Appendix

Table S1: Mean Skew Deviation relative to age.

| Age Group | N   | Minimum | Maximum | Mean | Standard Deviation (SD) | Upper Limit (Mean + 2 SD) |
|-----------|-----|---------|---------|------|-------------------------|---------------------------|
| 20-29     | 16  | 0.00    | 0.76    | 0.21 | 0.22                    | 0.66                      |
| 30-39     | 12  | 0.00    | 0.81    | 0.29 | 0.30                    | 0.89                      |
| 40-49     | 10  | 0.01    | 0.79    | 0.19 | 0.25                    | 0.68                      |
| 50-59     | 10  | 0.00    | 1.07    | 0.35 | 0.36                    | 1.08                      |
| >60       | 10  | 0.03    | 0.88    | 0.29 | 0.30                    | 0.89                      |

Table S2: Frequency table for video and clinical test of skew.

|                      | Stroke      |
|----------------------|-------------|
|                      | No | Yes | Total |
| VOG TS*              |    |     |       |
| No                   | N  | 40  | 57    |
| %                    | 75.5% | 70.8% | 74.0% |
| Yes                  | N  | 13  | 20    |
| %                    | 24.5% | 29.2% | 26.0% |
| Clinical TS          |    |     |       |
| No                   | N  | 52  | 73    |
| %                    | 98.1% | 87.5% | 94.8% |
| Yes                  | N  | 1   | 4     |
| %                    | 1.9%  | 12.5% | 5.2%  |
| Total                | N  | 53  | 77    |
| %                    | 100.0% | 100.0% | 100.0% |

*Cut-off for positive skew deviation: >0.81 deg
Table S3: Characteristics of stroke patients

| Gender | Age | Skew deviation (deg) | SPV of SN (deg/sec)* | Additional neurological signs | NIH Score | Lesion Site | Lesion Side | Hyper-tropic eye |
|--------|-----|----------------------|-----------------------|-------------------------------|-----------|-------------|-------------|-----------------|
| m      | 87  | 0.41                 | 0.77                  | No                            | 0         | Medulla     | left        | N/A             |
| m      | 69  | 0.09                 | 3.46                  | No                            | 0         | Cortical    | left        | N/A             |
| f      | 57  | 0.27                 | 0.36                  | Pathological left finger pointing test, GEN | 2         | Medulla, Pons, Cerebellum | bilateral | N/A             |
| m      | 51  | 0.85                 | 1.88                  | Quadrant anopsy, minor facial nerve palsy, GEN | 4         | Medulla, Pons, Midbrain, Cerebellum, Supratentorial WM | bilateral | left       |
| m      | 75  | 0.14                 | 0 **                  | GEN                           | 0         | Cerebellum  | left        | N/A             |
| f      | 34  | 0.20                 | 0.36                  | No                            | 0         | Cerebellum  | bilateral   | N/A             |
| m      | 71  | 3.60                 | 0.83                  | Light anisocoria, double vision, GEN | 1         | Cerebellum  | right       | right          |
| f      | 65  | 0.84                 | 5.29                  | Pathological left finger pointing test, tongue deviation to the left, GEN | 3         | Cerebellum  | left        | right          |
| m      | 52  | 0.48                 | 0.51                  | No                            | 0         | Supratentorial WM | right     | N/A             |
| m      | 61  | 1.04                 | 1.38                  | Light anisocoria, GEN         | 0         | Cerebellum  | left        | right          |
| m      | 70  | 0.68                 | 0.71                  | Pupillary reflex bilaterally, accommodation pathological right, pathological finger pointing test, double vision | 3         | Midbrain    | right       | N/A             |
| m      | 71  | 0.21                 | 0.78                  | Mild dysarthria, GEN          | 1         | Pons        | left        | N/A             |
| f      | 39  | 0.07                 | 0.11                  | No                            | 0         | Supratentorial WM | right     | N/A             |
| m      | 73  | 0.32                 | 2.11                  | Limb ataxia bds               | 2         | Supratentorial WM, Cortical | right     | N/A             |
| m      | 74  | 0.52                 | 1.49                  | Partial gaze palsy, limb ataxia, double vision | 2         | Medulla, Cerebellum | right     | N/A             |
| f      | 70  | 0.23                 | 2.82                  | Mild dysarthria, limb ataxia, GEN | 2         | Cerebellum  | right       | N/A             |
| f      | 74  | 0.11                 | 2.23                  | No                            | 0         | Cerebellum  | left        | N/A             |
| m      | 57  | 0.23                 | 0.69                  | Partial gaze palsy, limb ataxia, mild dysarthria, double vision | 3         | Medulla, Cerebellum | bilateral | N/A             |
| f      | 47  | 1.27                 | 1.49                  | Severe to total sensory loss, GEN | 2         | Medulla     | right       | left            |
| m      | 71  | 0.05                 | 1.32                  | Double vision                 | 0         | Pons        | right       | N/A             |
| f      | 71  | 0.02                 | 0.04                  | Limb ataxia bds., double vision | 2         | Pons, Cerebellum | left      | N/A             |
| m      | 65  | 0.32                 | 0.58                  | Pathological right finger pointing test | 1         | Medulla     | right       | N/A             |
| m      | 62  | 0.97                 | 9.17                  | No                            | 0         | Medulla, Cerebellum | left      | right          |
| m      | 75  | 11.49                | 0.31                  | Double vision , GEN           | 0         | Cerebellum  | right       | right           |

*Gaze straight ahead without fixation

**0 °/s SPV because of gaze evoked nystagmus
Figure S1. Flow chart

Screening
Dizzy patients (n=1677)

Excluded* (n=1677):
• Age <38 (n=38)
• Symptoms >72 hours (n=924)
• No Symptoms at time of ED visit (n=732)
• Absence of Spontaneous Nystagmus (n=1427)
• Unsafe for imaging (n=19)
• Previous Eye Movement disorders (n=33)
• Drugs (n=46)
• Contraindication to HIT (n=5)
• Critical illness (n=9)
• Risk to Patients or staff (n=7)
• Altered mental status (n=8)
• Vulnerable population (n=9)
• Other (n=42)
• Not willing to participate (n=12)

Enrolled AVS Patients (n=152)

Excluded* (n=73):
• No decline of MTH (loss of follow up) (n=25) in Vestibular Neuritis
• Symptoms abated (n=13)
• No or unclear diagnosis (n=32)
• Other diagnosis than stroke or Neuritis-Labyrinthitis (n=14)
• No valid VOG skew measurements (n=8)

Eligible (n=77)

AUVF (n=53)  Strokes (n=24)

*Patients could have had one or several reasons for exclusion