Good Practice Guide on Rail Workers and Diabetes – General Guidance

Synopsis:

This document provides guidelines and advice for rail workers regarding diabetes.

RS/505
Issue 1
June 2007

Published by:
Rail Safety and Standards Board
Evergreen House
160 Euston Road
London NW1 2DX

Approved by RSSB 03 April 2007

Contents

1. Introduction

1.1 Purpose and scope

The purpose of this Good Practice Guide (GPG) is to highlight the important factors that should be taken into account when assessing the fitness of people with diabetes when they carry out safety critical duties such as train driving or work on the lineside. The information is aimed primarily at those who are responsible for ensuring that individuals are fit to perform their duties, and for making any special arrangements which are needed in individual cases.

Diabetes is a common condition in the general population that may present itself at any age, varies greatly in severity and may be associated with a range of other health effects that develop over time. This means that diabetes may affect different people in different ways at various stages of their working lives.

2. About diabetes

Diabetes mellitus is a metabolic disorder characterised by excessive amounts of glucose in the blood. Insulin is a hormone that is responsible for regulating blood glucose levels and people with diabetes have insufficient insulin or cannot respond normally to it.

Type 1 diabetes typically develops in childhood or young adults when the insulin producing cells in the pancreas (beta cells) are destroyed by an auto-immune process. About 3 people in 1000 (0.3% of the population) are affected and they will require lifelong insulin injections and a special diet.

Type 2 diabetes usually develops after the age of 40 and affects 30 people in every 1000 (3% of the population). It is due to a resistance to the effect of insulin as well as a failure to produce sufficient quantities of insulin. Obesity and lack of exercise make the condition worse. Treatment is with diet, weight loss and tablets. Some patients eventually require insulin.

Diabetes is associated with a number of long-term complications including heart and circulatory problems, stroke, visual impairment, kidney failure and nervous system disorders. Research[1&2] has shown that careful attention to blood glucose control will reduce the incidence of these complications. Patients who use insulin or certain types of tablets to bring their blood glucose down to normal levels have to balance their food intake and exercise carefully. Otherwise their blood glucose will continue to fall to dangerously low levels. The brain is dependent on glucose so low blood glucose (hypoglycaemia or 'hypo') is associated with impaired concentration and confusion, progressing to loss of consciousness. Sometimes the well motivated person with diabetes, who works hard to prevent their blood glucose rising above the normal range, may also encounter more frequent problems with hypoglycaemia. Further information can be found on the Diabetes UK website.

2.2 Disability issues

The Disability Discrimination Act enshrines in law the principle that disabled people should not be discriminated against in employment or when seeking employment. The Act[3] defines disability as a physical or mental impairment that has a substantial and long-term effect on a person's ability to carry out normal day-to-day activities. In deciding whether an individual meets these criteria the effect of treatment is not to be taken into account. Therefore, those with all but the mildest degrees of diabetes could claim to be covered by the Act.

In the past people with diabetes, especially those using insulin, were barred from certain occupations as a matter of policy. This was often based on the idea that these individuals would be prone to hypoglycaemia or other health conditions that would make them unsafe or unreliable in their role. Although this may be true for some people with diabetes it is not true for all. Modern treatments and risk assessment methods have enabled some insulin treated individuals to perform safety critical roles just as well as other people.

People with diabetes have successfully challenged[4] employers who sought to exclude them from jobs simply because they were 'diabetic', rather than assessing them as individuals. This means that a

'blanket ban' for people with diabetes is no longer acceptable, except where there is a legal requirement.

3. How diabetes may affect fitness for work

Diabetes may affect fitness for work gradually or suddenly. It is sudden, unnoticed or unexpected impairment that is the greatest concern for workers in safety critical roles.

3.1 General health

People with diabetes may suffer a gradual deterioration of their health due to long term complications such as angina, visual impairment or kidney failure. These are a matter of concern in people with diabetes, just as in other individuals with the same conditions. They can be assessed and managed within the normal periodic medical assessment. Where such a problem arises between medical assessments the employee has a duty to bring this to the attention of their employer, who will in turn seek the opinion of an occupational health professional.

Sometimes these long-term health effects can be associated with an increased risk of sudden incapacity due, for example, to stroke or irregular heart rhythm. These people may be medically unfit for certain jobs as a result of these risks but not simply because they have diabetes.

3.2 Hypoglycaemia

The main area of concern that is peculiar to people with diabetes is the risk of loss of awareness, impaired concentration or loss of consciousness while performing their duties, as a consequence of hypoglycaemia.

The symptoms of hypoglycaemia (a 'hypo') are due the release of adrenaline, as well as the reduced glucose available for the brain. The individual experiences hunger, nausea, anxiety, sweating and increased pulse rate associated with impaired awareness and concentration. If untreated they may progress to collapse, loss of consciousness and fits. Some people do not experience any of the early symptoms of a hypo and progress to impaired awareness, collapse or loss of consciousness without warning. This is known as hypoglycaemia unawareness or reduced hypoglycaemia awareness, which has important implications for work.

Hypoglycaemia may be symptomatic or asymptomatic (only identified on biochemical testing). Symptomatic hypoglycaemia may be mild and easily rectified by the individual, or severe i.e. requiring third-party assistance or causing coma or seizure.

Symptomatic hypoglycaemia may occur when the blood glucose is below about 4.0 mmol/l and endogenous insulin production normally ceases below this level in people who are not diabetic. Symptoms are common when blood glucose falls below 3.0 mmol/l and significant changes in brain function occur when the blood glucose falls below 2.6 mmol/l.

People with diabetes may experience symptoms of hypoglycaemia if they are treated with insulin or with certain tablets known as the insulin secretagogues (the commonest type being sulphonylureas, such as glibenclamide and tolbutamide). This is because the treatment action cannot be stopped when the blood glucose falls. Other medications do not normally cause hypoglycaemia if used as a single treatment.

Therefore the diabetic person who is at risk of hypoglycaemia must learn to balance their food intake (which raises blood glucose) against their treatment and exercise levels (which lower it). About 7% of people with diabetes will experience at least one severe hypo each year if they are treated with the insulin secretagogue group of medicines. The figure for hypoglycaemia rises to about 30% in insulin treated patients. However it is difficult to get accurate figures and it should be remembered that the majority of people with diabetes do not have any severe hypos, so individual assessment is always required.

4 Safeguards and regular review

Diabetes UK's Driving and Employment Working Party has produced the following guidelines[6] for assessing the suitability of people with insulin-treated diabetes for employment where there may be a risk of injury or harm to themselves or to the public.

a) people should be physically and mentally fit in accordance with non-diabetic standards

b) diabetes should be under regular (at least annual) specialist review

c) diabetes should be under stable control

d) people should self-monitor their blood glucose, and be well educated and motivated in diabetes self-care

e) there should be no disabling hypoglycaemia (low blood sugar), and normal awareness of individual hypoglycaemic symptoms

f) there should be no advanced diabetes-related eye or kidney disease (retinopathy or nephropathy), nor severe symptomatic peripheral or autonomic nerve damage (neuropathy)

g) there should be no significant circulation disorders of heart, legs or brain (coronary heart disease, peripheral vascular disease or cerebrovascular disease)

h) suitability for employment should be re-assessed annually by both an occupational physician and diabetes specialist; and should be based on the criteria outlined above.

5 Prevention of hypoglycaemia

Over the past decade an increasing number of people with diabetes, including those who use insulin, have worked safely in occupations that were considered unsuitable in the past. These people understand the importance of avoiding hypoglycaemia at work and adopt a variety of strategies to achieve that:

a) maintaining a detailed knowledge of their diabetes and its treatment

b) frequent blood glucose monitoring

c) establishing a routine that includes regular meals and snacks

d) being able to react appropriately to changes in their blood glucose

e) keeping blood glucose high enough to avoid hypos during critical work periods

f) carrying carbohydrate food in case hypos are threatened or meal breaks are delayed

g) working closely with their doctor to choose tablets or insulins that are less likely to cause hypos

h) choosing insulin regimes that are more flexible.

6 Medical assessment of rail workers with diabetes

Concerns about people with diabetes and their fitness for safety critical work are based on the knowledge that some of these individuals have a greater than average likelihood of impairment of awareness or concentration, sudden incapacity or loss of consciousness. Although such impairments may be due to gradually developing disorders such as visual impairment or ischaemic heart disease these are normally detectable in the context of the periodic medical examination. Hypoglycaemia is of particular concern because it is difficult to assess or predict and may affect otherwise healthy, well controlled patients with diabetes.

The rail environment differs significantly from other workplaces and occupational physicians working in this field are expected to have knowledge of the hazards involved. Workers may be exposed to train movements when accessing the lineside environment or be expected to control the movement of trains when performing a signalling role. The physical demands of these jobs and working hours vary considerably. Even in the context of a single job such as train driving the risks may vary depending on the type of locomotive, the route and the train protection measures in operation.

In the UK rail industry, fitness standards apply to workers with safety critical duties but there have never been requirements specifically relating to diabetes. The Railway Group Standards include a general health requirement that:

Candidates shall not be suffering from medical conditions, or be taking medical treatment likely to cause:

a) sudden loss of consciousness

b) impairment of awareness or concentration

c) sudden incapacity

d) impairment of balance or co-ordination

e) significant limitation of mobility.

Technical Specifications for Interoperability (TSI) for the European rail network contain similar wording.

Whether there are regulatory standards or whether individual duty holders define their own fitness standards, the underlying principle of excluding people with conditions that are likely to cause these impairments is still important.

Diabetes and some treatments for diabetes have the capacity to produce effects under one or more of these categories. It is for the examining medical practitioner to advise the employer whether the employee can meet the general health requirement for their job. Any medical assessment will be performed by, or under the supervision of, a doctor having experience of occupational medicine and knowledge of the hazards of working in the railway environment.

If an individual does not meet all of the medical requirements the employer can still decide to permit the person to continue with their duties providing they take advice from their occupational physician and introduce measures to control the additional risks arising from the medical condition. In the case of an employee with diabetes, the occupational physician will take all of the relevant information into account and use their professional judgement before advising on fitness.

The employer has overall responsibility for deciding which duties an employee should be given, taking into account the advice from their occupational health provider. Should the employee disagree with their employers decision they should use the usual company procedures to resolve the matter.

References

1. Diabetes Control and Complications Trial Research Group (DCCT). The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. New England Journal of Medicine 1993;329:977-86. http://content.nejm.org/cgi/content/abstract/329/14/977?ijkey=da62b92445161d3e720507da5f8ccc1abdbea4f5&keytype2=tf_ipsecsha
2. UK Prospective Diabetes Study Group (UKPDS). Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). Lancet 1998;352:837-53.
3. Disability Discrimination Act 1995 (c. 50) http://www.opsi.gov.uk/acts/acts1995/1995050.htm
4. Welsh case challenges stereotyping of people with diabetes. The Disability Rights Commission Tuesday, November 18, 2003 http://www.drc-gb.org/about_us/drc_wales/newsroom/welsh_case_challenges_stereoty.aspx
5. Rail Safety and Standards Board. Railway Group Standards http://www.rgsonline.co.uk/

   See also RS/506 Good Practice Guide on Rail Workers and Diabetes –Guidance for Medical Assessors
6. British Diabetic Association. Diabetes and Potentially Hazardous Occupations. London. BDA; 1996