

OBESITY & DIABETES IN BERMUDA

Framework

for a

National Plan of Action

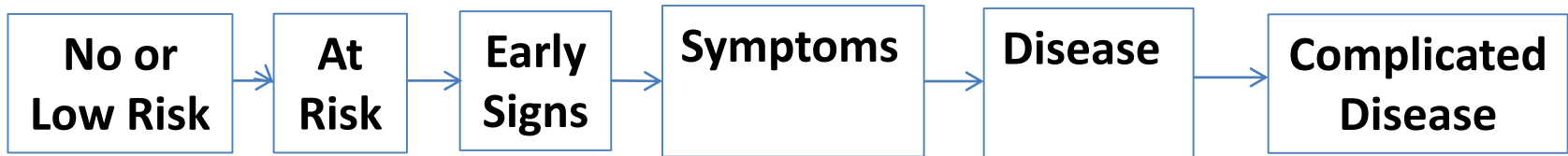
Dr. Janice Chang, MBBS, MPH

Senior Medical Officer, Department of Health, Bermuda

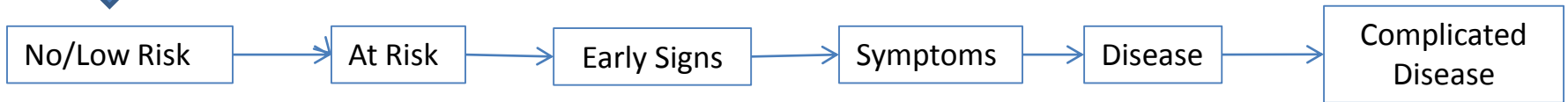
1. THE DISEASE CONTINUUM

or

THE NATURAL HISTORY OF DISEASE

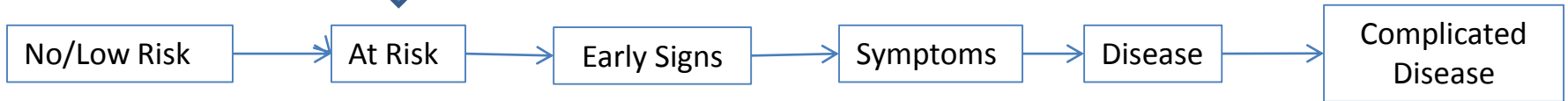


OBESITY CONTINUUM



Healthy weight
Healthy diet
Physical activity
No family history of obesity or genetics
No other risk factors
(availability / affordability of healthy foods; water available for drinking)

OBESITY CONTINUUM



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Unhealthy diet **

Physical inactivity **

Weight increase **

Older age (>45 years)

Pregnancy

Genetics

Family Lifestyle

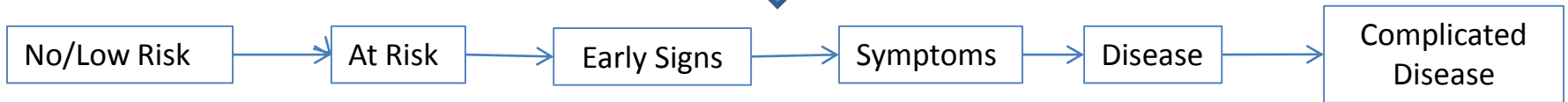
Biological / Medical conditions

Socio-economic

Lack of sleep

Quitting smoking tobacco

OBESITY CONTINUUM

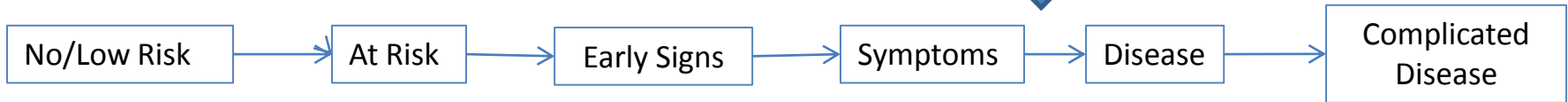


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Overweight (BMI >25-29.9)
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- Increased BMI
- Elevated blood sugar
- Increasing blood fats and cholesterol
- Reduced physical stamina and ability to exercise
- Cravings for unhealthy foods – high fat, high sugar, alcohol

OBESITY CONTINUUM



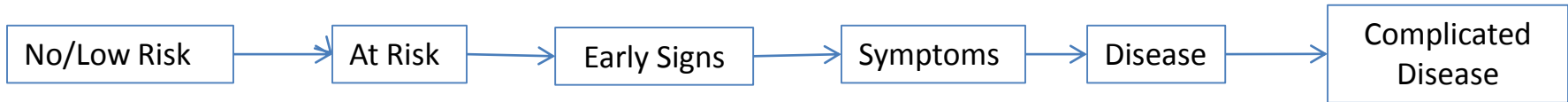
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Obese (BMI 30+)
- High blood fats and cholesterol
- Risks of other diseases e.g. Heart disease, Diabetes, Hypertension, Kidney failure, Cancers etc
- Complicated course and treatment for common ailments

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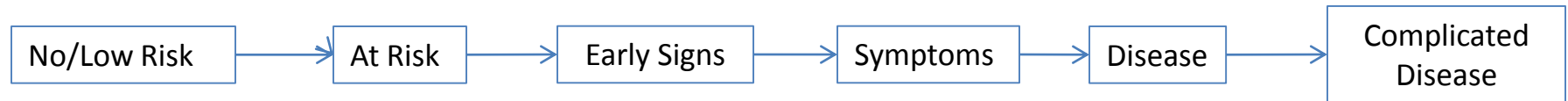
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Complicated and/or morbid obesity with co-morbidities
 - Gynaecological problems
 - Erectile dysfunction
 - Osteoarthritis
 - Sleep apnea
 - Hypertension
 - High blood cholesterol
 - Fatty Liver disease
 - Heart disease
 - Diabetes
 - Kidney disease (CKD and renal failure)
 - Stroke
 - Cancer

DIABETES CONTINUUM



Healthy weight

Healthy diet

Physical activity

No family history of Diabetes

Young age

No other risk factors
(e.g. ethnicity, personal and family medical history)

Overweight/obese **

Unhealthy diet **

Physical inactivity **

Family history of Diabetes

Older age (>45 yrs)

Other risk factors (e.g. high-risk ethnicity, personal and family medical history of disease)

Elevated blood glucose

- prediabetes
- Impaired fasting glycemia (IFG)
- Impaired glucose tolerance (IGT)
- detected by blood glucose screening tests

Elevated blood glucose & HbA1c >6.5% - diabetes

- Symptoms of diabetes present (polydipsia, polyuria, unexplained weight loss etc)
- poor wound healing
- Hyperglycemia

Complicated diabetes with co-morbidities

- Co-morbidities
- Hypertension
- High blood cholesterol
- Heart disease
- Stroke
- Blindness (retinopathy)
- Kidney disease (CKD and renal failure)
- Large & small blood vessel disease
- Erectile Dysfunction
- Neuropathy
- Lower limb amputations

RISK FACTORS FOR OBESITY & TYPE 2 DIABETES	BERMUDA Data
Ethnicity	
Early childhood nutrition*	
Family history of diabetes	52.2%
Previous gestational diabetes	
Older age (over 45 years)	44% (2014); 51% (2020 est)
Unhealthy diet	81.9% - inadequate fruit & vege 50% - 1 or more sugary drink/day
Physical inactivity	27.1%
Overweight and obesity	74.6% (M=79%, F=70%)
Active smoking	13.9%

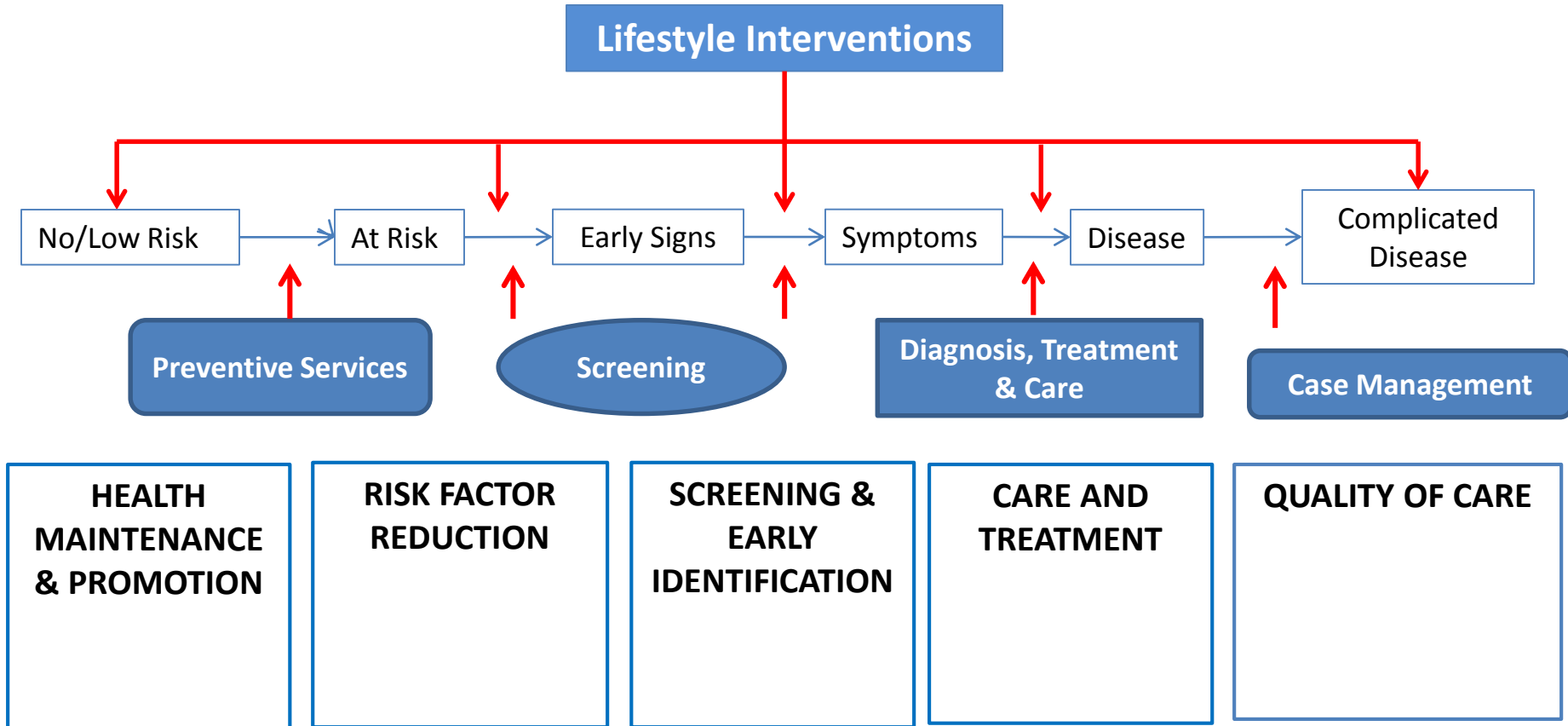
97% of Bermudians have 1 or more risk factor for NCD

*SOURCE: Risk factors: International Diabetes Foundation website
Bermuda statistics: STEPS Survey 2014*

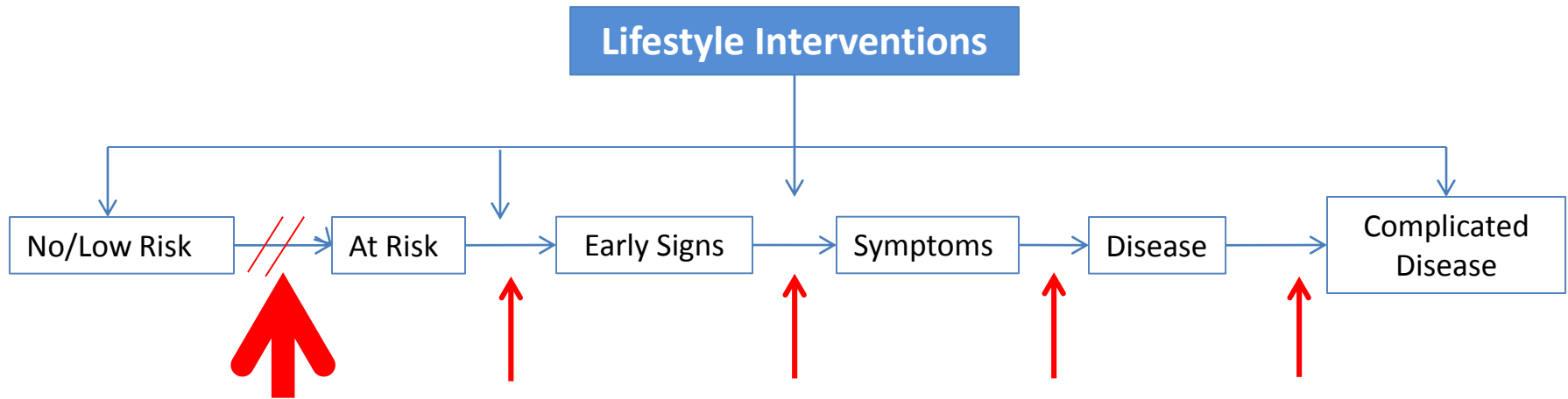
2. PREVENTION OF DISEASE

HEALTHY, NORMAL	AT-RISK	SIGNS: FIRST DEFECT/LESION	FIRST SYMPTOM	DISEASE, DISABILITY
Social & Environmental Determinants	Risk & Protective Factors	Pre-clinical Phase	Clinical Phase	Post-clinical Phase
PRIMORDIAL PREVENTION	PRIMARY PREVENTION	SECONDARY PREVENTION		TERTIARY PREVENTION
GENERAL POPULATION	SUSCEPTIBLE POPULATION	ASYMPTOMATIC POPULATION	SYMPTOMATIC OR DIAGNOSED POPULATION	
Alter social structures and thereby underlying determinants	Alter exposures that lead to disease	Detect and treat pathological process at an earlier stage when treatment can be more effective		Prevent relapses and further deterioration via follow-up care and rehabilitation
REDUCE RISKS	REDUCE DISEASE INCIDENCE	REDUCE PREVALENCE & CONSEQUENCES		REDUCE COMPLICATIONS OR DISABILITY
Health promotion	Immunization Risk Reduction Screening for Risks Clinical Preventive Services	Screening for Disease Markers Clinical Preventive Services Treatment & Care		Treatment & Care Secondary or specialist care Rehabilitation

3. INTERVENTION POINTS

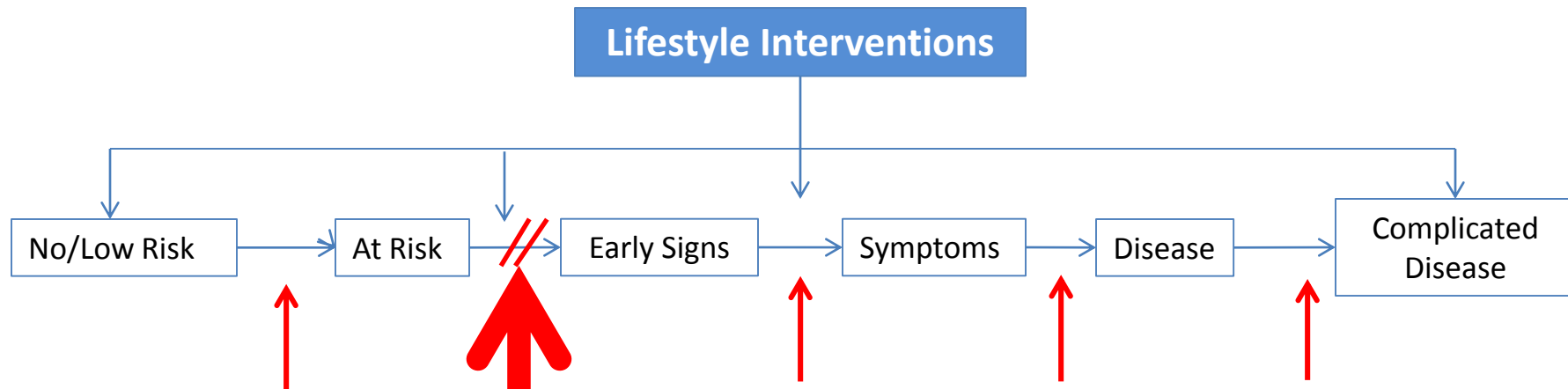


INTERVENTION POINTS, EXPECTED OUTCOMES & TARGETS



EXPECTED OUTCOMES	TARGETS
<p><u>1. SOCIAL DETERMINANTS / HEALTH MAINTENANCE & PROMOTION</u></p> <p>Increase the prevalence of health-promoting behaviours AND</p> <p><i>Reduce the prevalence of behavioural /other modifiable risk factors for obesity and diabetes</i></p>	<p>Increase the proportion of adults/children who:</p> <ul style="list-style-type: none"> - are at a healthy weight. - report consuming 5 or more servings of fruit and vegetables daily. - report participating in physical activity daily & meet the WHO guidelines. - consume only water instead of sugar-sweetened beverages (or consume zero sugar-sweetened beverages daily). <p>Increase the proportion of adult non-daily smokers of tobacco.</p>

INTERVENTION POINTS, EXPECTED OUTCOMES & TARGETS



EXPECTED OUTCOMES

2. RISK FACTOR REDUCTION

Increase prevention behaviours in persons at high-risk for diabetes and obesity (*i.e. persons who are overweight or obese, physically inactive, poor dietary habits, and with elevated blood glucose*)

TARGETS

Reduce the proportion of adults/children who:

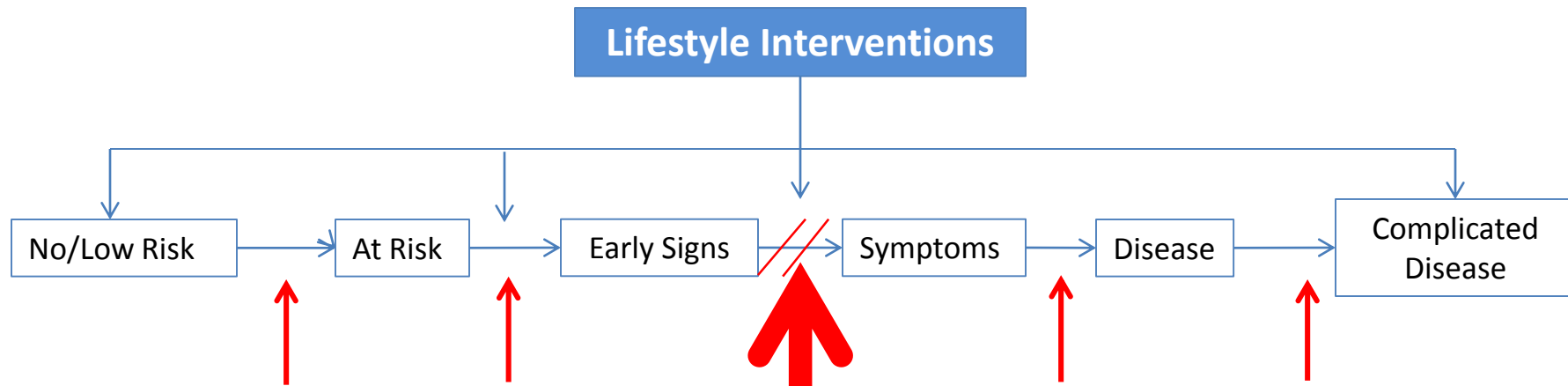
- are overweight/obese.
- are physically inactive / lack vigorous physical activity.
- consume 3 or more sugar-sweetened beverages daily.

Increase the proportion of adults who **during last year**:

- being overweight or obese, lose 10% of their body weight
- having elevated blood glucose, reduce and maintain blood glucose levels

Reduce the prevalence of prediabetes.

INTERVENTION POINTS, EXPECTED OUTCOMES & TARGETS



EXPECTED OUTCOMES

3. SCREENING & EARLY IDENTIFICATION

Early identification and appropriate management of:

- pre-diabetes & diabetes
- overweight & obesity

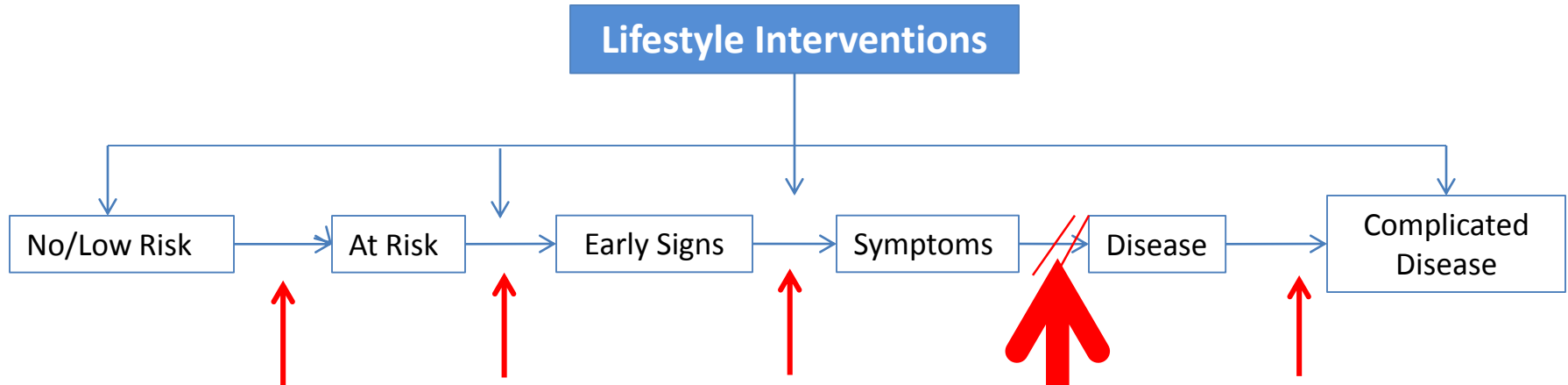
TARGETS

Increase the proportion of persons who have been screened & diagnosed with pre-diabetes & diabetes and overweight & obesity and effectively managed; who report:

- increasing their levels of physical activity.
- trying to lose weight.
- reducing the amount of fat and calories in their diet.
- receiving lifestyle advice and prescribed adequate treatment.

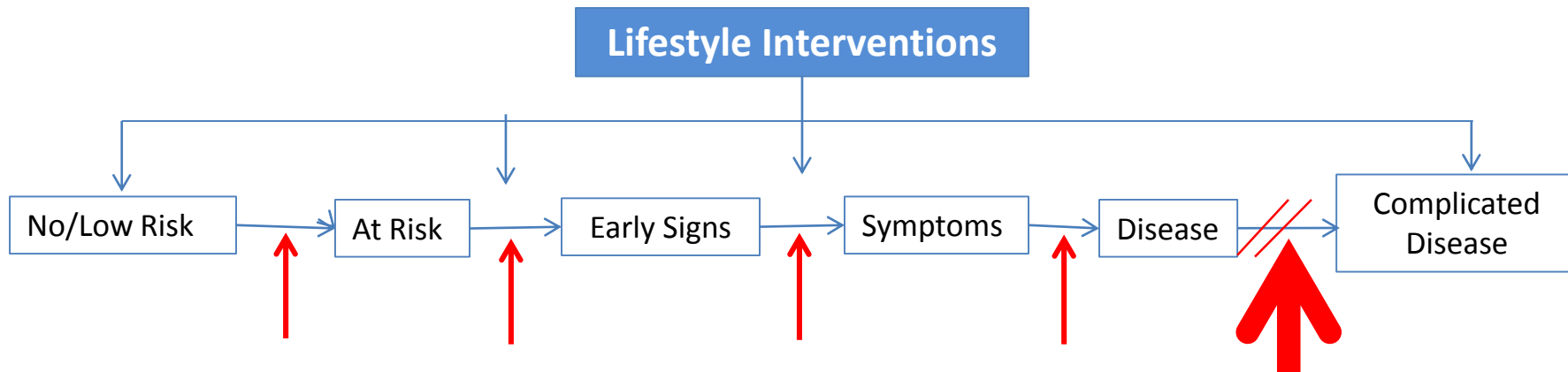
Reduce the incidence of obesity and of diabetes (i.e. number of new cases per 1,000 population aged 18-84 years).

INTERVENTION POINTS, EXPECTED OUTCOMES & TARGETS



EXPECTED OUTCOMES	TARGETS
<p>4. <u>CARE AND TREATMENT</u></p> <p>Among diagnosed persons:</p> <ul style="list-style-type: none"> • Improved glycemic control for diabetes • Improved weight control for obesity 	<p>Among persons diagnosed with <u>diabetes</u>:</p> <ul style="list-style-type: none"> - reduce the proportion with an A1c value greater than 9%. - increase the proportion with an A1c value less than 7%. - increase the proportion who lost at least 5/7/10% of body weight. <p>Among persons diagnosed with <u>obesity</u>:</p> <ul style="list-style-type: none"> - increase the proportion who lost at least 10% of body weight.

INTERVENTION POINTS, EXPECTED OUTCOMES & TARGETS



EXPECTED OUTCOMES	TARGETS (from X% to Y% by YEAR)
<p>5. <u>QUALITY OF CARE</u> Improved quality of care provided to persons diagnosed:</p> <ul style="list-style-type: none"> • with diabetes • with obesity. 	<p>Increase the proportion of persons diagnosed with diabetes who:</p> <ul style="list-style-type: none"> - have blood glucose self-monitoring devices and perform self-monitoring at least once daily; - have an annual dental, foot, dilated eye and urinary micro-albuminuria examination. <p>Reduce, among persons diagnosed with diabetes:</p> <ul style="list-style-type: none"> - the rate of lower extremity amputations. - the diabetes death rate. <p>Increase the proportion of persons diagnosed with obesity who receive nutritional and specialist services referral for weight loss.</p>

4. Life Course Approach

	Pregnancy & Birth (foetus in- utero)	Infancy, Toddler and Pre-School- aged	School- aged child	Young Adult of Reproductive Age	Older Adult	Seniors / Elderly
Age Range	Gestational period	0-<5 years	5-18 years	18-44 years	45-64 years	65+ years

A model that suggests that **health outcomes for individuals, families, and communities depend on the interaction of various protective and risk factors throughout the life course.** These factors are related to **psychological, behavioral, biological** and **environmental influences**, as well as **access to health services.**

The approach provides a more comprehensive vision of health and its determinants, and calls for the development of health service networks that are **centred on people's needs at each stage of their lives** and **address the social determinants of health.**

Strategies & Activities - Life Course Approach

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4. CARE & TREATMENT						
5. QUALITY OF CARE						

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HALTING THE RISE IN OBESITY AND DIABETES

Life Stage: Pregnancy

INTERVENTION POINTS	
<p>1. Social Determinants/Health Promotion</p> <p>Health education – antenatal and parenting classes</p> <p>Health promotion – preconception care, weight management, diet and physical activity, lifestyle interventions</p> <p>Risk avoidance regarding risky lifestyles and behaviours; avoidance of risks</p> <p>Promotion of breastfeeding</p> <p>Access to quality, comprehensive prenatal care</p>	<p>2. Primary Prevention/Risk Reduction</p> <p>Risk factor screening and identification</p> <p>Risk reduction regarding risky lifestyles and behaviours; avoidance of risks</p> <p>Preconception care and counselling</p> <p>Health education – antenatal diet, physical activity.</p>
<p>3. Screening & Early Detection</p> <p>Routine antenatal care guidelines and referral pathways</p> <p>Screening guidelines for blood glucose in preconception and antenatal care</p>	<p>4. Care and Treatment</p> <p>Protocols for management of prediabetes and diabetes in pregnancy</p> <p>Protocols for management of overweight and obesity in pregnancy</p> <p>Statutory reporting of diabetes diagnoses for National Register</p>
<p>5. Quality of Care</p> <p>Adherence to national guidelines for clinical management</p> <p>Clinical Care Quality Reporting system with monitoring and accountability mechanisms</p>	

PRECONCEPTION CARE ENCOUNTERS

Preconception care - a set of interventions to identify and modify biomedical, behavioral, and psychosocial risks to a woman's health or pregnancy outcome through prevention and management. Preconception care should be considered as a continuum of care throughout a woman's reproductive life; any form of contact with a health care worker to prepare for a healthy pregnancy.

- Measure Height & Weight, Calculate BMI
- Provide specific information
- Counsel on lifestyle choices and risky behaviours; recommend diet, nutrition and physical activity.
- Written Referral to Nutrition services, as indicated.

Preconception care may include:

- Provision of specific information
- Screening for and treating obesity-related health problems
- Customized or general dietary and exercise advice.

• Women with diabetes should be counseled on optimizing glycemic control, and pregnancy should be discouraged until control is achieved.

Gestational Weight Gain (GWG) Guidelines* (Institute of Medicine)

Pre-Pregnancy BMI	Recommended Weight Gain	COMMENTS
Underweight (BMI <18.5)	25-35 lbs / 11.4-15.9 kg	<p>1/3 of women gain excessive weight during their pregnancy. Maternal obesity is associated with several negative pregnancy outcomes.</p> <ul style="list-style-type: none"> • Inform pregnant woman of appropriate weight gain at the beginning of pregnancy • Advice on diet during pregnancy should be more intensive for overweight or obese woman • Provide advice on physical activity during pregnancy
Normal Weight (BMI 18.5 – 24.9)	25-35 lbs / 11.4-15.9 kg	
Overweight (BMI 25.0-29.9)	15-25 lbs / 6.8-11.4 kg	
Obese (BMI ≥30.0)	11-20 lbs / 5.0-9.0 kg	

* For the overweight or obese woman who is gaining less than the recommended amount but has an appropriately growing fetus, no evidence exists that encouraging increased weight gain to conform with the current IOM guidelines will improve maternal or foetal outcomes.

PREGNANT CLIENT ENCOUNTERS

PREGNANT CLIENT ENCOUNTERS	EVIDENCE
<p>First Prenatal Visit (GA: 8-12 wks)</p> <ul style="list-style-type: none"> • Measure Height & Weight, Calculate BMI • Recommended Gestational Weight Gain based on BMI • Elicit history of Type 2 Diabetes, Gestational DM, large infant (>9 lbs/4 kg), 1st degree family member with DM • Test for undiagnosed Type 2 DM if risk factors present (i.e. pre-pregnancy BMI >30, personal history of GDM, known impaired glucose metabolism) at first visit • Counsel regarding excessive weight gain, recommend diet and physical activity • Apply Nutrition Screening tool. 	<ul style="list-style-type: none"> • Women with complex medical conditions (obesity, Diabetes) must be offered referral for assessment by a consultant obstetrician. Referral pathways should be documented. • Structured Maternity Records and Client Passport & Itinerary should be available, showing time-line of prenatal care and what to expect at each visit. • Informing and educating women on appropriate weight gain before and in the beginning of pregnancy may contribute to better dietary compliance. • Diet or exercise, or both, during pregnancy can reduce the risk of excessive GWG, particularly for high-risk women. • Exercise appears to be an important part of controlling weight gain in pregnancy.

HALTING THE RISE IN OBESITY AND DIABETES

Life Stage: Pregnancy

<p>Every 4 weeks for first 28 weeks</p> <ul style="list-style-type: none"> • Weight – review total weight gain for pregnancy • Urine dip for glucose • Encourage breastfeeding 	<ul style="list-style-type: none"> • Dietary advice interventions for pregnant women may prevent GDM; decrease total GWG; and long-term postpartum weight retention. • Most diets (except high unsaturated or mono-unsaturated fatty acid diet) demonstrated fasting glucose improvement when compared to GWG advice only. DASH-style diet appeared optimal on fasting glucose. • Women receiving Lifestyle interventions were more likely to achieve postpartum weight goals, but no clear evidence of benefit for development of type 2 DM. • Overweight and obese pregnant women benefit from lifestyle, dietary and activity advice which restricts maternal weight gain and lowers prevalence of GDM.
<p>Every 2 weeks until 36 weeks gestation</p> <ul style="list-style-type: none"> • Screen for GDM at 24-28 weeks gestation in pregnant women not previously known to have diabetes (Do NOT Use HbA1c test) • Offer prenatal / childbirth classes, incl: <ul style="list-style-type: none"> - weight management during pregnancy - promoting breastfeeding - preventing childhood obesity 	
<p>Every week after 36 weeks</p>	
<p>Postpartum visit</p> <ul style="list-style-type: none"> • Weight & BMI • Review nutrition and exercise • Women with GDM should be screened for DM 6-12 weeks postpartum • Women with GDM should be followed up with screening for development of prediabetes or diabetes 	<ul style="list-style-type: none"> • Women with a history of GDM found to have prediabetes should receive intensive lifestyle interventions or Metformin to prevent diabetes. • Women with a history of GDM should have lifelong screening for development of diabetes or prediabetes, every 3 years.

MANAGEMENT OF DIABETES IN PREGNANCY

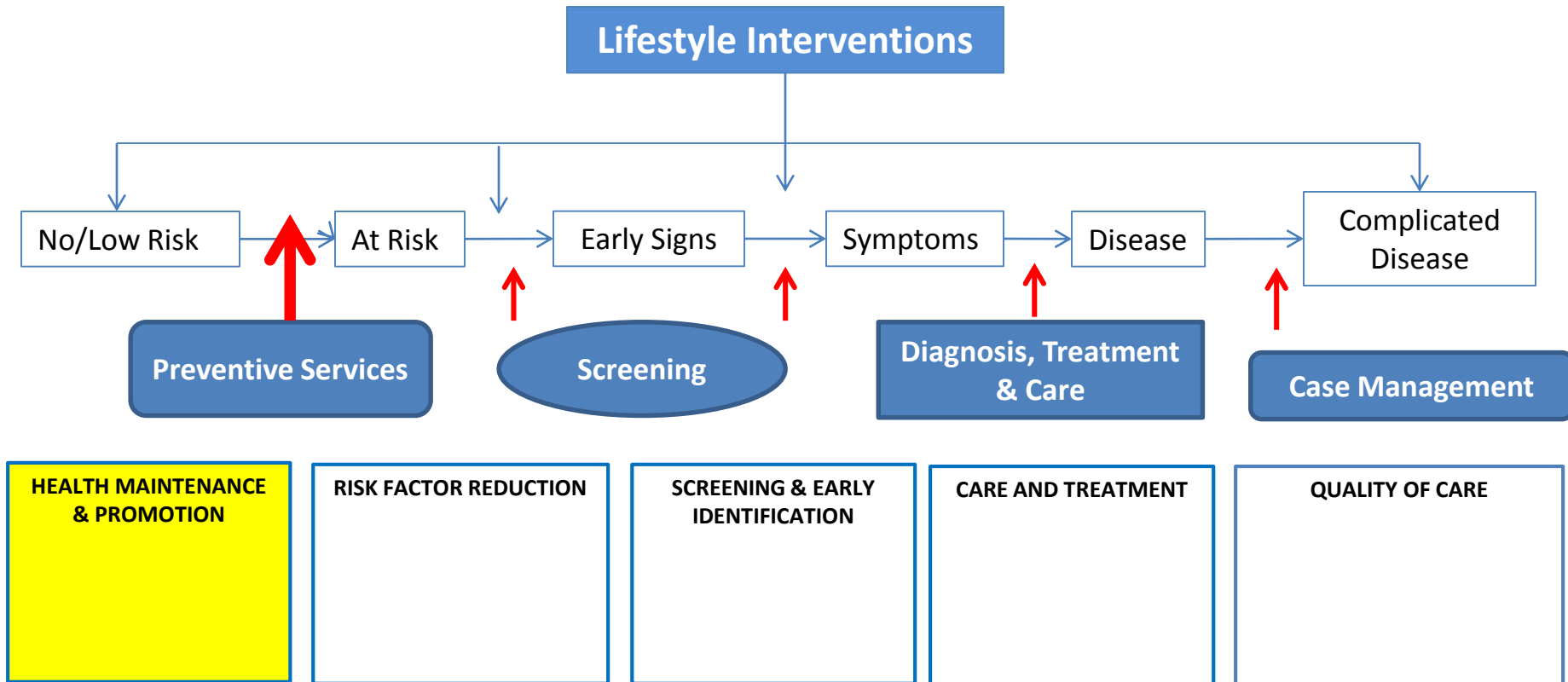
- **Pre-existing Diabetes:** preconception counseling; family planning/effective contraception; importance of glycemic control; risks of diabetic retinopathy: dilated eye exam prior or in 1st trimester, repeat every trimester and for 1 year post-partum.
- **GDM** – lifestyle change; medication (if needed).
- **General principles of management of DM in pregnancy** – avoid teratogenic meds if unreliable contraception; self-monitoring of blood glucose; modified targets for control using HbA1c and BP (for co-morbid hypertensives)

KEY: BMI = Body Mass Index GWG = Gestational Weight Gain GDM = Gestation Diabetes Mellitus DM = Diabetes Mellitus

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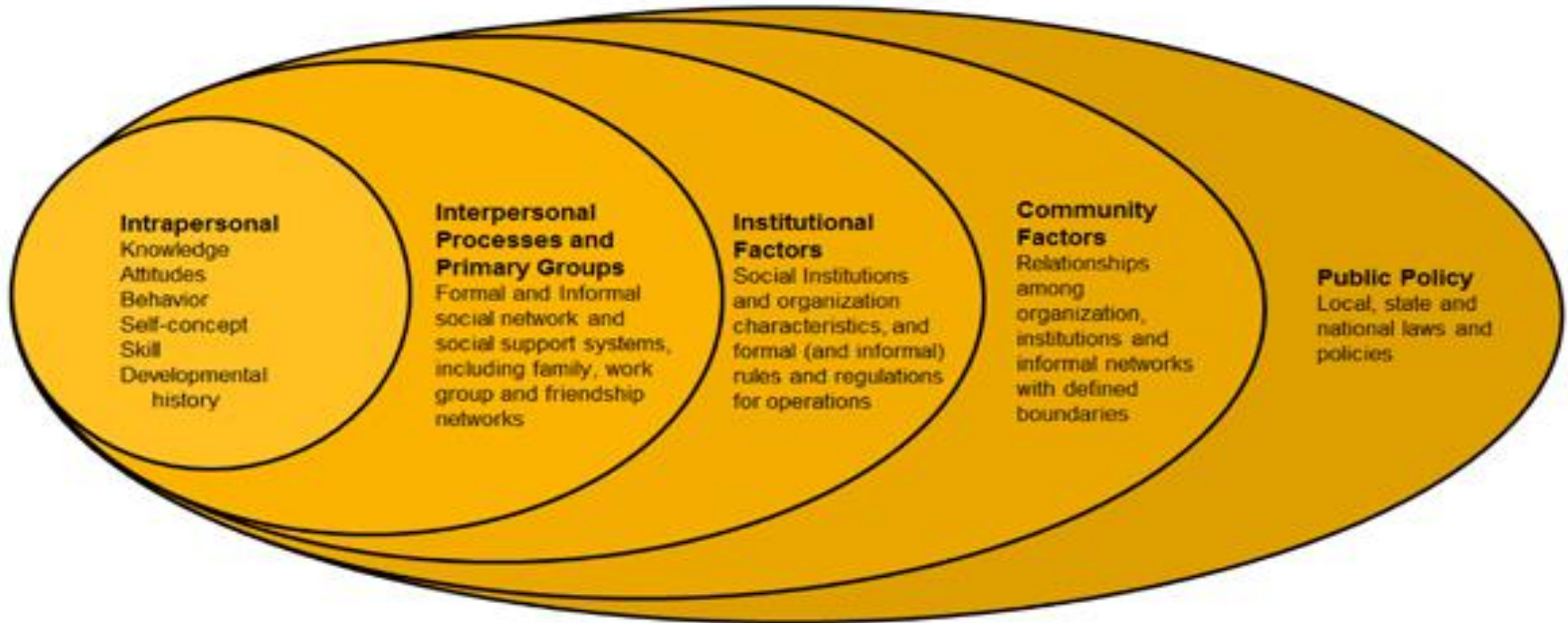
INTERVENTION POINTS



Strategies & Activities - Life Course Approach

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HEALTH PROMOTION Strategies

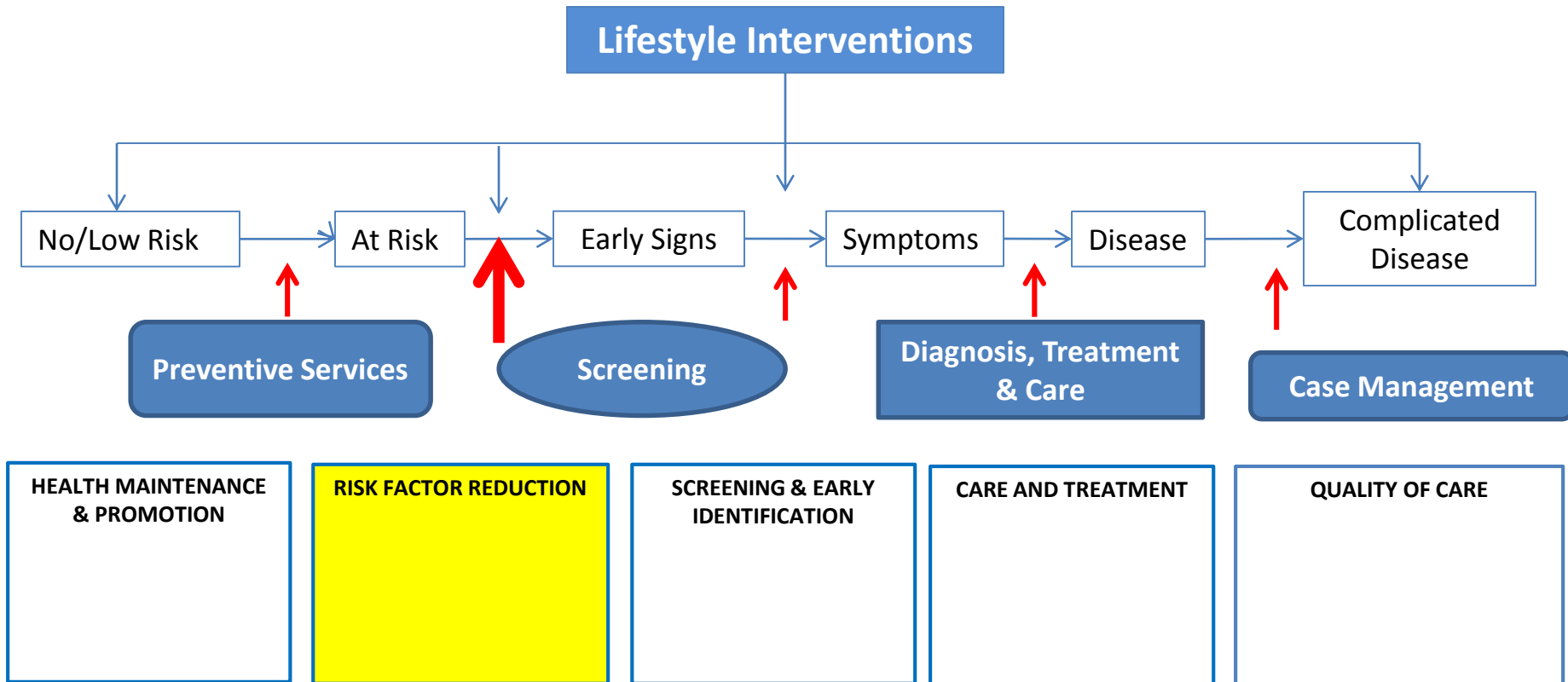


1. Building healthy public policies
2. Creating supportive environments
3. Strengthening community action
4. Developing personal skills
5. Re-orienting health services
6. Creating alliances (e.g. with the Media, non-health sector)

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INTERVENTION POINTS



HALTING THE RISE IN OBESITY AND DIABETES

Life Stage: School-aged Child (5 - 18 yrs)

INTERVENTION POINTS	
<p>1. Social Determinants/Health Promotion</p> <p>National policies on taxing sugar-sweetened beverages, food labelling, marketing of foods to children etc</p> <p>School Health & family life Education policy, health education curriculum incl. nutritional literacy</p> <p>Health Education/Promotion on avoidance of risk factors for obesity & diabetes</p> <p>Parental and Care-giver education on nutrition and physical activity</p> <p>National policy for inclusion of quality physical education in schools</p> <p>Standards for nutrition and physical activity in schools</p> <p>Premier's Youth Council on Fitness (PYFC)</p> <p>Public awareness and education on childhood obesity</p>	<p>2. Primary Prevention/Risk Reduction</p> <p>School health assessments and referral process</p> <p>Public awareness and education on childhood obesity</p> <p>3. Screening & Early Detection</p> <p>Routine weight and blood glucose screening guidelines (0-18 years)</p> <p>Implementation of weight and blood glucose guidelines for monitoring</p> <p>Comprehensive School- and community-based screening services (5-18 yrs)</p> <p>Referral resources for family support and health education</p> <p>Statutory reporting for Diabetes Register</p> <p>4. Care and Treatment</p> <p>Protocols for management of excessive weight gain, overweight and obesity.</p> <p>Protocols for management of impaired glucose metabolism in children</p> <p>Referral resources for development of self-care skills, family support and health education</p> <p>Statutory reporting of diabetes diagnoses for National Register</p>
<p>5. Quality of Care</p> <p>Adherence to national guidelines for clinical management</p> <p>Clinical Care Quality Reporting system with monitoring and accountability mechanisms</p>	
Defining Childhood Obesity (5-18 years)	
Weight Category	BMI-for-age
Underweight	<5 th percentile
Normal Weight	5 th to <85 th
Overweight	>85 th and <95 th
Obese	>95 th
<p><i>For children and teens, BMI is age and sex-specific and is often referred to as BMI-for-age. A child's weight status is determined using an age- and sex-specific percentile for BMI rather than the BMI categories used for adults, because children's body composition varies by age and gender. BMI level (among children and teens) is expressed relative to other children of the same age and sex.</i></p>	
HEALTH PROMOTION	EVIDENCE
<p>Supportive Policies</p> <p>Principals, Board chairs, parents and pupils, should assess the whole school environment and ensure that all school policies help children and young people to maintain a healthy weight, eat a healthy diet and be physically active, in line with existing standards and guidance:</p> <ul style="list-style-type: none"> building layout and recreational spaces, catering (including vending machines) and the food and drink children bring into school the taught curriculum including Physical Education (PE) and certification for possible external examination school travel plans and provision for cycling relating to the National Healthy Schools Programme. WHO Health Promoting Schools framework (e.g. Bermuda's Healthy Schools programme and PYFC). Policies for meeting guidelines for physical activity, and inclusion in School Improvement Plan 	<p><i>Activities included in beneficial programmes:</i></p> <ul style="list-style-type: none"> Curriculum on healthy eating, physical activity and body image integrated into regular curriculum; More sessions for physical activity and the development of fundamental movement skills throughout the school week Improved nutritional quality of foods made available to students Creating an environment and culture that support children eating nutritious foods and being active throughout each day Providing support for teachers and other staff to implement health promotion strategies and activities (e.g. professional development, capacity building activities) Engaging with parents to support activities in the home setting to encourage children to be more active, eat more nutritious foods and spend less time in screen-based activities
PRIMARY PREVENTION	EVIDENCE
<ul style="list-style-type: none"> Measure Height/Length & Weight, calculate BMI percentile and document at all Child health care visits. Anthropometric policy recommends at least annually for 5-18 year old. Diet and nutritional history Diet and physical activity interventions with school, home and community components. Involvement of School Nurses, Therapists etc in implementing effective school-based obesity interventions Implementation of Healthy Schools programme, and PYFC initiatives (referrals to PYFC Case Manager for Individual Wellness Plans). Formalized Referral System emphasizing feedback. 	<ul style="list-style-type: none"> Multi-component behaviour-changing interventions that incorporate diet, physical activity and behaviour change may be beneficial in achieving small, short-term reductions in BMI, BMI z score and weight in children aged 6 to 11 years. School-based interventions (during or after-school) can include: <ul style="list-style-type: none"> parent education and counseling staff education, physical activity, student education and counseling, parent participation, at school or via telephone consultation.

HALTING THE RISE IN OBESITY AND DIABETES

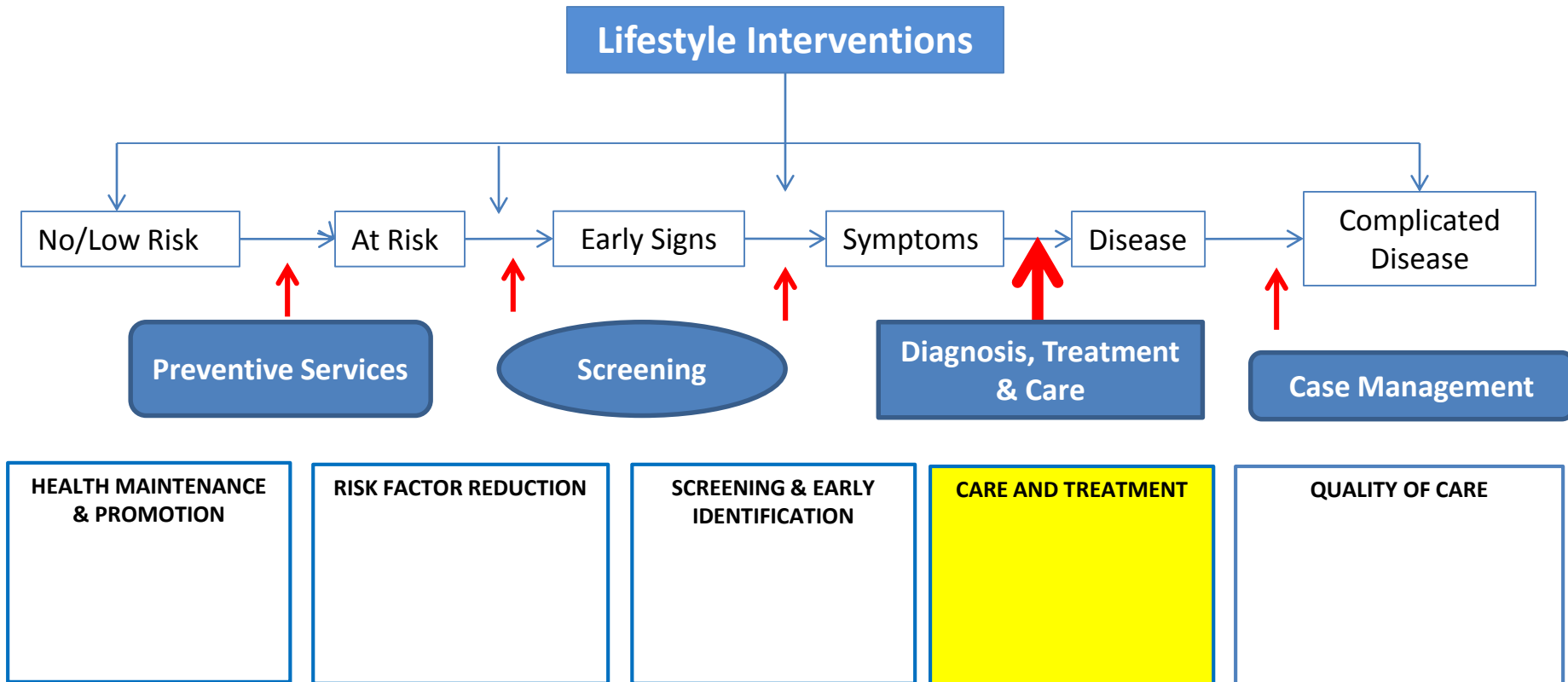
Life Stage: School-aged Child (5 - 18 yrs)

SCREENING AND EARLY DETECTION	EVIDENCE
<p>Routine "Well Child" Growth & Weight Monitoring</p> <ul style="list-style-type: none"> School Nurses P1 Assessments include weight/BMI screening; include at P2-4 when Vision screening performed. Include measurement or recording of weight on <i>Medical Health Form</i> used by School-based Rehabilitation services Collaborate with PYFC annual weight measurements of children [at P5-6, M1-3, S1-2] conducted by PE teachers. Establish and implement guidelines for routine screening for overweight and obesity in all children Establish and implement guidelines for routine screening for diabetes and prediabetes in asymptomatic children, if indicated by established criteria Behavioural Counseling Interventions: Assess, Advise, Agree, Assist, Arrange 	<ul style="list-style-type: none"> Routine screening for obesity to begin at age 6 years – earlier is recommended as obesity at 5 years predicts later obesity. <p>Criteria for Diabetes Screening in Asymptomatic Children:</p> <ul style="list-style-type: none"> Overweight (BMI >85th percentile for age and sex, weight for height >85th percentile, or weight >120% of ideal for height) <p>Plus any two of the following risk factors:</p> <ul style="list-style-type: none"> Family history of type 2 diabetes in first- or second-degree relative Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander) Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for gestational-age birth weight) Maternal history of diabetes or GDM during the child's gestation. <p>Age of initiation: age 10 years or at onset of puberty, if puberty occurs at a younger age. Frequency: every 3 years</p>
CARE AND TREATMENT	EVIDENCE
<ul style="list-style-type: none"> Obesity management in school settings <ul style="list-style-type: none"> Importance of confidentiality and building self-esteem Lifestyle-based interventions to help child eat a healthy diet and be physically active, develop positive body image and build self-esteem Diabetes care should be provided by a specialist and team to improve lifestyle management: <ul style="list-style-type: none"> Diabetes self-management education and support Nutrition therapy Physical activity Psychosocial screening and care 	<ul style="list-style-type: none"> Children and adolescents should engage in 60 minutes/day or more of moderate or vigorous intensity aerobic activity, with vigorous muscle strengthening and bone strengthening activities at least 3 days/week. Lifestyle-based weight loss interventions with 26 or more hours of intervention contact are likely to help reduce excess weight in children and adolescents.
QUALITY OF CARE	EVIDENCE
<ul style="list-style-type: none"> Adherence to clinical management guidelines Adherence to other management recommendations: <ul style="list-style-type: none"> Routine immunization according to age-related recommendations Annual influenza vaccination Pneumonia vaccination with pneumococcal polysaccharide vaccine (PPSV23) Referrals to Behavioural and Mental health professionals for psychosocial care 	<ul style="list-style-type: none"> Children and their carers may experience psychological problems (anxiety, depression, behavioural and conduct disorders and family conflict) or psychosocial difficulties that can impact on the management of diabetes and well-being. Offer to children and carers dietetic support to help to optimize body weight and blood glucose control. Explain HbA1c target level ideal for minimization of risk of long-term complications.
<p>KEY: BMI = Body Mass Index DOH = Department of Health PYFC = Premier's Youth Fitness Council</p>	
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Strategies & Activities - Life Course Approach

	Pregnancy & Birth (foetus in-utero)	Infancy, Toddler and Pre-School-aged	School-aged child	Young Adult of Reproductive Age	Older Adult	Seniors / Elderly
Age Range	Gestational period	0-<5 years	5-18 years	18-44 years	45-64 years	65+ years
TRANSITION POINTS						
1. SOCIAL DETERMINANTS APPROACH & HEALTH PROMOTION						
2. RISK FACTOR IDENTIFICATION & RISK REDUCTION						
3. SCREENING & EARLY DIAGNOSIS OF DISEASE						
4. CARE & TREATMENT						
5. QUALITY OF CARE						

INTERVENTION POINTS



HALTING THE RISE IN OBESITY AND DIABETES

Life Stage: Older Adult (45 - 64 years)

INTERVENTION POINTS

<p>1. Social Determinants/Health Promotion</p> <p>National food and nutrition policies (accessibility and affordability of healthy food, vending machines, food labelling etc)</p> <p>National policies on provision of community spaces for physical activity</p> <p>Health Education/Promotion on avoidance of risk factors for obesity & diabetes</p> <p>Adult Preventive Health Services and guidelines</p> <p>Social mobilization and media & informational campaigns</p> <p>Public awareness and education on obesity</p>	<p>2. Primary Prevention/Risk Reduction</p> <p>Adult Preventive Health Services</p> <p>Screening for risk factors for NCDs and referral for risk reduction</p> <p>Lifestyle and behaviour change interventions</p>
<p>3. Screening & Early Detection</p> <p>Adult Preventive Health Services protocols and standards</p> <p>Work- and community-based weight and blood glucose screening guidelines (45-65 years)</p> <p>Referral resources for behavioural intervention, family support and health education</p> <p>Statutory reporting for Diabetes Register</p>	<p>4. Care and Treatment</p> <p>Clinical Protocols for management of excessive weight gain, overweight and obesity; and management of impaired glucose metabolism</p> <p>Referral resources for development of diabetes self-care skills, family support and health education</p> <p>Accessible treatment and care services for obesity & diabetes</p> <p>Statutory reporting of diabetes diagnoses for National Register</p>
<p>5. Quality of Care</p> <p>Adherence to national guidelines for clinical management</p> <p>Clinical Care Quality Reporting system with monitoring and accountability mechanisms</p>	

Defining Adult Overweight and Obesity

Weight Category	BMI	COMMENTS
Underweight	<18.5	An individual is considered morbidly obese if he/she is 100 pounds over his/her ideal body weight, has a BMI of 40 or more , or 35 or more and experiencing obesity-related health conditions , such as high blood pressure or diabetes.
Normal Weight	18.5 - 24.9	
Overweight	25.0 - 29.9	
Obese	≥30	<p>Waist circumference indicates higher risk of developing obesity-related conditions if:</p> <ul style="list-style-type: none"> A male has a waist circumference of more than 40 inches A non-pregnant female has a waist circumference of more than 35 inches

HEALTH PROMOTION	EVIDENCE
<p>Supportive Policies</p> <ul style="list-style-type: none"> Policies - vending machine; food & menu labelling Total Worker Health (TWH) programmes integrating injury and illness prevention; workplace interventions. National comprehensive health promotion incl. campaigns & informational, behavioural/social and environmental/policy interventions and approaches. Conditional incentives for behavior change (diet and physical activity). Vouchers for fruit and vegetable purchases for low-income persons 	<ul style="list-style-type: none"> Food labelling empowers consumers in choosing healthier products; and interpretive labels, (e.g. traffic light labels), are more effective. Pricing and availability strategies are effective at improving the nutritional quality foods and beverages purchased from vending machines. Conditional incentives/rewards provided for physical-activity behavior instead of attendance, had positive effects; however long-term effects of financial incentives are still unclear. Positive association between incentives and dietary behavior change in the short term; with larger incentives associated with better outcomes Subsidizing healthy behavior (e.g., fruit and vegetable consumption) in low-income households is preferable to taxation as a disincentive for unhealthy food choices Proven effectiveness of TWH interventions for increasing rates of smoking cessation, increasing fruit and vegetable intake, and reducing sedentary work behavior.

PRIMARY PREVENTION	EVIDENCE
<ul style="list-style-type: none"> Total Worker Health (TWH) programmes Measure height & weight; calculate BMI at all health care visits; waist circumference is also a useful measure. Social media and app-based interventions to improve diet and physical activity. Lifestyle/Behaviour Change Interventions for diet and physical activity Behavioural Counseling Interventions (5-As): Assess, Advise, Agree, Assist, Arrange. 	<ul style="list-style-type: none"> Behaviour change interventions for diet and Physical Activity are modestly effective both at short and long term Multi-component social media interventions can lead to improved diet, physical activity behaviours. Use of mobile phone apps showed reductions in participants' bodyweight, BMI, waist circumference and body fat, based on frequency of programme use. Important features of effective apps were frequent self-recording of weight, personalisation of the intervention (counselling and individualized feedback), and a social support system which acts as a motivational tool. Lifestyle/behaviour change interventions for diet and physical activity, emphasizing motivational interviewing, and self-determination theory are associated with long-term effects.

HALTING THE RISE IN OBESITY AND DIABETES

Life Stage: Older Adult (45 - 64 years)

SCREENING AND EARLY DETECTION	EVIDENCE
<p>Obesity</p> <ul style="list-style-type: none"> All adults should be screened for obesity. Adults with BMI of 30 or higher, should be offered referral to individual multi-component behavioural interventions. <p>Diabetes</p> <ul style="list-style-type: none"> All asymptomatic adults: Screen for type 2 diabetes with an informal assessment of risk factors, or use a validated tool. Blood glucose testing in adult clients of any age considered if overweight or obese (BMI ≥25) and having one or more risk factors (test using either fasting plasma glucose, 2-hr plasma glucose after 75g oral glucose tolerance test, or HbA1c). All persons should be tested beginning at age 45 years. If normal, repeat at a minimum 3-year interval. Those with prediabetes should be tested yearly. 	<p>Referral to intensive behavioural intervention programs that include a variety of activities, are successful in helping people manage their weight. These programs:</p> <ul style="list-style-type: none"> include 12 to 26 sessions in the first year include group and/or individual sessions help people make healthy eating choices include physical activity address issues that make it difficult to change behaviors help people monitor their own behaviors help people develop strategies to maintain healthy eating and physical activity behaviors. <p>Patients with HIV should be screened for diabetes and prediabetes (fasting glucose) every 6-12 months before starting ART; and 3 months after starting or changing ART. If normal, check fasting glucose annually. If prediabetic, measure fasting glucose every 3-6 months.</p>
CARE AND TREATMENT	EVIDENCE
<ul style="list-style-type: none"> Obesity management: <ul style="list-style-type: none"> Behavioural Interventions (minimum 12 weeks' duration) Combined pharmacologic and behavioural intervention A complete medical evaluation should be performed at the initial visit to confirm the diagnosis and classify diabetes. Diabetes care and treatment should be provided by a team to improve lifestyle management. Statutory reporting for Diabetes Register 	<p>The comprehensive medical evaluation should ideally be done on the initial visit, although components can be done as appropriate on follow-up visits.</p> <ul style="list-style-type: none"> History, Physical examination and Laboratory investigations (e.g. HbA1C, lipids, microalbuminuria, GFR) Referrals for initial care management <ul style="list-style-type: none"> Eye care professional Family planning for women of reproductive age Registered dietitian for medical nutrition therapy Diabetes self-management education and support Comprehensive oral health examination Mental health professional, if indicated.
QUALITY OF CARE	EVIDENCE
<ul style="list-style-type: none"> Routine vaccinations according to age-related recommendations <ul style="list-style-type: none"> Annual influenza Pneumonia vaccine (pneumococcal polysaccharide PPSV23 vaccine up to age 64 yrs). At 65 yrs of age, pneumococcal conjugate vaccine (PCV13) to be administered, as recommended. Hepatitis B (to unvaccinated adults up to age 59 yrs). 	<p>Complete medical evaluation of Diabetic:</p> <ul style="list-style-type: none"> Detect diabetes complications and potential comorbid conditions. Review previous treatment and risk factor control in patients with established diabetes. Begin patient engagement in the formulation of a care management plan. Develop a plan for continuing care. <p>Health professionals treating obesity, should utilize disciplines that offer expertise in dietary counseling, physical activity, and behavior change through direct, formal relationships or an indirect referral.</p>

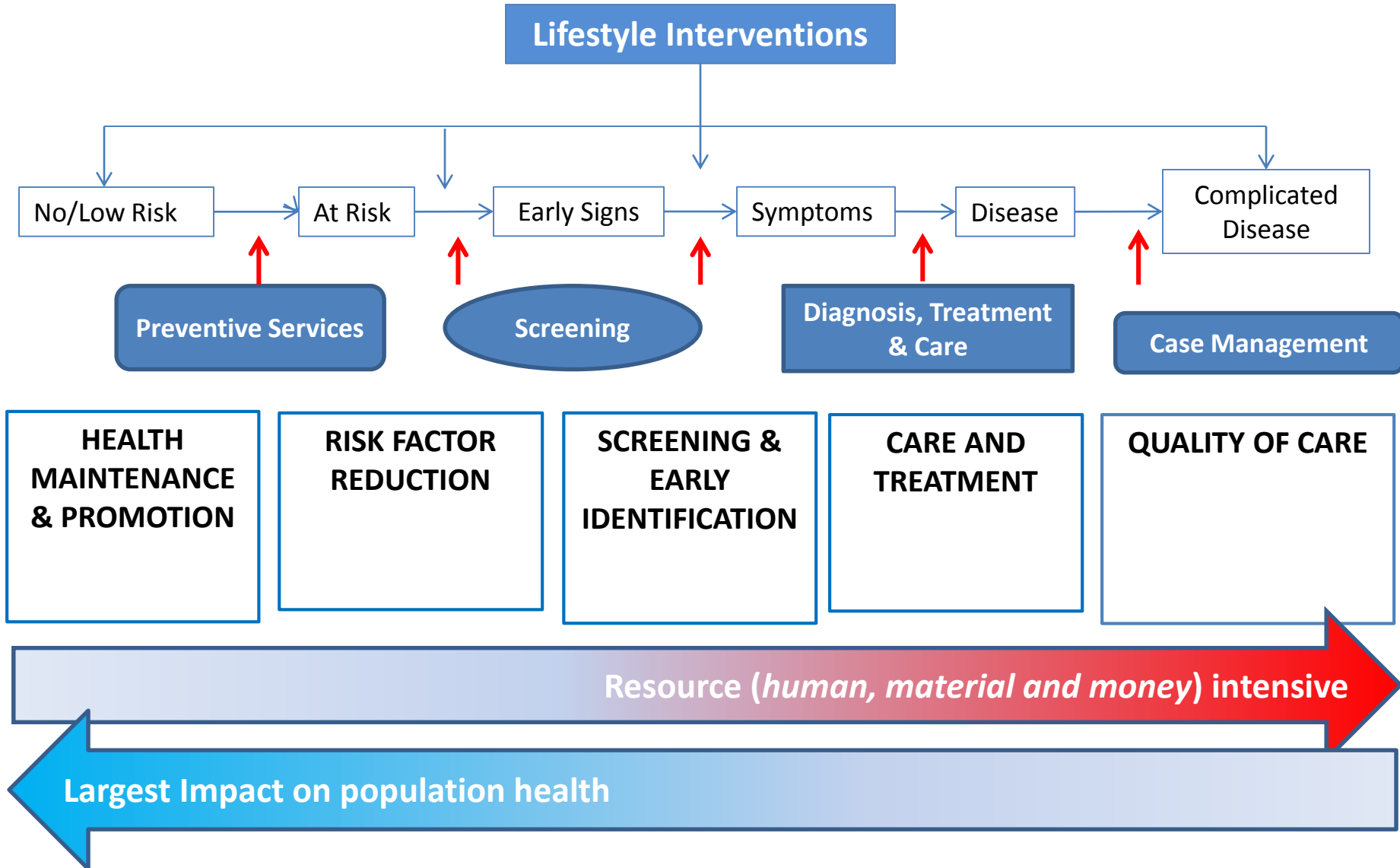
KEY: BMI = Body Mass Index DOH = Department of Health GFR = Glomerular Filtration Rate

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“All-of-Society” Involvement

INTERVENTIONS ON THE CONTINUUM



THE BEGINNING....



Halting the rise in obesity and diabetes