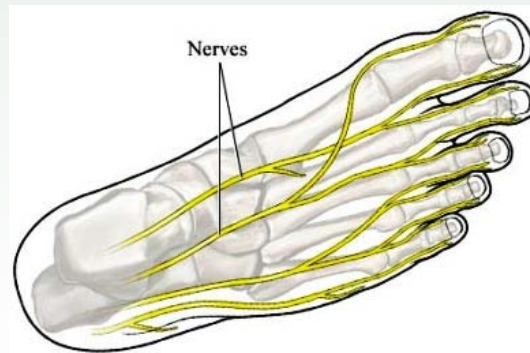
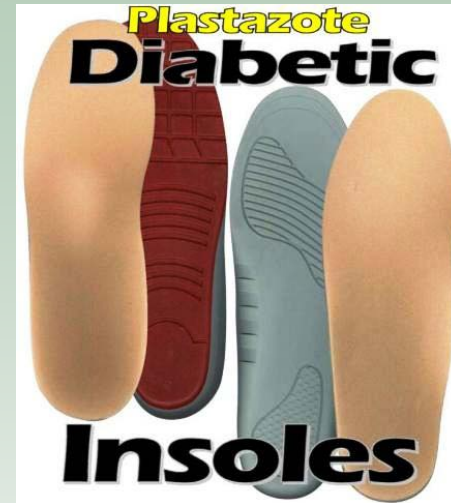
Get thorough foot examinations during all checkups.

Contact your physician if you observe the following:

- Swelling of the foot or ankle area
- Ingrown or infected toenails
- Dry cracks in the skin, particularly in the heel area
- Open sores on the foot that are not healing
- Changes in skin color or appearance
- Corns or calluses

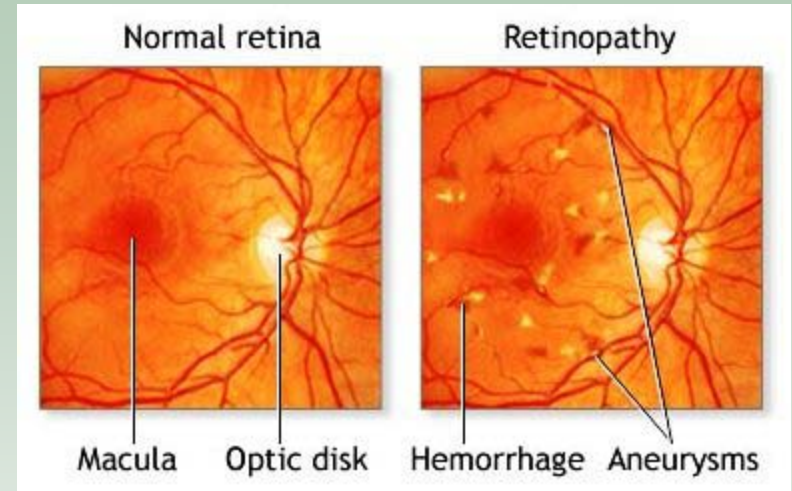
Nerve Damage

- Diabetic neuropathy
 - 60% of diabetics
- No blood flow to nerves
- Symptoms
 - Numbness
 - Burning
 - Aching



Eye Disease

- Diabetic Retinopathy
 - Background retinopathy
 - Proliferative retinopathy
- Cataracts
- Glaucoma



Other Complications

- Cardiovascular health issues
- Oral health issues
- Gestational diabetes complications
 - Newborn health issues
 - Neonatal health issues

Cardiovascular Health Issues

- High blood pressure
- High cholesterol
- Blood-clotting problems
- Stroke
- Heart Attack
- Heart Disease
- Heart failure



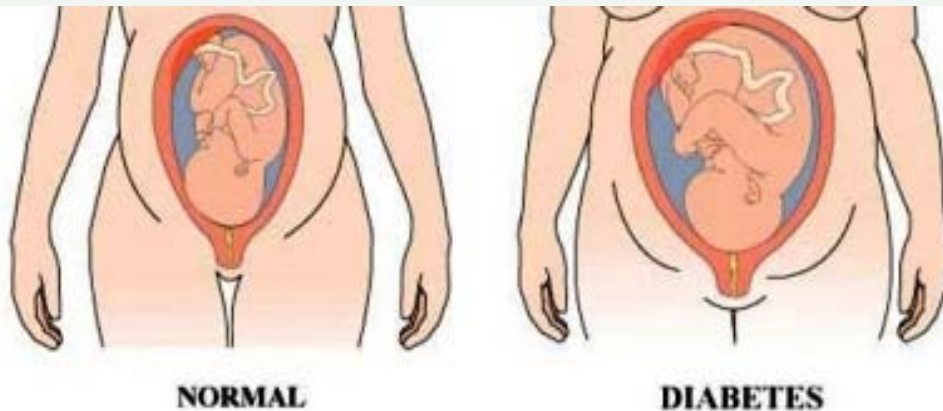
Oral Health Problems

- Increased risk
- Affects immune system
- High glucose levels in saliva causes:
 - Tooth decay
 - Gum disease
 - Gingivitis
 - Periodontitis
- Other oral health issues:
 - Oral microbial infections
 - Taste disturbances
 - Poor healing



Gestational Diabetes Complications

- Affects 2-5%
- Newborn health issues
 - Macrosomia ~ big baby
 - Over 9 lbs at delivery
 - Respiratory issues
- Neonatal health issues
 - Neonatal hypoglycemia (low blood sugar)





Who is diagnosed with
diabetes?

Traditionally...



- Past: healthy diets, active lifestyles
- Present: poor diets, sedentary lifestyle
 - Decline in health of Native Hawaiians and Pacific Islanders

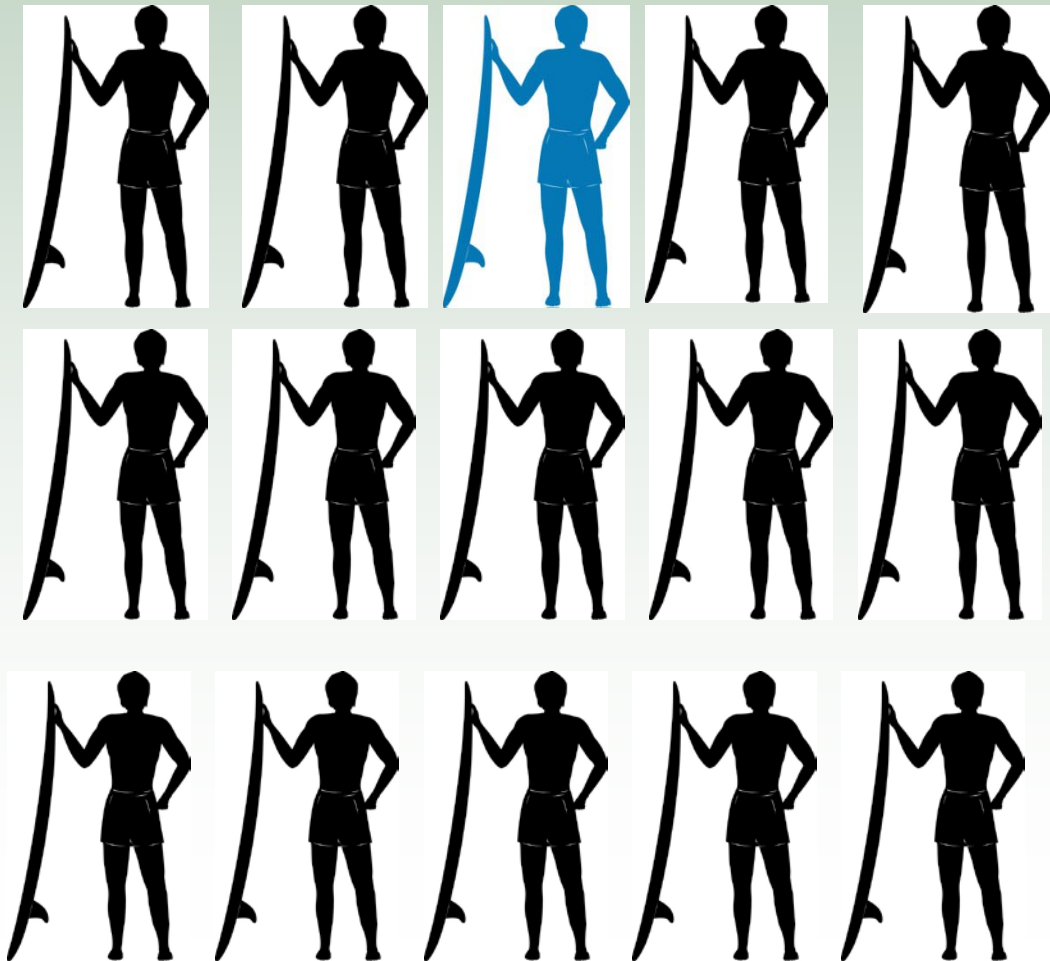
First Western Contact, Capt Cook, Waimea, Kaua'i, January 19, 1778

“...Indians are above middle size, strong, well made...of a dark copper Colour...walk gracefully, run nimbly and are capable of great fatigue.... Women have handsome faces ...good Teeth...agreeable tempers...truly good natured, social, friendly, and humane, possessing much liveliness and a constant flow of good Humour.”

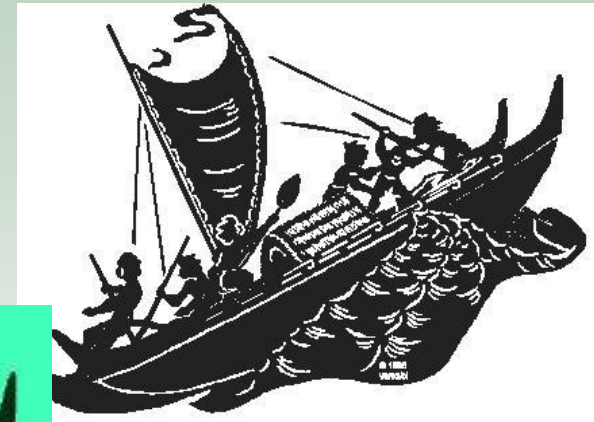


Third Western Contact, January 13, 1779, Kealahou, at Makahiki

Who is diagnosed with diabetes? – State of Hawai‘i



Who is diagnosed with diabetes? – Native Hawaiians



Objectives

Did we cover.....

- What is diabetes?
- What are the symptoms of diabetes?
- What are risk factors of diabetes?
- What are the complications of diabetes?
- Who is diagnosed with diabetes?

Acknowledgement

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