

# **Stroke and Commercial Motor Vehicle Driver Safety**

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## **Medical Expert Panel Recommendations**

Presented by

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# Medical Expert Panel Members

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# Key Questions

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## □ Question 1

- What is the risk of experiencing a future stroke among individuals who have experienced a TIA or Stroke

## □ Question 2

- Are individuals who have experienced a stroke at an increased risk for a motor vehicle crash

## □ Question 3

- Can neuropsychological testing of individuals who have experienced a stroke predict crash risk
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# Strength of Evidence Ratings

Strength of Evidence	Interpretation
<b>Qualitative Conclusion</b>	
Strong	Evidence supporting the qualitative conclusion is convincing. It is highly unlikely that new evidence will lead to a change in this conclusion.
Moderate	Evidence supporting the qualitative conclusion is somewhat convincing. There is a small chance that new evidence will overturn or strengthen our conclusion. ECRI recommends regular monitoring of the relevant literature for moderate-strength conclusions.
Minimally Acceptable	Although some evidence exists to support the qualitative conclusion, this evidence is tentative and perishable. There is a reasonable chance that new evidence will either overturn or strengthen our conclusions. ECRI recommends frequent monitoring of the relevant literature.
Insufficient	Although some evidence exists, the evidence is insufficient to warrant drawing an evidence-based conclusion. ECRI recommends frequent monitoring of the relevant literature.
<b>Quantitative Conclusion</b>	
High	The estimate of treatment effect in the conclusion is stable. It is highly unlikely that the magnitude of this estimate will change substantially as a result of the publication of new evidence.
Moderate	The estimate of treatment effect the conclusion is somewhat stable. There is a small chance that the magnitude of this estimate will change substantially as a result of the publication of new evidence. ECRI recommends regular monitoring of the relevant literature.
Low	The estimate of treatment effect included in the conclusion is likely to be unstable. There is a reasonable chance that the magnitude of this estimate will change substantially as a result of the publication of new evidence. ECRI recommends frequent monitoring of the relevant literature.
Unstable	Estimates of the treatment effect are too unstable to allow a quantitative conclusion to be drawn at this time. ECRI recommends frequent monitoring of the relevant literature.

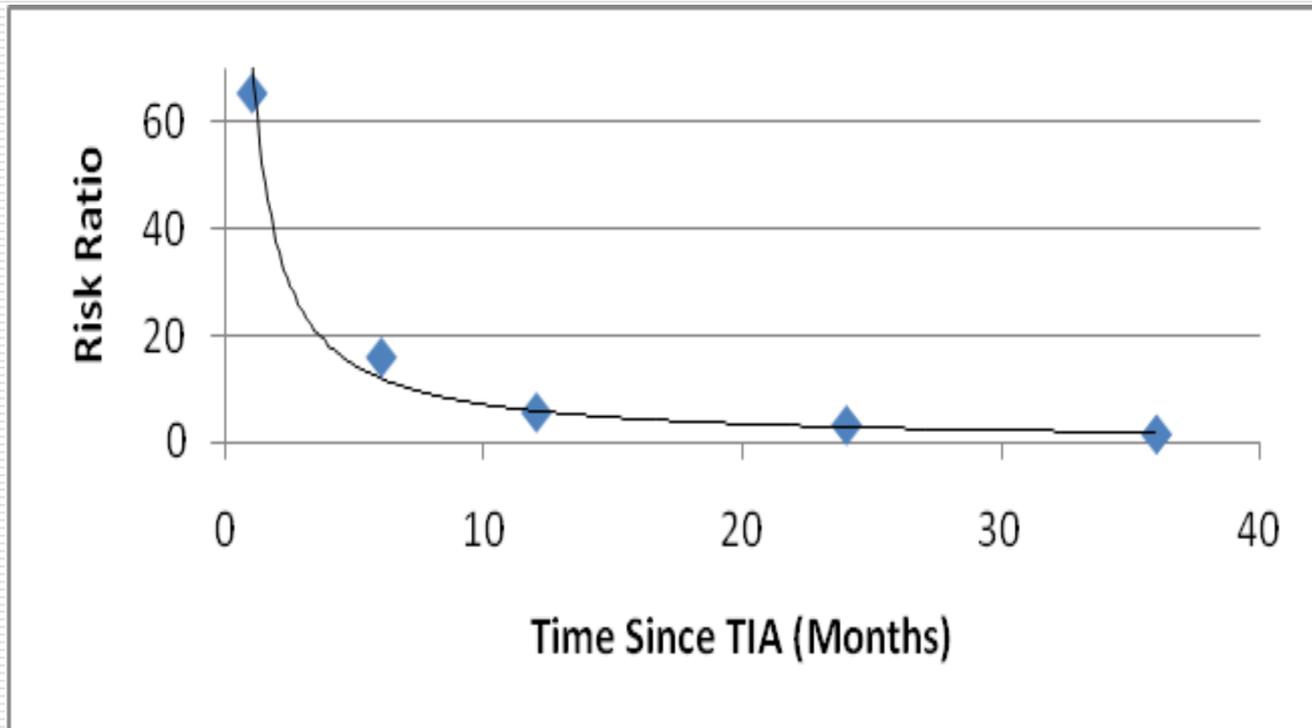
# Findings: Question 1

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- Evidence from 8 case-control and 5 cohort studies
  - Ind. are at an increased risk for stroke following a TIA or Stroke
    - Strength of Evidence: Strong
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## RR for Stroke over Time since TIA

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# Findings: Question 1 cont'd

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- **Stroke risk is highest immediately following TIA and decreases as a function of time since the event**
    - Strength of Evidence: Moderate
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# Findings: Question 2

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- Evidence from 6 studies
- Findings suggest that drivers who have suffered a stroke are at an increased risk of crash
  - Strength of Evidence: Minimally acceptable

*\*However, the size of this risk could not be determined*

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# Findings: Question 3

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- Evidence from 12 studies
- Some neuropsych. tests may predict the outcome of driving performance measured by a road test or in-clinic driving evaluation
  - Strength of Evidence: Moderate

*\*Whether neuropsych. tests can predict actual crash risk cannot be determined from currently available evidence*

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# Findings: Question 3 cont'd

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- **Neuropsychological tests found to be significant outcome predictors (pass vs. fail) in more than one study**
    - Figure of Rey (3/5 studies)
    - Dot Cancellation Test (3/4 studies)
    - Road Sign Recognition Test (2/4 studies)
    - What Else is in the Square Test (2/3 studies)
    - Motor-free Visual Perception Test (2/3 studies)
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# Findings: Question 3

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  - Strength of Evidence: Moderate

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# Medical Expert Panel Recommendations

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## □ Recommendation 1:

### Single TIA and CMV Driver Certification

- The MEP recommends that all individuals who have experienced a single TIA be immediately excluded from driving a CMV
  - Individuals who have remained free from recurrent TIA or stroke for a period of at least one year and who are otherwise physically qualified may be considered qualified to drive a CMV
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# Recommendation 1 cont'd

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- *Such individuals must demonstrate that they are likely to be able to perform their normal duties by undergoing a thorough evaluation of their physical and mental function by a qualified neurologist*
  - *The certification process should include an on road driving evaluation, just as it is required in 49 CFR §391.31 for new truck drivers. Considering the length, width, weight and other difficulties including seeing objects in the blind angle and the spatial requirements of driving a CMV, on-road test after one year cessation due to a TIA or Stroke should be mandatory*
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# Medical Expert Panel Recommendations

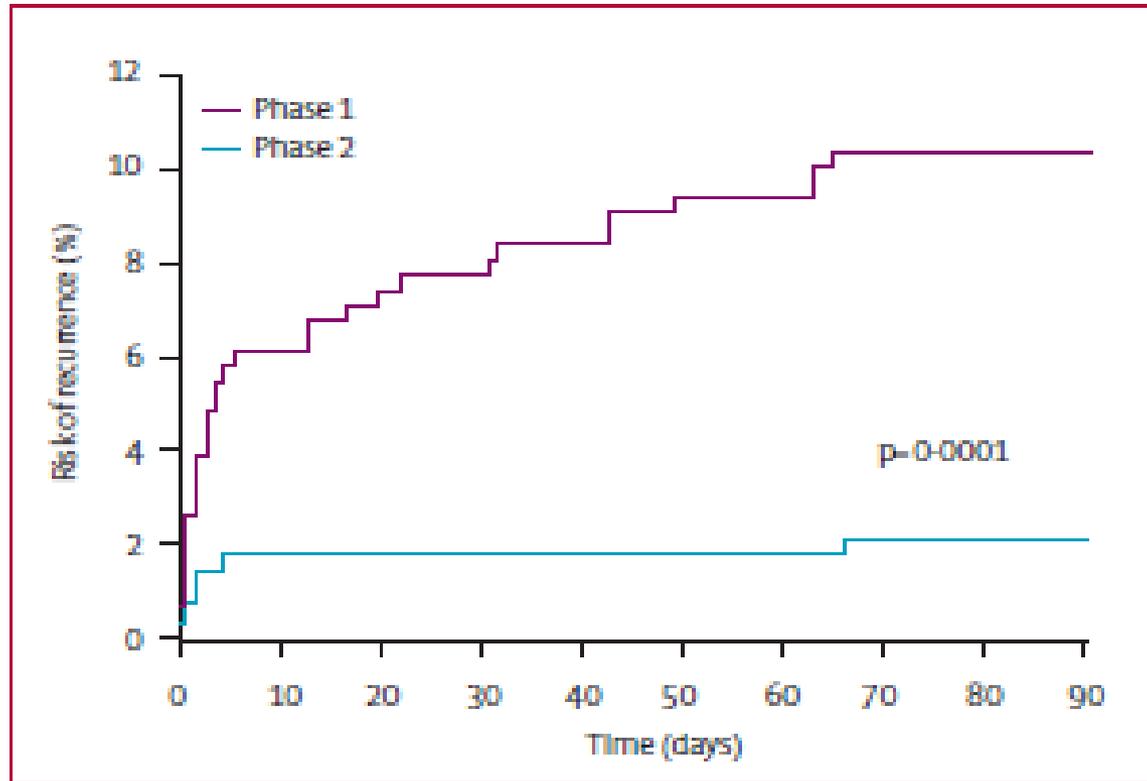
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## □ Recommendation 2:

### Preventative Treatment Following Single TIA or Minor Stroke Event

- Individuals who receive immediate (secondary) prophylactic treatment following a TIA may be at reduced risk for TIA or stroke recurrence compared to those who do not receive treatment or receive treatment later
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# Risk of recurrent stroke in all patients with TIA or Stroke



Phase 1 – Treatment of patients who had experienced a TIA or minor stroke not initiated immediately.  
Phase 2 – Treatment of patients who had experienced a TIA or minor stroke was initiated immediately.

# Recommendations 2 cont'd

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- At this time, however, the MEP recommends that such individuals be treated in the same manner as individuals who have not received treatment (see Recommendation 1)
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# Medical Expert Panel Recommendations

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## □ Recommendation 3:

### Stroke and CMV Driver Certification

- The MEP recommends that all individuals who have experienced a single stroke be excluded from driving a CMV
  - Provided an individual is otherwise physically qualified, individuals who have remained free from recurrent stroke for a period of at least one year may be considered qualified to drive a CMV
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# Recommendation 3 cont'd

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- *Such individuals must demonstrate that they are likely to be able to perform their normal duties by undergoing a thorough evaluation of their physical and mental function by a qualified neurologist*
  - *Individuals who have experienced severe disabling stroke resulting in their needing assistance or supervision in their activities of daily living are to be disqualified from driving due to the severity of their impairments*
  - *The certification process should include an on road driving evaluation, just as it is required in 49 CFR §391.31 for new truck drivers. Considering the length, width, weight and other difficulties including seeing objects in the blind angle and the special spatial requirements of driving a CMV, on-road test after one year cessation due to a TIA or Stroke should be mandatory*
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# Medical Expert Panel Recommendations

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## □ Recommendation 4:

### Occurrence of Seizures Consequent to Stroke

- Individuals who experience a seizure following a stroke should not be certified as physically qualified to drive a CMV
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# Medical Expert Panel Recommendations

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## □ Recommendation 5:

### Annual Recertification

- Individuals who have experienced a TIA or Stroke and who have been certified as being physically qualified to drive a CMV (Recommendations 1 through 3) should be recertified on an annual basis
    - *The annual recertification process should include a thorough neurologic assessment performed by a qualified neurologist*
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# Recommendation 5 cont'd

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- *Driving history should also be considered and should include the number of total miles driven, traffic violations and crash involvement (at fault or not at fault)*
  - *Any history TIA or Stroke recurrence, history of traffic violation or history of involvement in an “at fault” accident will result in permanent disqualification from operating a CMV*
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# Medical Expert Panel Recommendations

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## □ Recommendation 6:

### Neuropsychological Tests and On-road Evaluation

- Off-road tests shown to predict driving ability after stroke are: the figure of Rey test; the dot cancellation test, road sign recognition and square matrix tests from the SDSA and the Motor-free Visual Perception test
  - However, the MEP is of the opinion that while neuropsychological tests may provide a reasonable guide as to which person will likely pass a driver evaluation test, on-road evaluation should remain the gold standard for certification
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# Recommendation 6 cont'd

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- It is the opinion of the MEP, that one must not only confirm that the physical and mental function of individuals who have experienced a TIA or stroke are such that they are likely to be able to operate a CMV, but that such individuals demonstrate that they are actually able to operate a CMV by performing an on-road evaluation
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# Medical Expert Panel Recommendations

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## □ Recommendation 7:

### **Undertake Research as to How Stroke Affects CMV Safety**

- The MEP recommends that FMCSA consider the relative lack of high quality studies specific to Stroke and Commercial Motor Vehicle Safety and in particular the association between TIA/Stroke and CMV driver crash safety
  - The MEP recommends that FMCSA consider funding additional studies to investigate the US adapted version of the SDSA in predicting on-road performance of drivers, including CMV drivers, after TIA and stroke
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# Thank you

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