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SHORT COMMUNICATION

Driving and exceptional cases: Supporting relicensing evaluation in patients whose visual fields fail to meet standards

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Abstract

Purpose: The UK Driver and Vehicle Licensing Agency's (DVLA) visual field criteria mean that homonymous defects close to fixation are not usually acceptable for driving. Here, we illustrate cases where patients with field defects failing to meet standards had their licences revoked but subsequently were permitted to drive again through exceptional case provisions.

Methods: Clinical assessment of two patients with homonymous loss: a 62-year-old man (PWT) with a dense left upper homonymous quadrantanopia secondary to a right occipital lobe stroke and a 48-year-old woman (JC), only aware of right upper homonymous quadrantanopia following routine primary care assessment and subsequently attributed to left middle cerebral artery stroke from perinatal intracranial haemorrhage.

Results: PWT's Esterman test showed a significant central defect failing to meet the standard. His subsequent ophthalmic examination was otherwise unremarkable with excellent visual functions. Clinical evidence was provided supporting his relicensing application, and in time, a practical DVLA driving assessment indicated adaptation had been successful, and his licence was restored. JC's defect also failed to meet the standard, and her licence was revoked. Her ophthalmic examination was otherwise unremarkable, and her condition was attributed to a nonprogressive, isolated perinatal event. The DVLA accepted supporting clinical evidence; her subsequent practical driving assessment demonstrated successful adaptation and her licence was also restored.

Conclusions: Conventional visual field tests are not necessarily predictive of real-world driving performance, with drivers' adaptive strategies not being accommodated. In the UK, individuals with visual field loss failing to meet the standard may be eligible for relicensing as exceptional cases if specific criteria can be met. For exceptional cases potentially licensable under these criteria, the DVLA requires clinician support and a satisfactory practical driving assessment. Similar provisions exist internationally. Clinicians need to be aware of the role they may play in such scenarios.

KEYWORDS
driving, low vision, visual fields

Regulation of driving licences for medical conditions such as impaired visual function is necessary since those with visual impairment can pose a safety risk to themselves and other road users. It is expected, however, that regulation should be evidence-based and proportionate, such that safety is maintained without unnecessarily preventing people from driving when they might be safe to do so. This matter is of considerable importance, not least given the significance of driving restrictions on the risk of social isolation and depression, reduced quality of life, restricted access to healthcare services and the risk of requiring placement in long-term care.[1]

In the UK, in addition to vehicle registration mark and visual acuity criteria, the Driver and Vehicle Licensing Agency (DVLA) requires Group 1 licensed drivers to have a minimum field of vision of at least 120° horizontally (measured using a target equivalent to white Goldmann III4e), with the extension being at least 50° left and right of the midline.[2] In addition, there should be no 'significant' defect in the binocular field encroaching within 20° of fixation above/below the horizontal meridian. The following is generally regarded as an unacceptable central loss: a cluster of ≥4 adjoining points either wholly or partly within the central 20°; loss consisting of both a single cluster of 3 adjoining missed points up to and including 20° from fixation, and any additional separate missed points within the central 20° and any central loss from the hemianopia or quadrantanopia of >3 missed points. These field criteria mean patients with homonymous defects close to fixation, whether hemianopic or quadrantanopic, are not usually

Key Points

- Homonymous hemianopic visual field defects typically result in failure to meet vision standards for driving, with the loss of a licence likely to impact negatively on the quality of life.
- Exceptional case provisions within vision standards for driving may mean that some patients with visual field defects are eligible to be evaluated for relicensing.
- When exceptional case provisions within vision standards for driving apply, clinicians should be aware of their role, where appropriate, in supporting patients with visual field defects seeking licence restoration.

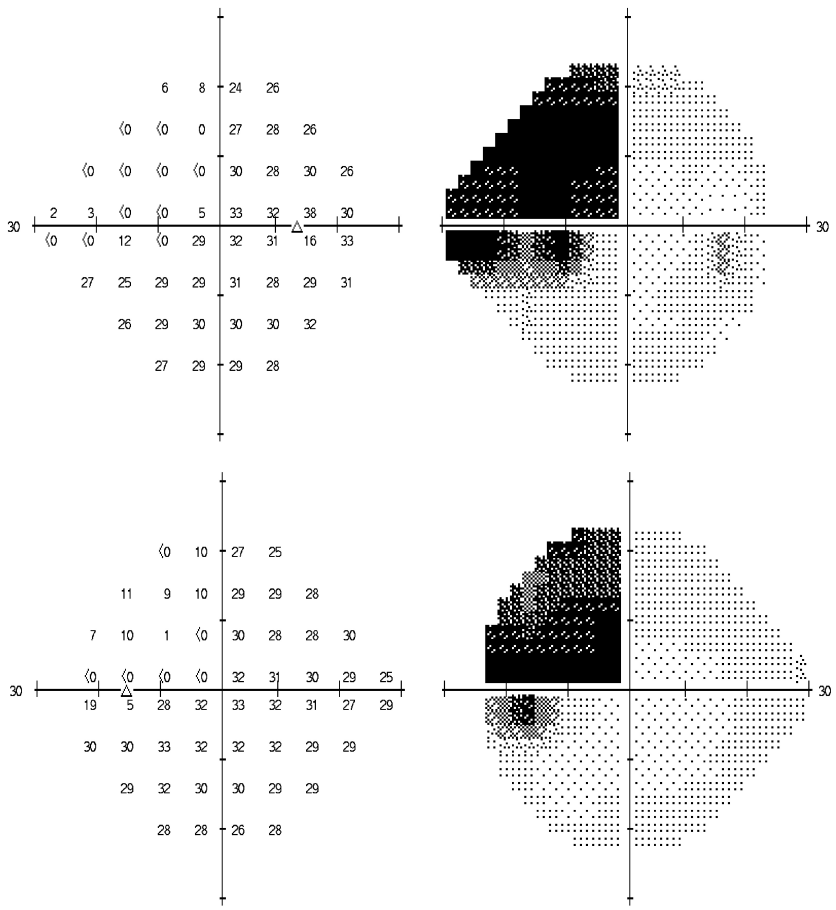

FIGURE 1 Case PWT's single visual fields for the right eye (top) and left eye (bottom) on the Humphrey visual field analyser, showing a dense left upper homonymous quadrantanopia, resulting in failure to secure the appropriate group 1 driver's visual field standard

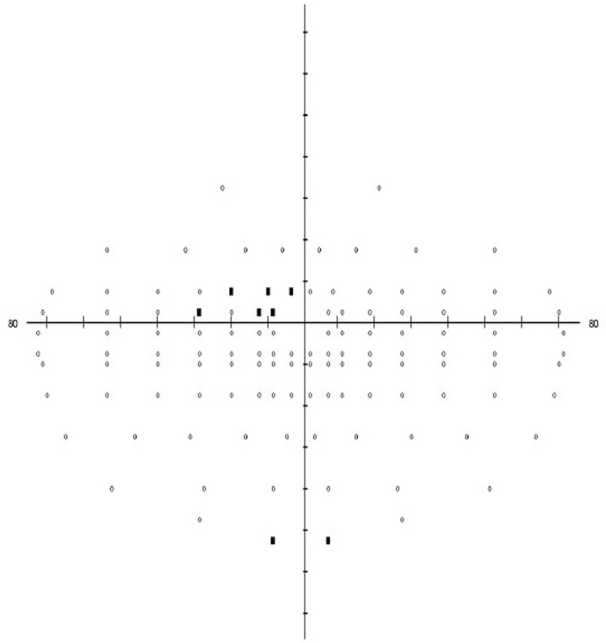

FIGURE 2 Esterman binocular visual field test for case PWT showing a significant defect of six missed points within the central 20° in the upper left quadrant of the binocular visual field, consistent in location (but not extent) with the left homonymous loss of sensitivity superiorly in each eye (open circles = points seen, closed squares = points missed)

accepted for driving. In a review of driving with homonymous visual field loss, Bowers[3] concludes that while there is clear evidence from on-road studies that some people with such defects may be rated as safe, others have significant deficits in skills considered important for driving safely. These deficits in skills include assuming a lane position too proximal to one side of the lane of travel, unstable steering and inadequate viewing or scanning behaviours. At the same time, for those who may be safe to drive, there is a role for clinicians knowing about processes and how to advise patients enquiring about their driving eligibility and potential for evaluation for relicensing.

We describe here two patients with homonymous visual field defects, one symptomatic with sudden onset visual loss acquired due to stroke later in life and the other due to an incidental finding discovered only in middle age at a routine eye examination, having arisen perinatally. Both scenarios initially resulted in the loss of eligibility to drive and required clinical support for subsequent successful relicensing.

PWT was a 62-year-old man with a dense left upper homonymous quadrantanopia (Figure 1) secondary to a right occipital lobe stroke, referred by his neurologist to ophthalmology shortly after his stroke. He presented with a positive scotoma and had stopped driving at this time when aware of this defect. His initial Esterman binocular visual field test showed a significant defect within the central 20° (Figure 2), and he surrendered his driving licence. Two years after his stroke, an initial application for consideration under exceptional case provisions (and based upon support through his general medical practitioner) was unsuccessful, on account of his unsafe performance in the practical driving assessment, where the DVLA considered that PWT had not fully adapted to his stable visual field defect. He was, however, informed that he was eligible to re-apply. On subsequent assessment 4 years after his stroke and now at 66 years of age, his monocular field tests confirmed a stable left upper quadrantic loss. A repeat Esterman demonstrated he was able to secure 120° on the horizontal, but he retained a significant scotoma within the central 20°, i.e., in accordance with DVLA criteria on unacceptable loss as specified above. Visual acuities were 0.00 logMAR in each eye with a small myopic refractive correction, Ishihara colour vision plates were all seen (17/17) in each eye separately and a good standard of binocular Pelli-Robson contrast sensitivity was attained (1.80 log CS). PWT had a normal anterior segment, normal intraocular pressures, minimal lens opacities and no evidence of posterior segment anomaly. There was, therefore, no ophthalmic condition present likely to give rise to progressive visual field loss. PWT was aware of his visual defect, which had been static over a 4-year period. This ophthalmic evidence was provided in support of his relicensing application and at the second time of asking his practical test was considered by the DVLA to be satisfactory, with his adaptation this time being judged to have been successful. PWT's licence was restored.

In contrast, Case JC was a 48-year-old woman who had hitherto been unaware of any visual defect, but who subsequently became aware of a right upper homonymous quadrantanopia (Figure 3) following a visual field test carried out as part of a case-finding for glaucoma in primary care. Follow-up neurological investigations identified a left middle cerebral artery stroke linked to a history of perinatal intracranial haemorrhage as the cause. Unfortunately, JC's visual field defect (Figure 4) failed to meet standards (a 'debarring' defect), and her licence was revoked. However, her ophthalmic examination was otherwise unremarkable, with no relative afferent pupillary defect, and a normal ophthalmic examination other than subtle optic disc pallor and nerve fibre layer thinning was considered to be consistent with her neuro-ophthalmic diagnosis. On subsequent follow-up, her right upper visual field loss appeared stable over a 12-month timeline, and her condition was attributed to her nonprogressive and isolated perinatal event. JC's visual acuities were excellent at −0.10 logMAR in each eye, Ishihara colour vision plates were all seen (17/17) in each eye separately, and binocular Pelli-Robson contrast sensitivity was 1.92 logCS, an above-average finding for her age. From an ophthalmic perspective, she met the DVLA's exceptional case provisions (detailed below), and with a 30-year history of incident-free, no-fault driving, was clinically supported in reapplying for her licence through the provision of a detailed report. The DVLA accepted this supporting evidence, and she was permitted to proceed to the practical driving ability assessment where JC demonstrated successful adaptation. JC's licence was restored.

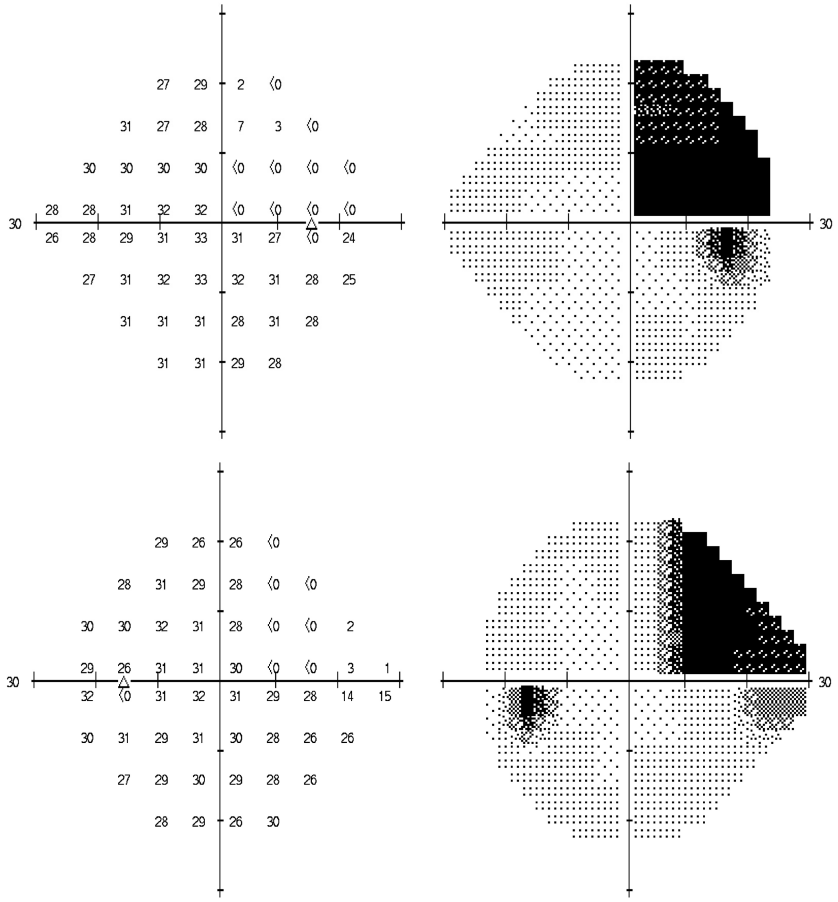

FIGURE 3 Case JC's single visual fields for the right eye (top) and left eye (bottom) on the Humphrey visual field analyser, showing dense right upper homonymous quadrantanopia which resulted in her failing to secure the appropriate group 1 driver's visual field standard. Fixation errors were more evident in testing the left eye

These cases demonstrate that eye care practitioners need to be aware that loss of eligibility to drive in patients presenting with visual fields failing to meet standards need not always be permanent. Compensation through the increased eye and head movements is important.[3] Traditional measurements of the extent of the visual field, and where eye movements are not permitted, do not assess drivers' adaptive strategies and are therefore not necessarily predictive of real-world driving performance.[4] Indeed, a recent investigation of drivers with field loss showed no correlation between passing or failing an on-road assessment, and the number or pattern of points missed on the Esterman plot.[5] In the absence of an optimal test to screen for those who may be safe to drive, it is entirely appropriate that suitable patients are afforded the opportunity to have an individual practical assessment to determine their extent of adaptation and fitness to drive. Patients with visual fields failing to meet standards are unlikely to be conversant with visual standards for driving and exceptional case provisions, with the potential for a practical on-road evaluation permitted for those with static defects.[6] As illustrated here in these two cases, Group 1 drivers, whose previous driving entitlement has been removed due to visual fields failing to meet standards, may be eligible for individual relicensing consideration under exceptional case provisions if the defect has been present for at least 12 months; the defect is caused by an isolated event or a nonprogressive condition; there is no other condition or pathology regarded as progressive and likely to be affecting the visual field; they have visual function in both eyes; they do not have uncontrolled diplopia; they have no other impairment of visual function (including no glare sensitivity, loss of contrast sensitivity or impairment of twilight vision) and there is clinical confirmation of full functional adaptation. For exceptional cases considered to be potentially licensable under these criteria, the DVLA will then require a satisfactory practical driving assessment. A protocol is also in place for exceptional cases for those individuals who have never driven and have a hemianopic loss from infancy (the latter but not the former being true for Case JC).

The loss of a driving licence is a hugely significant setback in a person's life, and for those with sight loss, this possibility may arguably be felt particularly acutely in those patients previously asymptomatic attending for routine sight testing, only to then be informed they have visual

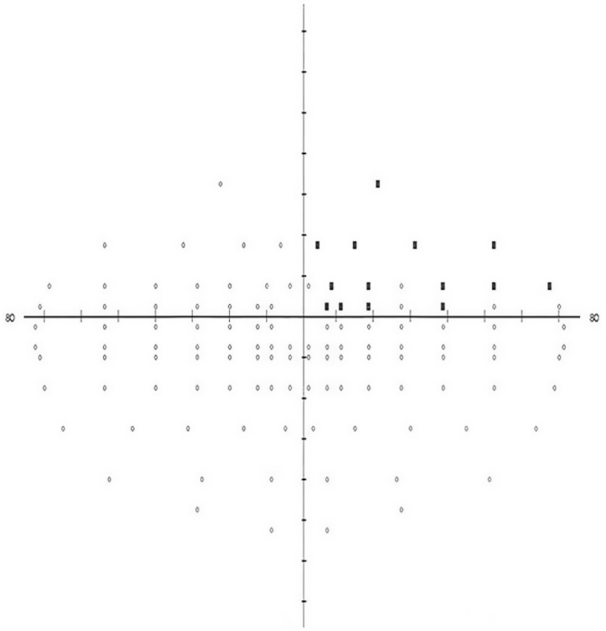

FIGURE 4 Esterman binocular visual field test for case JC showing a significant defect of 14 points missed within the central 20° in the upper right quadrant of the binocular visual field, consistent in location and extent with the right homonymous loss of sensitivity superiorly in each eye (open circles = points seen, closed squares = points missed)

fields failing to meet standards. The DVLA's exceptional case provisions apply only to Group 1 licences. Case PJW was aware of his sudden onset defect and adapted slowly over time to meet the criteria. Case JC, in contrast, had been asymptomatic, only becoming aware of her defect after a routine eye examination, and she was highly likely to be fully adapted from her long history of driving with essentially a congenital visual impairment. Their presentations and subsequent licence restoration serve as a reminder as to how clinicians can make a difference, as noted in the introduction, to their patients' health-related quality of life, risks of social isolation and depression, ability to access healthcare services and the risk of potential placement in long-term care.[1] While it is true that our quadrantanopia cases reflect a less severe loss of visual field than would be the case in those with more substantive hemianopic loss, it is still possible to be adapted and pass the practical test with complete hemianopic loss. In our view, the DVLA's exceptional case provisions in relation to the vision standards for driving are not widely appreciated. Many patients with visual fields failing to meet standards are unlikely to apply, some will fall outside exceptional case provisions and others may not receive support from their eye care specialist for clinical 'full functional adaptation', a term not precisely defined for clinicians. The number of cases applying under exceptional case provisions (and the proportion of these passing) is not available within the public domain. Interestingly, cases of hemianopia are eligible for sight impairment registration in the UK, albeit such a status is deemed incompatible with having a driving licence, despite the exceptional case provisions. Furthermore, adaptive devices such as the Pelli prism are also not permitted in the UK.

The exceptional case provisions discussed here apply in the UK and are managed by individuals applying to the DVLA with initial clinical support for their adaptation to field loss. The subsequent practical DVLA driving assessment (with an occupational therapist and an approved driving instructor) is open to those with such clinical support, but not to those without it. Internationally, and indeed within states within countries, there is variation in the visual standards for driving, the use of permissible optical devices and in the complexity of any exceptional cases licensing provisions open to those with visual field defects seeking to retain or regain eligibility to drive. Interestingly, a study of the scope of the problem of visual field loss among drivers in Australia highlighted that involvement of an expert medical advisory service in the state of Victoria resulted in increased likelihood that drivers with visual field loss would be allowed to continue driving.[7] Researchers continue to investigate the impact of visual field loss on driving and examine the evidence around the predictive ability of tests with the potential to assess for suitability to drive. A recent review highlighted the need for well-designed studies to examine the impact of visual impairment on driving outcomes and to better inform evidence-based policy around guidelines for fitness to drive.[8] In the meantime, as these cases illustrate, it is important for clinicians to be aware of the role they may play in such scenarios, where they may otherwise be unaware of the criteria, and simply advise patients that they do not meet the driving standards and 'leave it at that'.

AUTHOR CONTRIBUTIONS

Robert A. Harper: Conceptualization (lead); data curation (equal); project administration (lead); writing – original draft (lead); writing – review and editing (equal). **Jeremy A. Parkes:** Conceptualization (supporting); data curation (supporting); project administration (supporting); writing – original draft (supporting); writing – review and editing (supporting). **Christine M. Dickinson:** Conceptualization (supporting); data curation (supporting); project administration (supporting); writing – original draft (equal); writing – review and editing (equal).

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CONFLICT OF INTEREST

None.

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