Diabetes (clinical) DSS

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Diabetes (clinical) DSS

Identifying and definitional attributes

Metadata item type: Data Set Specification

METEOR identifier: 273054

Registration status: Health, Superseded 21/09/2005

DSS type: Data Set Specification (DSS)

Scope: The use of this standard is voluntary.

However, if data is to be collected the Diabetes (clinical) Data Set Specification (DSS) aims to ensure national consistency in relation to defining, monitoring and recording information on patients diagnosed with diabetes.

The Diabetes (clinical) DSS relates to the clinical status of, the provision of services for, and the quality of care delivered to individuals with diabetes, across all health care settings including:

- General Practitioners;
- Divisions of General Practice;
- Diabetes Centres'
- Specialists in private practice; and
- Community Health Nurses and Diabetes Educators.

The Diabetes (clinical) DSS:

- provides concise, unambiguous definitions for items/conditions related to diabetes quality care, and
- aims to ensure standardised methodology of data collection in Australia.

The expectation is that collection of this data set facilitates good quality of care, contributes to preventive care and has the potential to enhance self-management by patients with diabetes.

The underlying goal is improvement of the length and quality of life of patients with diabetes, and prevention or delay in the development of diabetes related complications.

Collection and usage attributes

Collection methods: This metadata set is primarily concerned with the clinical use of Diabetes data. It could/should be used by health and health related establishments that create, use or maintain, records on health care clients.

Data are collected over a 1-month period of all diabetes patients presenting at sites participating in the collection. The information is de-identified to protect the privacy of individuals. The participation is voluntary. An individual Benchmarking report is provided. The results provide a snapshot of care of people with diabetes.

Comments: Statistical units are entities from or about which statistics are collected or in respect of which statistics are compiled, tabulated or published.

Scope links with other Metadata sets

Cardiovascular disease (clinical) DSS.

Source and reference attributes

Submitting organisation: National Diabetes Data Working Group

Relational attributes

Related metadata references:

Has been superseded by Diabetes (clinical) NBPDS Health, Standard 21/09/2005

Is re-engineered from Diabetes (clinical), DSS, NHIMG, Superseded 01/03/2005.pdf (127.1 KB)
No registration status

Metadata items in this Data Set Specification

Seq No.	Metadata item	Obligation	Max occurs
-	Female—current pregnancy status, code N	Mandatory	1

DSS specific information:

Pregnancy in women with pre-existing diabetes is a potentially serious problem for both the mother and fetus. Good metabolic control and appropriate medical and obstetric management will improve maternal and fetal outcomes. The diagnosis or discovery of diabetes in pregnancy (gestational diabetes), identifies an at risk pregnancy from the fetal perspective, and identifies the mother as at risk for the development of type 2 diabetes later in life.

Following Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus diabetes management during pregnancy includes:

- routine medical review every 2-3 weeks during the first 30 weeks and then every 1-2 weeks until delivery
- monitor HbA1c every 4-6 weeks or more frequently if indicated to ensure optimal metabolic control during pregnancy
- advise patients to monitor blood glucose frequently and urinary ketones
- initial assessment and on going monitoring for signs or progression of diabetes complications
- regular routine obstetric review based on the usual indicators.

Management targets

- Blood glucose levels:
  - Fasting <5.5 mmol/L
  - Post-prandial < 8.0 mmol/L at 1 hour, < 7mmol/L at 2 hours.
- HbA1c levels within normal range for pregnancy. (The reference range for HbA1c will be lower during pregnancy).
- The absence of any serious or sustained ketonuria.

Normal indices for fetal and maternal welfare. Oral hypoglycaemic agents are contra-indicated during pregnancy and therefore women with pre-existing diabetes who are treated with oral agents should ideally be converted to insulin prior to conception.

What to do if unsatisfactory metabolic control:

- explore reasons for unsatisfactory control such as diet, intercurrent illness, appropriateness of medication, concurrent medication, stress, and exercise, and review management,
- review and adjust treatment,
- consider referral to diabetes educator, dietician, endocrinologist or physician experienced in diabetes care, or diabetes centre.

-	Health service event—fasting status, code N	Mandatory	1
-	Health service event—referral to ophthalmologist status (last 12 months), code N	Mandatory	1

Seq No.	Metadata item	Obligation	Max occurs
-	Laboratory standard—upper limit of normal range for microalbumin, albumin/creatinine ratio N[NN].N	Optional	1

DSS specific information:

Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in 2 of 3 samples collected over a 6-month period in patients in whom other causes of an increased urinary albumin excretion have been excluded.

Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal. A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage.

If microalbuminuria is present:

- review diabetes control and improve if necessary
- consider treatment with Angiotensin-converting enzyme (ACE) inhibitor
- consider referral to a physician experienced in the care of diabetic renal disease

If macroalbuminuria is present:

- quantitate albuminuria by measuring 24-hour urinary protein.
- refer to a physician experienced in the care of diabetic renal disease.

-	Laboratory standard—upper limit of normal range for microalbumin, total micrograms per minute N[NN].N	Optional	1

DSS specific information:

Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in 2 of 3 samples collected over a 6-month period in patients in whom other causes of an increased urinary albumin excretion have been excluded.

Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal. A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage.

If microalbuminuria is present:

- review diabetes control and improve if necessary
- consider treatment with Angiotensin-converting enzyme (ACE) inhibitor
- consider referral to a physician experienced in the care of diabetic renal disease

If macroalbuminuria is present:

- quantitate albuminuria by measuring 24-hour urinary protein.
- refer to a physician experienced in the care of diabetic renal disease.

Seq No.	Metadata item	Obligation	Max occurs
-	Laboratory standard—upper limit of normal range for microalbumin, total milligrams per 24 hour N[NN].N ***DSS specific information:*** Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in 2 of 3 samples collected over a 6-month period in patients in whom other causes of an increased urinary albumin excretion have been excluded. Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal. A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. If microalbuminuria is present: • review diabetes control and improve if necessary • consider treatment with Angiotensin-converting enzyme (ACE) inhibitor • consider referral to a physician experienced in the care of diabetic renal disease If macroalbuminuria is present: • quantitate albuminuria by measuring 24-hour urinary protein. • refer to a physician experienced in the care of diabetic renal disease.	Optional	1
-	Laboratory standard—upper limit of normal range for microalbumin, total milligrams per litre N[NN].N ***DSS specific information:*** Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in 2 of 3 samples collected over a 6-month period in patients in whom other causes of an increased urinary albumin excretion have been excluded. Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal. A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. If microalbuminuria is present: • review diabetes control and improve if necessary • consider treatment with Angiotensin-converting enzyme (ACE) inhibitor • consider referral to a physician experienced in the care of diabetic renal disease If macroalbuminuria is present: • quantitate albuminuria by measuring 24-hour urinary protein. • refer to a physician experienced in the care of diabetic renal disease.	Optional	1
-	Laboratory standard—upper limit of normal range of glycosylated haemoglobin, percentage N[N].N	Mandatory	1
-	Patient—diagnosis date (diabetes mellitus), YYYY	Mandatory	1
-	Patient—initial visit since diagnosis status (diabetes mellitus), code N	Mandatory	1
-	Patient—insulin start date, YYYY	Mandatory	1

Seq No.	Metadata item	Obligation	Max occurs
-	Person (male)—erectile dysfunction, code N	Mandatory	1

DSS specific information:

Erectile problems occur in up to 50% of men with diabetes who are over 40 years old.

-	Person—blindness, code N	Mandatory	1

DSS specific information:

Patients with diabetes have an increased risk of developing several eye complications including retinopathy, cataract and glaucoma that lead to loss of vision.

Diabetic retinopathy is a leading cause of blindness. Retinopathy is characterised by proliferation of the retina's blood vessels, which may project into the vitreous, causing vitreous haemorrhage, proliferation of fibrous tissue and retinal detachment. It is often accompanied by microaneurysms and macular oedema, which can express as blurred vision. The prevalence of retinopathy increases with increasing duration of diabetes. In the early stage, retinopathy is asymptomatic. Up to 20% of people with diabetes Type 2 have retinopathy at the time of diagnosis of diabetes. The cumulative prevalence of proliferation diabetic retinopathy and macular oedema after 20 years of type 1 diabetes is about 40%. The Diabetic Retinopathy Study Group showed that panretinal photocoagulation reduces the risk of severe loss of vision by 50%.

Although diabetes retinopathy cannot totally be prevented, better control of blood sugar level slows the onset and progression of retinopathy (The Diabetes Control and Complications Trial - DCCT). Cataract and glaucoma are also associated diabetic eye problems that could lead to blindness.

Regular eye checkups are important for patients suffering from diabetes mellitus. This helps to early detect abnormalities and to avoid or postpone vision-threatening complications.

According to the NSW Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, a comprehensive ophthalmological examination should be carried out:

- At diagnosis and then every 1-2 years for patients whose diabetes onset was at age 30 years or more.
- Within five years of diagnosis and then every 1-2 years for patients whose diabetes onset was at age less than 30 years.

If retinopathy is detected, review diabetes control and improve if necessary.

References:

Vision Australia, No 2, 1997/8; University of Melbourne.

The Diabetic Retinopathy Study Research Group. Photocoagulation treatment of proliferative diabetic retinopathy.

Clinical application of Diabetic Retinopathy Study (DRS) finding, DRS Report Number8. Ophthalmology. 1981; 88:583/600).

Diabetes Control and Complications Trial: DCCT NewEngland Journal of Medicine, 329(14), September 30, 1993.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—blood pressure (diastolic) (measured), millimetres of mercury NN[N]	Mandatory	1

DSS specific information:

The United Kingdom Prospective Diabetes Study (1987 to 1998) showed major benefit from lowering blood pressure in preventing diabetes complications.

A target for blood pressure for people who suffer from diabetes is 130/85 mm Hg or less; recommended by the Australian Diabetes Society (if proteinuria is detected it is less than 125/75 mm Hg) Australian Medicines Handbook: last modified February, 2001).

Following the NSW Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus for patients who suffer from hypertension, if pharmacological intervention is required, ACE inhibitors are the preferred agents for treating hypertension in people with diabetes (unless contraindicated).

-	Person—blood pressure (systolic) (measured), millimetres of mercury NN[N]	Mandatory	1

DSS specific information:

The United Kingdom Prospective Diabetes Study (1987 to 1998) showed major benefit from lowering blood pressure in preventing diabetes complications.

A target for blood pressure for people who suffer from diabetes is 130/85 mm Hg or less; recommended by the Australian Diabetes Society (if proteinuria is detected it is less than 125/75 mm Hg) Australian Medicines Handbook: last modified February, 2001).

Following the NSW Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus for patients who suffer from hypertension, if pharmacological intervention is required, ACE inhibitors are the preferred agents for treating hypertension in people with diabetes (unless contraindicated).

-	Person—cardiovascular medication taken (current), code N	Mandatory	1

DSS specific information:

A person may be taking one or more of the following medications for a cardiovascular condition. Therefore more than one code may be reported.

Example 1:

If a person takes one of the ACE inhibitors and a Beta blocker, the code recorded would be 13.

Example 2:

If a person takes one of the ACE inhibitors, an Angiotensin II receptor blocker and a Beta blocker, the code recorded would be 123.

-	Person—cataract status, code N	Mandatory	4

Seq No.	Metadata item	Obligation	Max occurs
-	Person—cerebral stroke due to vascular disease (history), code N	Mandatory	1

DSS specific information:

Cerebral stroke is a medical emergency condition with a high mortality rate, which is often recognised as a vascular complication of diabetes mellitus.

The risk of stroke in patients with diabetes is at least twice that in non-diabetic patients according to Meigs et al. (Intern Med. 1998). Diabetes may increase actual stroke risk up to fivefold by increasing atheromatous deposits. Patients with diabetes who have a first stroke have 5-year survival rate reduced to 50% in comparison to non-diabetic stroke patients. The duration of diabetes clearly influences the severity of vascular disease. Atherosclerosis is more common and more severe earlier in the course of diabetes. In large arteries, plaque occurs from direct endothelial membrane injury, adverse balance of lipoproteins, and hyperinsulinemia (JAMA 1997). Small vessels are also affected more frequently than they are in non-diabetic stroke, resulting in an increased risk of lacunar stroke.

References:

Meigs J, Nathan D, Wilson P et al. Metabolic risk factors worsen continuously across the spectrum of non-diabetic glucose tolerance. Ann Intern Med. 1998; 128:524-533

Gorelick PB, Sacco RL, Smith DB, et al. Prevention of a first stroke: a reviewof guidelines and a multidisciplinary consensus statement from the National Stroke Association. JAMA 1999; 281:1112-1120

-	Person—cholesterol level (measured), total millimoles per litre N[N].N	Mandatory	1

DSS specific information:

The risk of coronary and other macrovascular disorders is 2-5 times higher in people with diabetes than in non-diabetic subjects and increases in parallel with the degree of dyslipidaemia.

Following Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, the targets for lipids management are:

- To reduce total Cholesterols to less than 5.5 mmol/L
- To reduce triglyceride levels to less than 2.0 mmol/L
- To increase high density lipoprotein Cholesterols to more than or equal to 1.0 mmol/L.

If pre-existing cardiovascular disease (bypass surgery or myocardial infarction), total cholesterol should be less than 4.5 mmol/L

-	Person—coronary artery disease intervention (history), code N	Mandatory	1
-	Person—creatinine serum level, micromoles per litre NN[NN]	Mandatory	1
-	Person—date of birth, DDMMYYYY	Mandatory	1

Seq No.	Metadata item	Obligation	Max occurs
-	Person—diabetes mellitus status, code NN	Mandatory	1

DSS specific information:

Uncontrolled diabetes leads to a variety of complications, often resulting in limitation of activity, disability, illness and premature mortality. Therefore ongoing assessment is required to identify people at risk of developing complications so that early preventive strategies can be applied. Although there is no cure for diabetes, with modern treatment most people can lead a full and active life and avoid long-term complications.

Aetiological classifications contained in the scientific paper 'Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications Part 1: Diagnosis and Classifications of Diabetes Mellitus Provisional Report of a WHO Consultation (Alberti & Zimmet 1998)'.

-	Person—diabetes therapy type, code NN	Mandatory	1

DSS specific information:

The objectives and priorities of treatment must be tailored to the individual considering age, sex, weight and individual health status.

An individual management plan for each patient should include the following:

- establishment of targets of treatment
- healthy eating plan
- education in self-monitoring,
- adjustment of treatment and in approaches to coping with emergencies
- exercise program
- risk factor reduction, e.g. smoking cessation
- use of oral hypoglycaemic agents, if required
- use of insulin, if required
- screening for and treatment of complications of diabetes.

In addition to glycaemic control, management of diabetes of either type requires close attention to other risk factors for the development of complications, and the impact of lifestyle changes on blood glucose levels should be monitored. In patients with Type 2 diabetes, an increase in physical activity is essential in management of lipids and glucose level. Increased physical activity has been recognised as perhaps the most feasible way of modifying glucose intolerance, a risk factor for developing diabetes and macrovascular disease (Guest & O'Dea 1992).

Seq No.	Metadata item	Obligation	Max occurs
-	Person—dyslipidaemia treatment status (anti-lipid medication), code N	Mandatory	1

DSS specific information:

Dyslipidaemia is associated with many health problems including diabetes and hypertension. It is often related to overweight and obesity. Usually caused by inappropriate diet and sedentary lifestyle, dyslipidaemia has been reaching epidemic proportions. Active lifestyle and low calorie diets are the best way of prevention, however sometimes for the treatment of dyslipidaemia the use of pharmacotherapy is required. Abnormal levels of blood lipids are associated with increased risk of developing CHD especially in diabetic patients.

The risk of coronary and other macrovascular disorders is 2-5 times higher in people with diabetes than in non-diabetic subjects and increases in parallel with the degree of dyslipidaemia. Diabetes mellitus greatly modifies the significance of lipoprotein levels, particularly when associated with smoking, hypertension and family history of CVD. Poor metabolic control of diabetes seems to have impact on abnormal lipoprotein level. Primary dyslipidaemia, due to genetic and environmental (especially dietary) factors, is diagnosed if secondary causes have been excluded (hypothyroidism, nephrotic syndrome, cholestasis, anorexia nervosa, diabetes mellitus Type 2, renal impairment).

-	Person—end-stage renal disease status (diabetes complication), code N	Mandatory	1

DSS specific information:

To determine chronic renal impairment: -

Glomerular filtration rate (GFR)
GFR > 90 ml/min normal
GFR > 60 - 90 ml/min: mild renal impairment
GFR > 30 - 60 ml/min: moderate renal impairment
GFR 0- 30 ml/min: severe renal impairment
For greater than 3 months.

In general, patients with GFR < 30 ml/min/1.73 m2 are at high risk of progressive deterioration in renal function and should be referred to a nephrology service for specialist management of renal failure.
Patients should be assessed for the complications of chronic renal impairment including anaemia, hyperparathyroidism and be referred for specialist management if required.

Patients with rapidly declining renal function or clinical features to suggest that residual renal function may decline rapidly (i.e. hypertensive, proteinuric (>1 g/24 hours), significant co-morbid illness) should be considered for referral to a nephrologist well before function declines to less than 30 ml/min. (Draft CARI Guidelines 2002. Australian Kidney Foundation).
Patients in whom the cause of renal impairment is uncertain should be referred to a nephrologist for assessment.

End-stage renal disease is a recognised complication of Type 1 and Type 2 diabetes mellitus. Diabetes is the commonest cause for renal dialysis in Australia.

The term end-stage renal disease has become synonymous with the late stages of chronic renal failure. Diabetic nephropathy may be effectively prevented and treated by controlling glycemia and administering angiotensin-converting enzyme (ACE) inhibitors. *J Am Soc Nephrol 2002 Jun; 13(6): 1615-1625]*.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—foot deformity status, code N	Mandatory	1

DSS specific information:

Foot deformities are frequently the result of diabetic motor neuropathy and diabetic foot disease is the most common cause of hospitalisation in people with diabetes.

Diabetic foot complications are common in the elderly, and amputation rates increase with age: by threefold in those aged 45 - 74 years and sevenfold over 75 years. In people with diabetes, amputations are 15 times more common than in people without diabetes and 50% of all amputations occur in people with diabetes (Epidemiology of the diabetic foot; Report of the Diabetic Foot and Amputation Group). All patients with diabetes mellitus should be instructed about proper foot care in an attempt to prevent ulcers. Feet should be kept clean and dry at all times. Patients with neuropathy should not walk barefoot, even in the home. Properly fitted shoes are essential.

Specialised foot clinics appear to decrease further episodes of foot ulceration and decrease hospital admissions for amputations.

Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus recommendations include:

- feet should be examined every 6 months or at every visit if high risk foot or active foot problem.
- refer to specialists experienced in the care of the diabetic foot if infection or ulceration is present.
- ensure that patients with 'high-risk foot' or an active foot problem receive appropriate care from specialists and podiatrists expert in the treatment of diabetic foot problems.
- to identify the 'high-risk foot' as indicated by a past history of foot problems, especially ulceration, and/or the presence of Peripheral neuropathy
- assessment outcome, peripheral vascular disease, or foot deformity or history of previous ulceration.

-	Person—foot lesion status (active), code N	Mandatory	1

DSS specific information:

Early detection and appropriate management of the 'high risk foot' and active foot problems can reduce morbidity, hospitalisation and amputation in people with diabetes.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—foot ulcer history status, code N	Mandatory	1

DSS specific information:

Past history of foot ulceration, peripheral neuropathy and foot deformities have been associated with increased risk of foot ulceration and lower limb amputation for patients who suffer from diabetes. The aim is to identify the 'high-risk foot' as indicated by a past history of foot problems, especially ulceration.

Following the Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, individuals with a 'high-risk foot' or a significant active foot problem should be examined every six months or at every visit.

Assessment:

- ask patient about previous foot problems, neuropathic symptoms, rest pain and intermittent claudication
- inspect the feet (whole foot, nails, between the toes) to identify active foot problems and the 'high-risk foot'
- assess footwear
- check peripheral pulses
- examine for neuropathy by testing reflexes and sensation preferably using tuning fork, 10 g monofilament and/or biothesiometer.

-	Person—foot ulcer status (current), code N	Mandatory	1

DSS specific information:

The development of ulcers of the feet and lower extremities is a special problem in the diabetic patient, and appears to be due primarily to abnormal pressure distribution secondary to diabetic neuropathy.

Diabetic foot ulceration is a serious problem and the lack of pain does not mean that the ulcer can be ignored or neglected. The absence of pain is very common in people with diabetes due to peripheral neuropathy.

All patients with diabetes mellitus should be instructed about proper foot care in an attempt to prevent ulcers. Feet should be kept clean and dry at all times. Patients with neuropathy should not walk barefoot, even in the home. Properly fitted shoes are essential.

Early detection and appropriate management of the 'high-risk foot' and current foot ulceration can reduce morbidity, hospitalisation and amputation in people with diabetes.

-	Person—glycosylated haemoglobin level (measured), percentage N[N].N	Mandatory	1
-	Person—health professionals attended for diabetes mellitus (last 12 months), code N	Mandatory	1
-	Person—height (measured), total centimetres NN[N].N	Mandatory	1

Seq No.	Metadata item	Obligation	Max occurs
-	Person—high-density lipoprotein cholesterol level (measured), total millimoles per litre [N].NN	Mandatory	1

DSS specific information:

Lowered HDL-Cholesterol, with increased serum triglyceride and increased low-density lipoprotein cholesterol are important risk factors for vascular disease in type 2 diabetes.

In the New South Wales Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, recommendations are that HDL, total cholesterol, triglycerides are to be measured:

- every 1-2 years (if normal)
- every 3-6 months (if abnormal or on treatment)

and the target is:

- to increase HDL Cholesterol to more than or equal to 1.0 mmol/L
- to reduce total Cholesterol to less than 5.5 mmol/L
- to reduce triglyceride levels to less than 2.0 mmol/L.

If pre-existing cardiovascular disease (bypass surgery or myocardial infarction) total cholesterol should be less than 4.5 mmol/L. A level below 1.0 mmol/L increases risk approximately 2-fold (Gordon et al. 1989; Assmann et al, 1998), (Draft NHF Lipid Guidelines Paper 2001). It has been concluded from prospective population studies that for every 0.025 mmol/L increase in HDL-C, the coronary risk is reduced by 2-5%.

In settings such as general practice where the monitoring of a person's health is ongoing and where a measure can change over time, the date of assessment should be recorded.

References:

National Heart Foundation of Australia - Lipid Management Guidelines 2001.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—hypertension treatment status (antihypertensive medication), code N	Mandatory	1

DSS specific information:

Hypertension is probably the most important public health problem in developed countries. It is common, asymptomatic, readily detectable, usually easily treatable, and often leads to lethal complications if left untreated.

Elevated blood pressure (Hypertension) is a recognised risk for microvascular and macro vascular complications of diabetes (coronary, cerebral and peripheral).

Hypertension is elevated arterial blood pressure above the normal range (130 to 139/85 to 89 mm Hg) and values above these are defined as hypertension. Lower levels of target blood pressure should be aimed for in specific groups, e.g. in diabetics aim for blood pressure less than 135/80 mm Hg.

Many diabetics fail to control high blood pressure. Among all the diabetics with high blood pressure, 29% were unaware that they had high blood pressure and only slightly more than half were receiving hypertensive medications as treatment.
Numbers of studies have shown that good management of blood pressure is at least as important as good control of blood glucose and the reduction of cholesterol in preventing the complications of diabetes.

Antihypertensives - Australian Medicines Handbook: February, 2001. Tight blood control in diabetes usually requires combination therapy as stated by (Australian Diabetes society) Therapeutic Guidelines Limited (05.04.2002).

People taking antihypertensives are also encouraged to make healthy lifestyle changes, such as quit smoking, lose weight and have regular physical activity. The level of blood pressure should generally be established on at least two to four occasions prior to initiating antihypertensive medication.

Systematic reviews of studies that have reported outcomes in patients with diabetes and hypertension indicate that combination therapy is frequently required and may be more beneficial than monotherapy. In the past multi-drug therapy to control hypertension has not been advocated much, but according to the special report published in the American Journal of Kidney Diseases, if ACE inhibitor therapy alone doesn't achieve good blood pressure control, multi-drug therapy should be implemented. (Heart Center Online)

Pahor M, Psaty BM, Furberg CD. Treatment of hypertensive patients with diabetes. Lancet 1998; 351:689-90. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. UK Prospective Diabetes Study Group [erratum appears in Br Med J 1999; 318:29].
Br Med J 1998; 317:703-13. Grossman E, Messerli FH, Goldbourt U, Curb JD, Pressel SL, Cutler JA, Savage PJ, Applegate WB, Black H, et al. Effect of diuretic-based antihypertensive treatment on cardiovascular disease risk in older diabetic patients with isolated systolic hypertension.
Systolic Hypertension in the Elderly Program Cooperative Research Group. JAMA 1996; 276:1886-92.
Hypertension in diabetes[Australian Prescriber Feb 2002]. American Journal of Preventive Medicine 2002;21.

-	Person—Indigenous status, code N	Mandatory	1

Seq No.	Metadata item	Obligation	Max occurs
-	Person—lower limb amputation due to vascular disease, code N	Mandatory	1

DSS specific information:

In people with diabetes, amputations are 15 times more common than in people without diabetes, and 50% of all amputations occur in people with diabetes (The Lower Limb in People With Diabetes; 1997/98 Australian Diabetes Society).

Diabetic foot disease is the most common cause of hospitalisation in people with diabetes. Diabetic foot complications are common in the elderly, and amputation rates increase with age: by threefold in those aged 45 - 74 years and sevenfold in population aged over 75 years. As stated by Duffy and authors the rate of lower extremity amputations can be reduced by 50% by the institution of monofilament testing in a preventive care program.

-	Person—microalbumin level (measured), albumin/creatinine ratio N[NN].N	Mandatory	1

DSS specific information:

A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in two of three samples collected over a six-month period in patients in whom other causes of an increased urinary album excretion have been excluded.

Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal.

According to the Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus a test for microalbuminuria is to be performed:

- at diagnosis and then every 12 months for patients with Type 2 diabetes,
- 5 years post diagnosis and then every 12 months for patients with Type 1 diabetes,
- if microalbuminuria is present, perform up to two additional measurements in the next 6 weeks.

-	Person—microalbumin level (measured), total micrograms per minute N[NNN].N	Mandatory	1

DSS specific information:

A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in two of three samples collected over a six-month period in patients in whom other causes of an increased urinary album excretion have been excluded.

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Seq No.	Metadata item	Obligation	Max occurs
-	Person—microalbumin level (measured), total milligrams per 24 hour N[NNN].N	Optional	1

DSS specific information:

A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in two of three samples collected over a six-month period in patients in whom other causes of an increased urinary album excretion have been excluded.

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- at diagnosis and then every 12 months for patients with Type 2 diabetes,
- 5 years post diagnosis and then every 12 months for patients with Type 1 diabetes,
- if microalbuminuria is present, perform up to two additional measurements in the next 6 weeks.

-	Person—microalbumin level (measured), total milligrams per litre N[NNN].N	Optional	1

DSS specific information:

A small amount of protein (albumin) in the urine (microalbuminuria) is an early sign of kidney damage. Microalbuminuria is a strong predictor of macrovascular disease and diabetic nephropathy. Incipient diabetic nephropathy can be detected by urine testing for microalbumin. Incipient diabetic nephropathy is suspected when microalbuminuria is detected in two of three samples collected over a six-month period in patients in whom other causes of an increased urinary album excretion have been excluded.

Diagnosis of microalbuminuria is established if 2 of the 3 measurements are abnormal.

According to the Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus a test for microalbuminuria is to be performed:

- at diagnosis and then every 12 months for patients with Type 2 diabetes,
- 5 years post diagnosis and then every 12 months for patients with Type 1 diabetes,
- if microalbuminuria is present, perform up to two additional measurements in the next 6 weeks.

-	Person—myocardial infarction (history), code N	Optional	1

Seq No.	Metadata item	Obligation	Max occurs
-	Person—ophthalmological assessment outcome (left retina) (last 12 months), code N	Optional	1

DSS specific information:

Patients with diabetes have increased risk of developing several eye complications including retinopathy, cataract and glaucoma that lead to loss of vision.

Many diabetes eye related problems are asymptomatic and require appropriate eye assessment to be detected. Regular eye checkup is important for patients suffering from diabetes mellitus. This helps to early detect abnormalities and to avoid or postpone complications and prevent blindness in people with diabetes.

According to Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus a comprehensive ophthalmological examination should be carried out:

- at diagnosis and then every 1-2 years for patients whose diabetes onset was at age 30 years or more,
- within five years of diagnosis and then every 1-2 years for patients whose diabetes onset was at age less than 30 years.

Assessment by an ophthalmologist is essential:

- at initial examination if the corrected visual acuity is less than 6/6 in either eye;
- at subsequent examinations if declining visual acuity is detected
- if any retinal abnormality is detected;
- if clear view of retina is not obtained.

References:

Vision Australia, No 2, 1997/8; University of Melbourne.

Diabetes Control and Complications Trial: DCCT NewEngland Journal of Medicine, 329(14), September 30, 1993.

US National Eye Institute.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—ophthalmological assessment outcome (right retina) (last 12 months), code N	Mandatory	1

DSS specific information:

Patients with diabetes have increased risk of developing several eye complications including retinopathy, cataract and glaucoma that lead to loss of vision.

Many diabetes eye related problems are asymptomatic and require appropriate eye assessment to be detected. Regular eye checkup is important for patients suffering from diabetes mellitus. This helps to early detect abnormalities and to avoid or postpone complications and prevent blindness in people with diabetes.

According to Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus a comprehensive ophthalmological examination should be carried out:

- at diagnosis and then every 1-2 years for patients whose diabetes onset was at age 30 years or more,
- within five years of diagnosis and then every 1-2 years for patients whose diabetes onset was at age less than 30 years.

Assessment by an ophthalmologist is essential:

- at initial examination if the corrected visual acuity is less than 6/6 in either eye;
- at subsequent examinations if declining visual acuity is detected
- if any retinal abnormality is detected;
- if clear view of retina is not obtained.

References:

Vision Australia, No 2, 1997/8; University of Melbourne.

Diabetes Control and Complications Trial: DCCT NewEngland Journal of Medicine, 329(14), September 30, 1993.

US National Eye Institute.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—ophthalmoscopy performed status (previous 12 months), code N	Mandatory	1

DSS specific information:

Patients with diabetes have an increased risk of developing several eye complications including retinopathy, cataract and glaucoma that lead to loss of vision.

Eye examinations should be commenced at the time diabetes is diagnosed. If no retinopathy is present, repeat the eye examination at least every 2 years. Once retinopathy is identified more frequent observation is required.

Diabetic retinopathy is a leading cause of blindness. Retinopathy is characterised by proliferation of the retina's blood vessels, which may project into the vitreous, causing vitreous haemorrhage, proliferation of fibrous tissue and retinal detachment. It is often accompanied by microaneurysms and macular oedema, which can express as a blurred vision. The prevalence of retinopathy increases with increasing duration of diabetes. In the early stage, retinopathy is asymptomatic, however up to 20% of people with diabetes Type 2 have retinopathy at the time of diagnosis of diabetes. Cataract and glaucoma are also associated diabetic eye problems that could lead to blindness.

Regular eye checkups are important for patients suffering from diabetes mellitus. This helps to detect and treat abnormalities early and to avoid or postpone vision-threatening complications.

References:

Vision Australia, No. 2 - 1997/8; University of Melbourne.

Diabetes: complications: Therapeutic Guidelines Limited (05.04.2002).

Seq No.	Metadata item	Obligation	Max occurs
-	Person—peripheral neuropathy status, code N	Mandatory	1

DSS specific information:

The most important aspect of grading diabetic neuropathy from a foot ulceration point of view is to assess the degree of loss of sensation in the feet.

Diabetic neuropathy tends to occur in the setting of long-standing hyperglycaemia.
Peripheral neuropathy, which affects about 30% of people with either type 1 or type 2 diabetes, is the major predisposing disorder for diabetic foot disease. Peripheral neuropathy in feet results in loss of sensation and autonomic dysfunction. Neuropathy can occur either alone (neuropathic feet) or in combination with peripheral vascular disease causing ischaemia (neuro-ischaemic feet). Purely ischaemic feet are unusual, but are managed in the same way as neuro-ischaemic feet (see Australian Diabetes Society - Position Statement - The Lower Limb in People With Diabetes).

As stated by Duffy and others, the rate of lower extremity amputations can be reduced by 50% by the institution of monofilament testing in a preventive care program.

Diabetes polyneuropathy is frequently asymptomatic but may be associated with numbness, tingling and paraesthesia in the extremities, and less often with hyperesthesias. The most common form is a distal, symmetric, predominantly sensory polyneuropathy, which begins and is usually most marked in the feet and legs.
If symptomatic neuropathy is present consult with endocrinologist or physician specialising in diabetes care since options are available for the relief of symptoms.

Peripheral nerve function should be checked at least yearly in the patient with diabetes.

References:

1997 North Coast Medical, INC. San Jose, CA 95125; 800 821 - 9319

Duffy MD, John C and Patout MD, Charles A. 1990. 'Management of the Insensitive Foot in Diabetes: Lessons from Hansen's Disease'. Military Medicine, 155:575-579

Bell- Krotovski OTR, FAOT, FAOTA, Judith and Elizabeth Tomancik LOTR. 1987.The Repeatability of testing with Semmens-Weinstein Monofilaments. 'The Journal of Hand Surgery,' 12A: 155 - 161

Edmonds M, Boulton A, Buckenham T, et al. Report of the Diabetic Foot and Amputation Group. Diabet Med 1996; 13: S27 - 42

Foot Examination -an interactive guide; Aust Prescr 2002; 25:8 - 10

Seq No.	Metadata item	Obligation	Max occurs
-	Person—peripheral vascular disease status (foot), code N	Mandatory	1

DSS specific information:

Peripheral vascular disease is the leading cause of occlusion of blood vessels of the extremities with increasing prevalence in individuals with hypertension, hypercholesterolemia and diabetes mellitus, and in cigarette smokers. Peripheral vascular disease is estimated to occur 11 times more frequently and develop about 10 years earlier in people with diabetes.

Presence of symptomatic peripheral vascular disease requires an interdisciplinary approach including a vascular surgeon, an endocrinologist or physician specialising in diabetes care.

References:

Foot Examination - an interactive guide; Australian Prescriber

-	Person—severe hypoglycaemia history, status code N	Mandatory	1

DSS specific information:

Most hypoglycaemic reactions, however, do not cause long term problems, but the risks of permanent injury to the brain are greater in children under the age of 5 years, the elderly with associated cerebrovascular disease and patients with other medical conditions such as cirrhosis and coeliac disease. The serious consequences of hypoglycaemia relate to its effects on the brain. Rarely hypoglycaemia may cause death.

It is important to know how to recognise and react when someone is unconscious from hypoglycaemia. These people should be placed on their side and the airway checked so that breathing is unhampered and nothing should be given by mouth as food may enter the breathing passages. Treatment needs to be given by injection - either glucagon (a hormone which raises the blood glucose by mobilising liver stores) or glucose itself. Glucagon should be given by injection (usually intramuscular) at a dose of 0.5 units (or mg) in children under the age of 5 years and 1.0 units (mg) for all older age groups.

All diabetic patients at risk of developing hypoglycaemia should have glucagon at home. Their families need to be shown how to administer it in times of severe hypoglycaemia.

-	Person—sex, code N	Mandatory	1
-	Person—tobacco smoking status (previous three months), code N	Mandatory	1

DSS specific information:

For people with diabetes smoking is one of the most powerful treatable risk factors. Associated with hypertension, diabetes and hypercholesterolemia, smoking is a definite health hazard for coronary heart disease.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—triglyceride level (measured), total millimoles per litre N[N].N	Mandatory	1

DSS specific information:

Following Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, the targets for lipids management are:

- to reduce total cholesterol to less than 5.5 mmol/L
- to reduce triglyceride level to less than 2.0 mmol/L
- to increase HDL-C to more than or equal to 1.0 mmol/L.

Alterations in fat transport, often resulting in hyper-triglyceridaemia, are well-recognised concomitants of diabetes mellitus.

Elevated plasma triglyceride levels are present in about one third of diabetic patients. It seems that triglycerides are related to the critical role of insulin in the production and removal from plasma of triglyceride-rich lipoproteins.

Lifestyle modifications, including weight loss and reduction of excess alcohol intake, are particularly effective for reducing triglyceride and increasing HDL-C.

-	Person—visual acuity (left eye), code NN	Mandatory	1

DSS specific information:

Record actual result for both right and left eyes (this is a repeating field):

- 1st field: Right eye
- 2nd field: Left eye.

-	Person—visual acuity (right eye), code NN	Mandatory	1

DSS specific information:

Record actual result for both right and left eyes (this is a repeating field):

- 1st field: Right eye
- 2nd field: Left eye.

Seq No.	Metadata item	Obligation	Max occurs
-	Person—weight (measured), total kilograms N[NN].N	Mandatory	1

DSS specific information:

Following Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus, body mass index (BMI) should be below 27 kg/m 2 for men and women. For adults who suffer from diabetes, the recommendation is to measure weight and calculate BMI on the initial visit and then measure weight every 3 months. If the patient is on a weight reduction program, weight is to be measured more frequently.

Strong evidence exists that weight loss reduces blood pressure in both overweight hypertensive and non-hypertensive individuals; reduces serum triglycerides and increases high-density lipoprotein (HDL)-cholesterol; and generally produces some reduction in total serum cholesterol and low-density lipoprotein (LDL)-cholesterol.

The risk of developing diabetes rises continuously with increasing obesity (DHAC & AIHW 1999:13). An increased central distribution of body fat (when fatness is concentrated in the abdomen) also appears to be associated more often with Type 2 diabetes (Bishop et al. 1998:430-1).

Weight loss reduces blood glucose levels in overweight and obese persons with and without diabetes; and weight loss also reduces blood glucose levels and HbA1c in some patients with type 2 diabetes. Although there have been no prospective trials to show changes in mortality with weight loss in obese patients, reductions in risk factors would suggest that development of type 2 diabetes and CVD would be reduced with weight loss.

-	Service contact—service contact date, DDMMYYYY	Mandatory	1