**Chapter 1 Learning App: video outline**

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| Chapter: Screening, prevention and diagnosis | Presenter: Prof. Kamlesh Khunti |
| Lesson: Diabetes is a group of metabolic disorders characterized by hyperglycaemia, which can lead to complications if left untreated | Video type: Expert commentary |
| Video title: Health complications of diabetes: importance of early intervention and early optimization of blood glucose levels | Video shot: faculty straight to camera, positioned right or left. Animations to appear over shoulder and/or as full screen overlay where appropriate. |
| Video objective: To describe the potential consequences of uncontrolled diabetes and the rationale for early treatment and treatment intensification to achieve glycaemic targets | Video setting: Self-filming in clinic or office |
| Video length: Approx 7 minutes | |

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| **Topic 1: Long-term complications of diabetes**  **Duration of topic: 2 minutes** | | |  |
| **Talking points/script** | **Animation (if applicable)** | **Timings** | **References** |
| * Diabetes is a very common disease worldwide that most healthcare professionals working in primary care settings are familiar with. * What is not so well known, however, is the severe impact that diabetes can have on long-term health. * Some of the most common long-term complications of diabetes are diseases that affect the small blood vessels. These are known as **microvascular diseases** and include:   + **retinopathy** – which is disease of the retina at the back of the eye   + **neuropathy**, which is nerve damage, and   + **nephropathy**, which is impaired kidney function * These complications can be severe, and may lead to blindness, amputation or even death. * Diabetes also affects the large blood vessels in the body, resulting in **cardiovascular** and **cerebrovascular diseases**, which include heart attack and stroke. * Unfortunately, many people with diabetes are unaware of their condition and can remain untreated for many years. * Others who are diagnosed don’t receive optimal treatment, meaning that their **blood glucose levels are not well controlled**, and this exposes people to greater risk of these complications. * A major contributing factor to people with diabetes not achieving their glycaemic target is due to **clinical inertia**, which is reluctance from healthcare providers to appropriately and promptly intensify treatment for individuals who are not at their goal. Clinical inertia must be addressed to prevent people with diabetes unnecessarily developing complications of diabetes. | The video will be a combination of full screen talking head and over the shoulder talking head with on screen animations.  Keywording: text screens depicting keywords highlighted in blue on the left | TBC in post-production |  |
| **Topic 2: Glycaemic control reduces risk for complications in T1D and T2D**  **Duration of topic: 2 minutes** | | |  |
| **Talking points/script** | **Animation (if applicable)** | **Timings** |  |
| * There is very good evidence that **controlling blood glucose can reduce risk for complications** in people type 1 and type 2 diabetes.   **(<<Type 1 diabetes>>)**   * The Diabetes Control and Complications Trial (DCCT) included people with type 1 diabetes who were either treated intensively with insulin to maintain blood glucose concentrations close to the normal range, or who received usual care of one or two insulin doses per day, without any daily adjustments. * Over the average trial period of 6.5 years, the people treated intensively achieved significantly lower blood glucose levels (**HbA1c of 7.1%**) than those receiving usual care (**HbA1c of 9.1%**) * During this time, **the risk of developing retinopathy, neuropathy and nephropathy were markedly reduced** in people treated intensively. * The benefits of intensive treatment were so great that the trial was stopped early, and those receiving usual care were encouraged to switch to intensive treatment.   **(<<Type 2 diabetes>>)**   * Turning now to type 2 diabetes – in the UK Prospective Diabetes Study (or the UKPDS), people with newly diagnosed type 2 diabetes, were either treated intensively with a sulfonylurea or insulin to achieve an FPG level of 6 mmol/l, or received diet therapy alone. * Over the 10-year trial period, **blood glucose was significantly lower in the intensive group** versus the usual care group. * **Those who were treated intensively were 12% less likely** than those receiving diet therapy **to have a diabetes-related health event** during the trial, and this difference was driven largely by a **25% reduction in risk for microvascular complications**, such as retinopathy and kidney failure. * Risk of having a heart attack was also 16% lower in the intensive therapy group. | (Graph will be redrawn graph downward arrows) |  | <https://pubmed.ncbi.nlm.nih.gov/8366922/>  <https://pubmed.ncbi.nlm.nih.gov/9742976/>  <https://pubmed.ncbi.nlm.nih.gov/10938048/> |
| **Topic 3: Impact of early intervention on complications outcomes**  **Duration of topic: 2 minutes** | | |  |
| * We’ve heard that keeping blood glucose close to the normal range is important, but this isn’t the only factor to consider. There is also very clear evidence, that **achieving glycaemic control earlier in the disease course is important** to maximize health benefits. * In long-term follow-up studies of the trials already mentioned, the health benefits of being treated in the ‘intensive’ glycaemic control group persisted for many years after the studies ended, even though the difference in glycaemic levels narrowed between the intensive and ‘usual care’ groups once they were taken off study treatment. * For example, those who had been treated intensively during the DCCT trial, and therefore achieved lower blood glucose levels, were **57% less likely to have a heart attack, or a stroke, or die from cardiovascular disease** during 17 years of study follow-up. * Similarly, the **health benefits** of early glycaemic control in the UKPDS **persisted over a 10-year** follow-up period in those who were originally assigned to **intensive** therapy. * Other studies have evaluated the effects of intensive glycaemic control in people who already had long-standing type 2 diabetes and complications. In these studies, intensive treatment improved microvascular complications, but there was no improvement in cardiovascular death, heart attack or stroke. * Taken together, these findings show that **controlling blood glucose earlier in the disease course has greater long-term health benefits** than controlling blood glucose late, when complications have already developed. | * Overlay figure of blood glucose levels converging over time. Point arrows show to early control, and persistence in health benefits later. |  | [Nathan DM, et al. N Engl J Med 2005;353:2643–2653.](https://www.ncbi.nlm.nih.gov/pubmed/?term=16371630)  [**https://pubmed.ncbi.nlm.nih.gov/18784090/**](https://pubmed.ncbi.nlm.nih.gov/18784090/)  [ADVANCE Collaborative Group. N Engl J Med 2008;358:2560–2572.](https://www.ncbi.nlm.nih.gov/pubmed/?term=18539916)  [ACCORD Study Group. N Engl J Med 2008;358:2545–2559.](https://www.ncbi.nlm.nih.gov/pubmed/?term=18539917)  [Duckworth W et al. N Engl J Med 2009;360:129–139.](https://www.ncbi.nlm.nih.gov/pubmed/?term=19092145) |
| **Topic 4: Link between diabetes and infectious diseases**  **Duration of topic: 1 minute** | | |  |
| * Healthcare professionals should also be aware of the link between diabetes and **infectious diseases, such as tuberculosis and COVID-19**. * People with diabetes are at **greater risk of developing TB**, and the disease is **usually more serious** in these individuals. * For example, people with diabetes have a greater risk of relapsing after TB treatment, of developing drug-resistant TB, and of dying from TB infection. * Those with diabetes are also more likely to experience **poor COVID-19 outcomes**, particularly in an intensive care setting. This risk is greater if other diabetes complications, such as hypertension, cardiovascular disease, or kidney disease, are present. Risk is also greater if blood glucose levels are elevated. |  |  | <https://www.who.int/publications/digital/global-tuberculosis-report-2021/featured-topics/tb-diabetes> |
| **Topic 5: Summary**  **Duration of topic: 30 seconds** | | |  |
| * For all the reasons discussed, **early diagnosis, prompt treatment and frequent review of people with diabetes** gives them the best chance of leading a long life with minimal health complications. * Where possible, measures to **prevent development of type 2 diabetes** should also be implemented to reduce the burden of these diseases. * In this chapter you will learn how to identify people at risk for diabetes, as well as best practice approaches to screening and diagnosis. |  |  |  |