

Index

Note: Figures and Tables are indicated by *italic page numbers*

- advanced retinopathy 113–22
 - occurrence in diabetic population 33
- alcoholic drinks 15
- angle closure glaucoma 124–5, 126
- anti-thrombotic tablets 18
- aqueous humour 23, 165
- artefacts 65
 - edge (iris) 76
 - eyelash 65, 76, 95, 117
 - light-reflection 57, 58, 65, 66–7, 69, 73, 74, 76, 80, 81, 89, 101, 106, 109, 120
 - photographic (flash) 139
- arteries 165
 - examination of image 57
 - occlusions 137
- arterio-venous (AV) nipping/crossing
 - changes 165
 - in background retinopathy 84
 - images 70, 74, 84, 88, 94, 104, 108, 133
 - in severe non-proliferative retinopathy 88
- asteroid hyalosis 74
- background retinopathy 29, 77–84
 - early 79–83
 - grading system 62
 - lesions 29, 77–8
 - moderate 84
 - occurrence in diabetic population 33, 34
 - see also* blot haemorrhages; ‘cotton wool’ spots; exudates; microaneurysms
- beta cells (in pancreas) 1, 165
 - destruction in type 1 diabetes 1
- blindness
 - causes 33, 34, 91
 - occurrence in diabetic population 33–5
 - preventability 33–5
- blood glucose
 - effect of insulin 4
 - normal range 8
 - testing 8, 9, 17
- blood glucose control 2–5, 16, 17, 18
 - in management of maculopathy 93
 - proliferative retinopathy affected by sudden improvement 103
 - retinopathy affected by tightness of control 35–6
- blood lipid control 16, 18

- blood pressure control 16, 18, 92
 complications affected by 10, 20–1
 in maculopathy 92, 97
 in proliferative retinopathy 103
 retinopathy affected by tightness of
 control 36–7
 in severe non-proliferative retinopathy
 86, 95
- blot haemorrhages 27, 28, 77–8
 in advanced retinopathy 116, 118, 119,
 121
 in background retinopathy 29, 77–8,
 79, 80, 81, 83, 84
 images 76, 79, 80, 81, 83, 84, 88, 94,
 95, 96, 100, 101, 102, 105, 106,
 108, 109, 116, 118, 119, 121, 129,
 137
 in maculopathy 94, 96, 100, 101, 102
 in non-diabetic eye disease 129, 137
 in proliferative retinopathy 105, 106,
 108, 109
 in severe non-proliferative retinopathy
 88, 95
- branch retinal artery occlusions 137
 branch retinal vein occlusions 124, 136
 British Association of Retinal Screeners
 151
 British Diabetic Association 151
 funding for mobile screening units 44
see also Diabetes UK
- calorie-restricted diet 15
 capillaries 26, 28, 165
 carbohydrate ‘exchanges’ 5
 carbohydrates 5, 15, 165
 cataract(s) 29–30
 appearance 29
 as cause of blindness 34
 images affected by 87, 107, 134
 occurrence in diabetic population 30
 central vein retinal occlusions 124
 children, type 1 diabetes 1
 cholesterol embolus 124, 135
 chorioretinitis 123, 130
 compared with laser scars 110
 scars 129
- choroid 24, 24, 165
 images 72, 110, 111, 135
 choroidal circulation 75
 ciliary muscle 23, 24, 165
 circinate exudates 165
 in advanced retinopathy 119
 images 87, 96, 100, 101, 106, 119
 in maculopathy 96, 100, 101
 in proliferative retinopathy 106
 in severe non-proliferative retinopathy
 87
- coalescent exudates 102
 communication of screening information
 58–60
 standard form of words used 59
- cones (and rods) 26, 27, 166
 confidentiality 47
 congenital retinal disorders 124
 conjunctiva 23, 24, 166
 conjunctivitis 125
 cornea 23, 24
 ‘cotton wool’ spots 28, 78
 in background retinopathy 78
 images 72, 86, 87, 89, 97, 99, 108
 in maculopathy 97, 99
 in proliferative retinopathy 108
 in severe non-proliferative retinopathy
 86, 87, 89
- deep round haemorrhages 85
 images 87, 98, 99, 109
 in maculopathy 98, 99
 in proliferative retinopathy 109
 in severe non-proliferative retinopathy
 85, 87
- diabetes
 as cause of blindness 33, 34
 history 10, 21
 macrovascular complications 9, 19
 meaning of term 1, 166
 microvascular complications 8, 19
 type 1, 1–11
 blindness caused by 33, 34, 35
 causes 1
 complications 8–10
 history 10

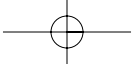
- living with 6–8
 - management 2–8
 - occurrence in population 1
 - symptoms 2
- type 2, 13–22
 - age at onset 13
 - blindness caused by 33–4, 35
 - causes 13
 - complications 17, 19–21
 - history 21
 - management 14–17
 - occurrence in population 14
 - symptoms 14
- Diabetes Control and Complications Trial (DCCT) 35–6
- Diabetes UK 151
 - insurance terms 150
- diabetic retinopathy *see* retinopathy
- digital retinal imaging, as screening
 - method of choice 40
- disagreement on classification of image 43, 45
- district screening system, organization of 60
- double vision, causes 30
- driving 149
 - after screening 52
 - and laser therapy 149, 153
 - rules 8, 149
- Drusen spots 123, 127–8, 134
- early background retinopathy 79–83
- eating habits 3, 5, 14–15
- edge artefact 76
- employment, and diabetes 150
- explanation of screening procedure 47
- exudate maculopathy 28, 78, 94, 96–102, 119
 - severe 119
 - treatment of 37, 153
- exudates
 - in advanced retinopathy 118, 119, 120
 - in background retinopathy 29, 78
 - causes 28, 28, 78
 - circinate 87, 96, 100, 101, 106, 119, 165
 - close to fovea 94
 - coalescent 102
 - images 68, 72, 87, 89, 94–102, 106, 108, 109, 118, 119, 137
 - linear 98
 - in maculopathy 94, 96–102, 119
 - in non-diabetic eye disease 137
 - plaques 96, 97, 99, 106, 119
 - in proliferative retinopathy 106, 108, 109
 - in severe non-proliferative retinopathy 87, 89, 95
 - widespread 96
 - with circinates 101
- eye
 - diabetes-related changes 26–30
 - time course 19
 - structure 23–6
- eyebrows, effect on image 65
- eyelash artefact 65, 76, 95, 117
- eyelids 25
 - effect on image 65
- false negative 42
- false positive 42
- fibrosis 114–15
- fibrous band 122
- fibro-vascular membrane 116
- flame-shaped haemorrhages 97, 101, 131, 133, 136
- foot complications, time course 20
- fovea 25, 91, 166
 - images 58
- glaucoma 30, 124–5
 - acute (angle closure glaucoma) 124–5, 126
 - as cause of blindness 34, 124
 - chronic (open angle glaucoma) 124, 126
 - and mydriatic drops 52, 124, 125
 - treatment of 124, 126
- glaucomatous disc 138
- gliclazide 16, 18
- glitazones 16, 18
- glossary 165–8

- glucagon 6, 166
- glucose 166
- levels in blood
 - effect of insulin 4
 - normal range 8
 - retinopathy affected by tightness of control 35–6
 - testing/monitoring 8, 9, 17
 - in urine 2, 14
 - effect of diet in type 2 diabetes 21
 - testing/monitoring 17
- glucose-control tablets 16, 18
- grading of image 62
- disagreement 43, 45
- ‘ground glass’ appearance of images 107, 134
- haemorrhages
- in advanced retinopathy 113, 117–18, 120–1
 - in background retinopathy 29, 77–8, 79, 80, 81, 83, 84
 - images 72, 76, 79, 80, 81, 83, 84, 86, 87, 88, 94, 96, 97, 98, 99, 100, 101, 102, 104, 105, 106, 108, 109, 110, 111, 117–18, 120–1, 127
 - in maculopathy 94, 96, 97, 98, 99, 100, 101, 102
 - in proliferative retinopathy 104, 105, 106, 108, 109, 110, 111
 - in severe non-proliferative retinopathy 85, 86, 87, 88
 - see also* blot haemorrhages; deep round haemorrhages; flame-shaped haemorrhages; pre-retinal haemorrhage; vitreous haemorrhage
- HbA1c level 9–10, 166
- Heavy Goods Vehicle licence 149, 150
- history
- discovery of diabetes 10, 21
 - retinal screening 44
- hypertension
- papilloedema caused by 133
 - see also* blood pressure control
- hypertensive retinopathy 123
- ‘hypo’
- causes 6, 7
 - symptoms 6
 - treatment 6
- hypoglycaemia 6, 166
- as side effect 6, 16, 17
 - see also* ‘hypo’
- identity confirmation 47
- insulin 1, 2, 166
- injection regimes 2, 4
 - levels in non-diabetic person 4
 - pen injector 2, 3, 167
 - types 5
 - use in type 2 diabetes 17
- insulin-dependent diabetes mellitus (IDDM) *see* type 1 diabetes
- insurance, and diabetes 150
- intraretinal cysts 129
- intraretinal microvascular anomalies (IRMA) 29, 85, 166
- in advanced retinopathy 114, 121
 - images 86, 87, 88, 104, 105, 114
 - in proliferative retinopathy 104, 105
 - in severe non-proliferative retinopathy 29, 85, 86, 87, 88
- iris 23, 24, 166
- edge artefact caused by 76
 - new blood vessel growth in 30, 113
- juvenile onset diabetes *see* type 1 diabetes
- ketoacidosis 6, 166
- ketones 2, 166
- kidney complications, time course 19
- laser, meaning of term 153
- laser therapy 37, 39, 152–3
- and driving licence requirements 149, 153
 - grid photocoagulation 93, 153
 - maculopathy treated by 93, 153
 - pan-retinal photocoagulation 122, 152
 - proliferative retinopathy treated by 110–11, 152

- scars 88, 110–11, 114, 115, 116, 120, 122
 compared with chorioretinitis 110
 side effects 153
 light reflection artefacts 57, 58, 65, 66–7, 69, 73, 74, 76, 80, 81, 88, 89, 101, 106, 109, 120
 light sensitivity due to mydriasis 52
 lipid-lowering treatments 18
 long-sightedness, correction of 49
 low-fat low-sugar diet 15
- macula 25, 91, 167
 macular hole 139
 macular oedema 29
 occurrence in diabetic population 33, 34
 possible symptoms 51, 91–2, 119
 maculopathy 91–102
 detection using photography 44, 94–102
 grading system 62
 management 92–3
 meaning of term 91, 167
 treatment of 37, 92–3, 153
 maturity onset diabetes *see* type 2 diabetes
 metformin 16, 18
 microaneurysms 27, 28, 77
 in advanced retinopathy 118, 119, 121
 in background retinopathy 29, 77, 79, 80, 81, 82, 83, 84
 images 58, 68, 70, 79, 80, 81, 82, 83, 84, 88, 95, 96, 97, 100, 101, 102, 105, 108, 109, 111, 118, 119, 121, 129
 in maculopathy 96, 97, 100, 101, 102
 in non-diabetic eye disease 129
 in proliferative retinopathy 105, 108, 109, 111
 in severe non-proliferative retinopathy 88, 95
 moderate background retinopathy 84
 mononeuropathies 30
 mydriasis 51, 167
 eye drops to induce 51–4
 myelinated fibres 71, 167
 image 71
 myopic crescent 72, 94, 139
- naevi 104, 123–4, 134
 National Retinopathy Screening System(s) 152
 nerve complications, time course 20
 neuropathy, eye muscles 30
 new vessels
 on disc 104–5, 107
 growth of 29, 103
 images 89, 104–9
 in iris 30, 113
 on retina 106, 108–9, 120
see also proliferative retinopathy
 Newcastle upon Tyne
 photography-based screening study 44
 quality assurance system 41
 time distribution prior to blindness 34, 35
 non-diabetic eye disease 123–39
 non-insulin-dependent diabetes mellitus (IDDM) *see* type 2 diabetes
 non-white-skinned people, images 73, 101
 normal retina, images 65–76
- obesity
 treatment 18
 type 2 diabetes affected by 13, 14, 21
- ocular pressure
 increased
 causes 30
see also glaucoma
- opacities
 cataract 29
 reflection artefacts due to 74, 101
 open angle glaucoma 124, 126
- ophthalmologist
 macular oedema assessment by 92, 93
 quality assurance by 41
 referral criteria 41, 51, 61, 92
 screener's links with 60–1

- ophthalmoscope/ophthalmoscopy 153–5,
167
 compared with photography-based
 screening 44
 procedure 154–5
- optic cup
 images 67, 69, 70, 72, 73, 82, 84, 95,
 97, 98, 99, 106, 117, 118, 127, 128
 relative size 67, 72, 95, 98, 124, 138
- optic disc 167
 examination of images 57
 new vessels on 104–5, 107
 relative size 91
 tilted 130
- oral hypoglycaemic agents/tablets 16, 18,
167
- pancreas 1, 167
- papilloedema 123, 131–3, 167
- pen injector (for insulin) 2, 3, 167
- phenylephrine (mydriatic eye drop) 53–4
- photographic (flash) artefact 139
- photoreceptor cells 26
 see also cones; rods
- physical activity 15
- pigment epithelial hypertrophy 134
- pigmented image 73
- pilocarpine eye drops, not used 54
- pinhole device (in visual acuity
 measurement) 48, 50
- plaque exudates 96, 97, 99, 106, 119
- practical details (for retinal screening)
47–63
- pre-proliferative retinopathy 29, 85–9
 grading system 62
 see also severe non-proliferative
 retinopathy
- pre-retinal haemorrhages 29, 103, 113
 images 117–18, 120–1
 with new vessel formation 120
 see also vitreous haemorrhages
- prescription charges 150
- proliferative retinopathy 103–11
 grading system 62
 laser therapy for 110–11, 152
 meaning of term 29, 103, 168
 occurrence in diabetic population 33, 34
 see also new vessels
- Public Service Vehicle licence 149, 150
- quality assurance 41–3, 45, 60
 percentage of images reviewed 41, 43
- referable maculopathy, grading system 62
- reflection artefacts 57, 58, 65, 66–7, 69,
73, 74, 76, 80, 81, 88, 89, 101, 106,
109, 120
- refractive errors 48, 49
- retina 24, 24, 25–6, 168
 examination of image 58
 microstructure 27
 new vessels on 106, 108–9
 normal, images 65–76
- retinal artery occlusions 137
- retinal screener
 British Association 151
 meaning of term 168
- retinal screening
 history 44
 as integral part of diabetes care 37,
 40–1
 method of choice 40
 organization of system 39, 40, 60
 practical details 47–63
 examining the image 56–8
 explaining results 58–60
 mydriatic eye drops used 51–4
 obtaining the image 54–6
 visual acuity measurement 48–51
 principles 40–1
 quality assurance in 41–3, 45
 reason for 33–46
 retinopathy incidence affected by 39, 40
 where it should take place 39
 who should be screened 39, 44
- retinal vein occlusions 124, 136
- retinitis pigmentosa 124
- retinopathy, diabetic 26–9
 asymptomatic, detecting 37, 39–40
 grading system 62
 occurrence in diabetic population 33
 slowing of progression 35–7

- time course 19, 33
see also advanced retinopathy;
 background retinopathy;
 proliferative retinopathy; severe
 non-proliferative retinopathy
- rods (and cones) 26, 27, 168
- rubeosis iridis 30, 113
- sclera 24, 24, 168
- screening
 reason for 33–46
see also retinal screening
- self-assessment questions 141–8
 answers 157–63
- sensitivity of screening 42–3, 168
- severe exudate maculopathy 119
- severe non-proliferative retinopathy 85–9
 close to macula 95
 signs 85
see also intraretinal microvascular
 anomalies; venous abnormalities
- short-sightedness
 correction of 49
 effect on retinal image 75, 91, 102
see also myopic crescent
- sleep apnoea, papilloedema caused by
 131–2
- slit lamp examination 92, 93
- Snellen chart testing 48
- 'sparkling' eyes/retinas 65
- specificity of screening 43, 168
- sub-conjunctival haemorrhage 125
- suspensory ligaments 23, 168
- tiger striping 69–70, 71, 73, 132
- tilted disc 130
- tortuous vessels 68, 114, 115
- toxoplasmosis, eye disease caused by 123,
 130
- tropicamide (mydriatic eye drop) 51–3
 action 51–2
 contraindications to use 52
 first recommended 44
 instilling 53
 safety 52–3, 124, 125, 126
 side effects 52
- true negative 42
- true positive 42
- type 1 diabetes 1–11
 blindness caused by 33, 34, 35
 causes 1
 complications 8–10
 history 10
 living with 6–8
 management 2–8
 occurrence in population 1
 symptoms 2
- type 2 diabetes 13–22
 age at onset 13
 blindness caused by 33–4, 35
 causes 13
 complications 17, 19–21
 history 21
 management 14–17
 medication for 16–17, 18
 occurrence in population 14
 symptoms 14
- UK
 National Retinal Screening Programme,
 retinopathy grading system 62
 National Retinal Screening Project
 Group 40
 Prospective Diabetes Study (UKPDS)
 20, 36
- urine testing
 glucose 17
 ketones 6
- uveitis 125
- veins 168
 examination of image 57
 occlusions 124, 136
- venous abnormalities 29, 85
 in advanced retinopathy 114
 images 86, 87, 88, 89, 100, 108, 111,
 114
 in maculopathy 100
 in proliferative retinopathy 108,
 111
 in severe non-proliferative retinopathy
 29, 85, 86, 87, 88, 89



-
- vessels
 - examination of image 57
 - tortuous, image 68
 - see also* arteries; new vessels;
veins
 - visual acuity measurement 48–51
 - interpretation 48, 51, 92
 - procedure 48
 - vitrectomy 153
 - vitreous haemorrhages 103, 113
 - see also* pre-retinal haemorrhages
 - vitreous humour 24, 24, 168

