

AsMA 2014 ICAO Session

The Role of Preventive Medicine in Regulatory Aviation Medicine

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Preventive Medicine:




1.Primary Prevention: Prevent disease from occurring

2.Secondary Prevention: Early detection and management

3.Tertiary Prevention: Treatment and Rehabilitation



What do we routinely do during the medical assessment of civil aviation applicants – initial and renewal and in between medical assessments:

1. **Primary Prevention: Prevent disease from occurring** 
2. **Secondary Prevention: Early detection and treatment** 
3. **Tertiary Prevention: Treatment and Rehabilitation** 

Prevention of medical conditions = Flight Safety

**There are 2 major components of the
Prevention Stratagem that we do fairly
well.**

**Should we not complete the picture and
carry out the preventive role all the way
through?**

In many chronic diseases, the preventive aspects are part and parcel of the treatment and rehabilitation regime.

Eg.

Diabetes Mellitus Type 2

Diabetes Prevalence Rose Substantially in 20 Years

Larry Hand

April 15, 2014

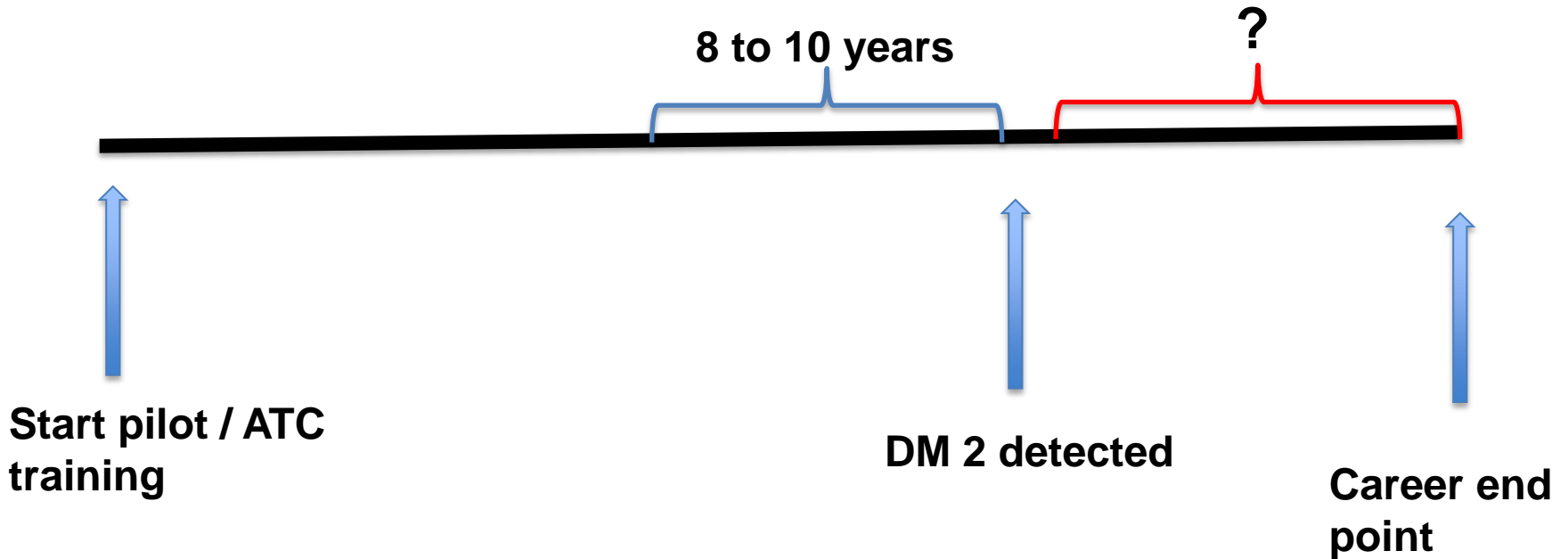
The prevalence of diabetes in the United States has increased substantially over the course of the last 2 decades, paralleling an increase in the prevalence of obesity, according to a study [published online](#) April 14 in the *Annals of Internal Medicine*.

Ann Intern Med. Published online April 14, 2014

The authors found that the prevalence of total confirmed diabetes increased from 6.2% in 1988 to 1994 to 8.8% in 1999 to 2004 to 9.9% in 2005 to 2010. When they included fasting glucose levels in their analysis, the trend was similar, but at higher rates, going from 7.3% to 9.4% to 10.9%, respectively.

For all periods, when fasting glucose levels were included, the prevalence of undiagnosed diabetes was 60% to 180% greater than when HbA1c levels alone were considered.

Diabetes Mellitus Type 2



Upon detection of DM 2 in a pilot or ATCO:

Management:

- **Lifestyle modification**

- * **Diet**
- * **Exercise**
- * **Weight reduction**
- * **etc.**



Primary Prevention

- **Medication**

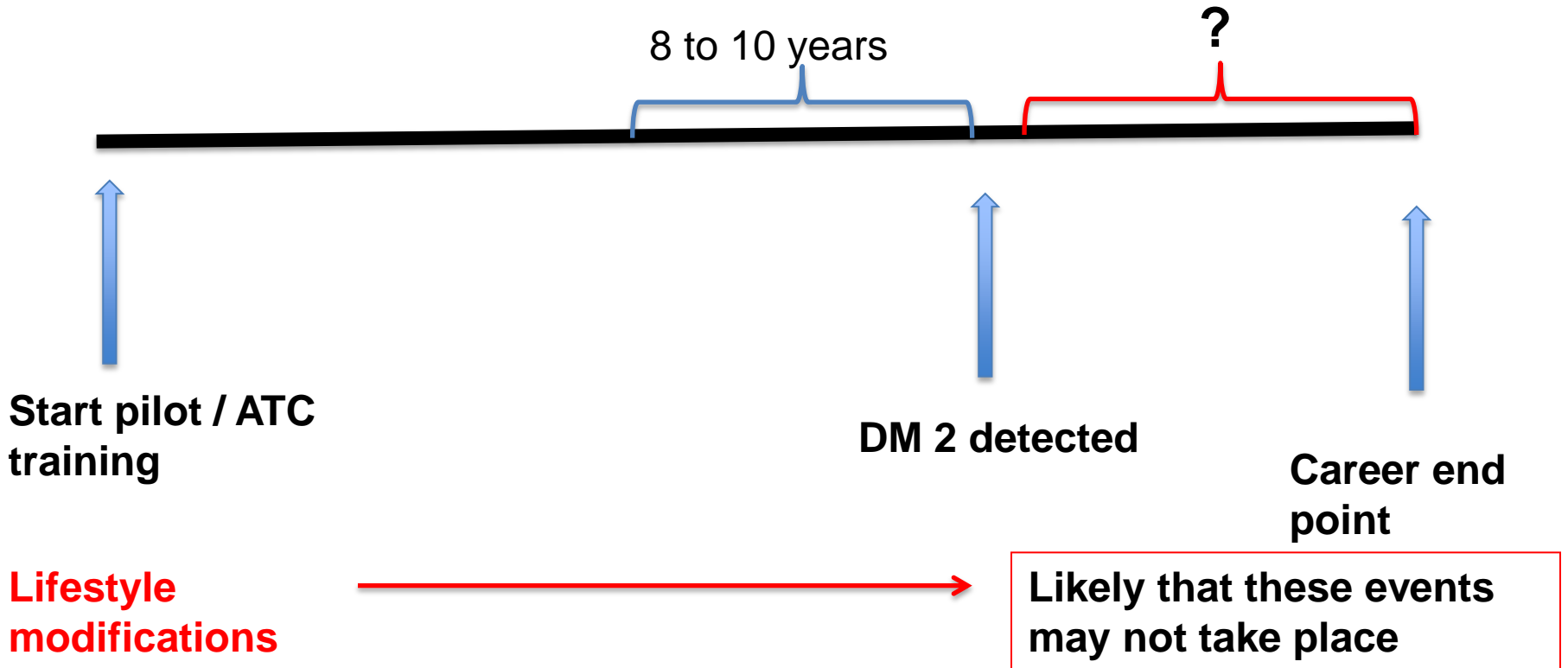
- **Monitoring of control**

- **Screening for complications -- ongoing**



**Secondary
& Tertiary
Prevention**

Diabetes Mellitus Type 2



Patterns of Obesity Development Before the Diagnosis of Type 2 Diabetes: The Whitehall II Cohort Study

Vistisen D, Witte DR, Tabák AG, et al

PLOS Medicine. 2014;11:e1001602

Prevention of diabetes through lifestyle modification that includes exercise has been definitively shown to be highly effective in clinical trials.

The time has come to treat exercise as a medical intervention rather than a lifestyle choice. This means that **exercise should be prescribed to those who are not engaging in it, rather than just discussed with those who appear to need it because of their weight.**

References

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This situation applies to most chronic medical conditions



Major Drop in MI, Stroke, Amputation in Diabetes Since 1990

Marlene Busko

April 17, 2014

Over the past 2 decades, the incidence of diabetes-related complications among Americans with diabetes has fallen substantially, a new study shows. Rates of MI and death from hyperglycemic crisis have each plummeted by two-thirds. Rates of stroke and amputation have each declined by half, and the rate of end-stage renal disease (ESRD) has dropped by 30%.

The decline in these outcomes has been greater among people with diabetes than the general population, which is "encouraging," lead author Edward W. Gregg, PhD, from the Centers for Disease Control and Prevention, in Atlanta, Georgia, told *Medscape Medical News*.

N Engl J Med. 2014;370:1514-1523

Better Diabetes Control, Fewer Complications

After publication of the [Diabetes Control and Complications Trial](#) (DCCT) 21 years ago — which showed that intensive glycemic control reduced microvascular complications in type 1 diabetes — and subsequent studies that showed the control of blood pressure, glucose, and lipid levels could reduce complications in type 2 diabetes, care for adults with diabetes has improved substantially, the authors write.

To examine how rates of diabetes complications changed, Dr. Gregg and colleagues analyzed data from the National Health Interview Survey, National Hospital Discharge Survey, US Renal Data System, and US National Vital Statistics System. They looked at rates of 5 outcomes — lower-extremity amputation, ESRD, acute MI, stroke, and death from hyperglycemic crisis — in 5-year intervals between 1990 and 2010 among adults diagnosed with diabetes and the overall adult population in the US.

Between 1990 and 2010, the number of adults diagnosed with diabetes more than tripled, from 6.5 million to 20.7 million, whereas the US adult population increased by 27%, from 178 million to 226 million.

Although rates of all 5 complications declined, the magnitude of reduction was greatest for CVD, particularly acute MI, which has historically been the most common diabetes-related complication but is now about as common as stroke, Dr. Gregg and colleagues write.

"These findings probably reflect a combination of advances in acute clinical care, improvements in the performance of the healthcare system, and health-promotion efforts directed at patients with diabetes," they speculate. These efforts include better risk-factor management — blood pressure, lipids, and smoking cessation — screening for early complications, advances in revascularization approaches, and improvements in the in-hospital management of diabetic ketoacidosis.

Alcohol-Attributable Deaths and Years of Potential Life Lost — 11 States, 2006–2010

Katherine Gonzales, MPH, Jim Roeber, MSPH, Dafna Kanny, PhD, Annie Tran, MPH, Cathy Saiki, MS, Hal Johnson, MPH, Kristin Yeoman, MD, Tom Safranek, MD, Kathleen Creppage, MPH, Alicia Lepp, Tracy Miller, MPH, Nato Tarkhashvili, MD, Kristine E. Lynch, PhD, Joanna R. Watson, DPhil, Danielle Henderson, MPH, Megan Christenson, MS, MPH, Sarah Dee Geiger, PhD

Disclosures Morbidity and Mortality Weekly Report. 2014;63(10):213-216.

Excessive alcohol consumption, the fourth leading preventable cause of death in the United States,^[1] resulted in approximately 88,000 deaths and 2.5 million years of potential life lost (YPLL) annually during 2006–2010 and cost an estimated \$223.5 billion in 2006.

The majority of AAD (median = 70%) and YPLL (median = 82%) were among working-age (20–64 years) adults.

Routine monitoring of alcohol-attributable health outcomes, including deaths and YPLL, in states could support the planning and implementation of **evidence-based prevention strategies recommended by the Community Preventive Services Task Force to reduce excessive drinking and related harms.**

Surgeon General's Report Links More Diseases to Smoking

Miriam E. Tucker

January 17, 2014

On the fiftieth anniversary of the first Surgeon General's report on smoking, researchers continue to link the practice to new diseases, and public health officials urge even more forceful efforts to bring America to the smoking "end game."

"Today marks a new era in the fight against tobacco-related death and disease.... Enough is enough," said acting Surgeon General Boris Lushniak, MD, MPH, in announcing a [new report](#), *The Health Consequences of Smoking—50 Years of Progress*, at a White House briefing.

The research section is the largest, reflecting a huge accumulation of knowledge since the first Surgeon General's report linking smoking with lung cancer. "Amazingly, 50 years in, we're still finding out new ways that tobacco maims and kills people," noted Thomas R. Frieden, MD, head of the Centers for Disease Control and Prevention (CDC), also speaking at the briefing.

Indeed, diabetes, rheumatoid arthritis, immune dysfunction, tuberculosis, colorectal cancer, liver cancer, age-related macular degeneration, and erectile dysfunction are among the diseases that can now be added to the ever-growing list for which evidence strongly supports a causal association with smoking.

Clinicians Called to Action

Among the report's recommendations for "accelerating the national movement to reduce tobacco use" are calls for taking advantage of the ACA's antismoking provisions to provide access to treatments such as counseling and medication for all smokers, and particularly those with significant mental and physical comorbidities.

The report also calls for "expanding smoking cessation for all smokers in primary and specialty care settings by having health care providers and systems examine how they can establish a strong standard of care for these effective treatments."

Dr. Samet told *Medscape Medical News*, "We still need physicians to be involved, to do what they should be doing with their patients who smoke. More and more they are, but we can still do better."

Prevention: Stop Cancer Before It Starts

Kathy D. Miller, MD

April 16, 2014

If we had the power to do it, which single "calcified" feature of the oncology culture would we change? In other words, which change would lead to the biggest improvement in outcomes? I have a very simple answer. **We need to forget about treatment and focus on prevention.**

Aviation medicine

From Wikipedia, the free encyclopaedia

Aviation medicine, also called **flight medicine** or **aerospace medicine**, is a [preventive](#) or [occupational medicine](#) in which the patients/subjects are pilots, aircrews, or persons involved in spaceflight. The specialty strives to treat or **prevent** conditions to which aircrews are particularly susceptible, applies medical knowledge to the [human factors](#) in [aviation](#) and **is thus a critical component of [aviation safety](#)**.

**Thank you for your
kind attention!**

