

Background: Cerebrovascular diseases, including stroke, is the second leading cause of death in Latvia, accounting for 19% of all deaths in 2016¹. Besides stroke is not only the major cause of long-term disability, but also the main cause of epilepsy and the second most common cause of dementia in the elderly people.² As thrombolytic therapy is not provided by prehospital emergency medical care ambulance team, patient outcomes mostly depends on timely delivery of medical care in hospital, i.e. time window 4 – 4,5 h.^{3,4}

Objectives:

- To evaluate prehospital emergency medical care for patients with acute cerebrovascular syndrome in Latvia year 2017 by analyzing State Emergency Medical Service patient electronical medical records and compare findings with year 2011 by analyzing data in urban and rural areas .
- To evaluate stroke patients outcomes in hospital.

Patients & Methods : **Electronical medical records of 11 360 patients** with prehospital diagnosis I60-I64 were analyzed. 28 medical records were excluded due to incorrect data. Also, medical records of 2267 patients transported to Pauls Stradins Clinical University Hospital (one of the leading hospitals in cardiovascular diseases care in Latvia) were analyzed to evaluate outcomes.

Results & discussion: There were 11 360 ambulance visits to patients with stroke (I60 – I64) - 6644 (58,5%; 95% CI 57.6 - 59.4) were women and 4716 were men (41,5%; 95% CI 40.6 - 42.4).

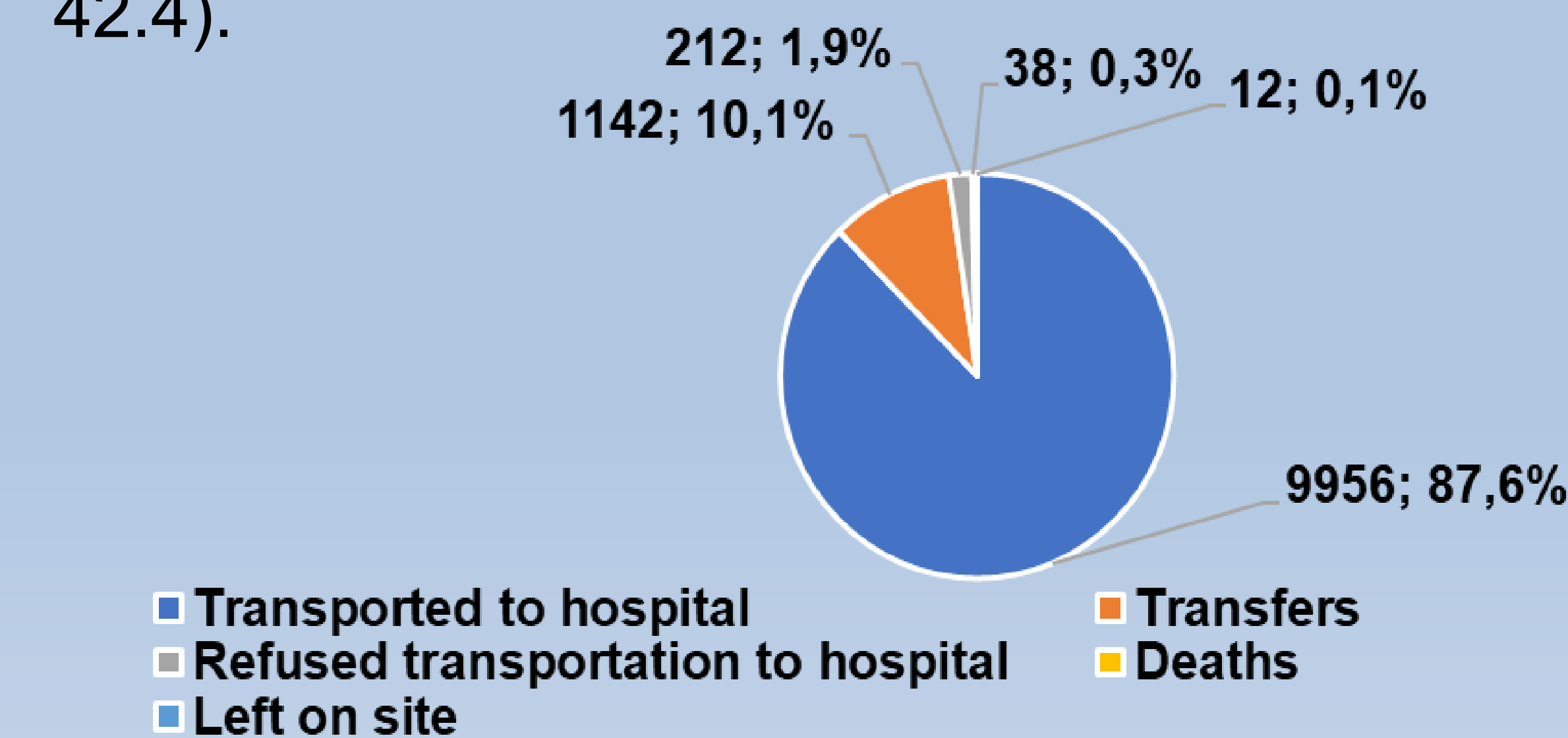


Figure 1. Ambulance visits to patients with diagnoses I60 – I64 by result, 2017

Emergency medical **dispatcher recognised stroke signs in 38.8 %** of cases as **the most common reason for call was paralyzes**. Other call reasons were “Feeling bad, can’t explain the reason” (11.6%), “Unconscious, breathing, cause unknown” (7.4%), “Dizziness” (5.3%), “Behavioral disorders (2.9%)”, “Fainting”(2.2%) etc. Average conversation time was 2 min 5 s (SD 1.1).

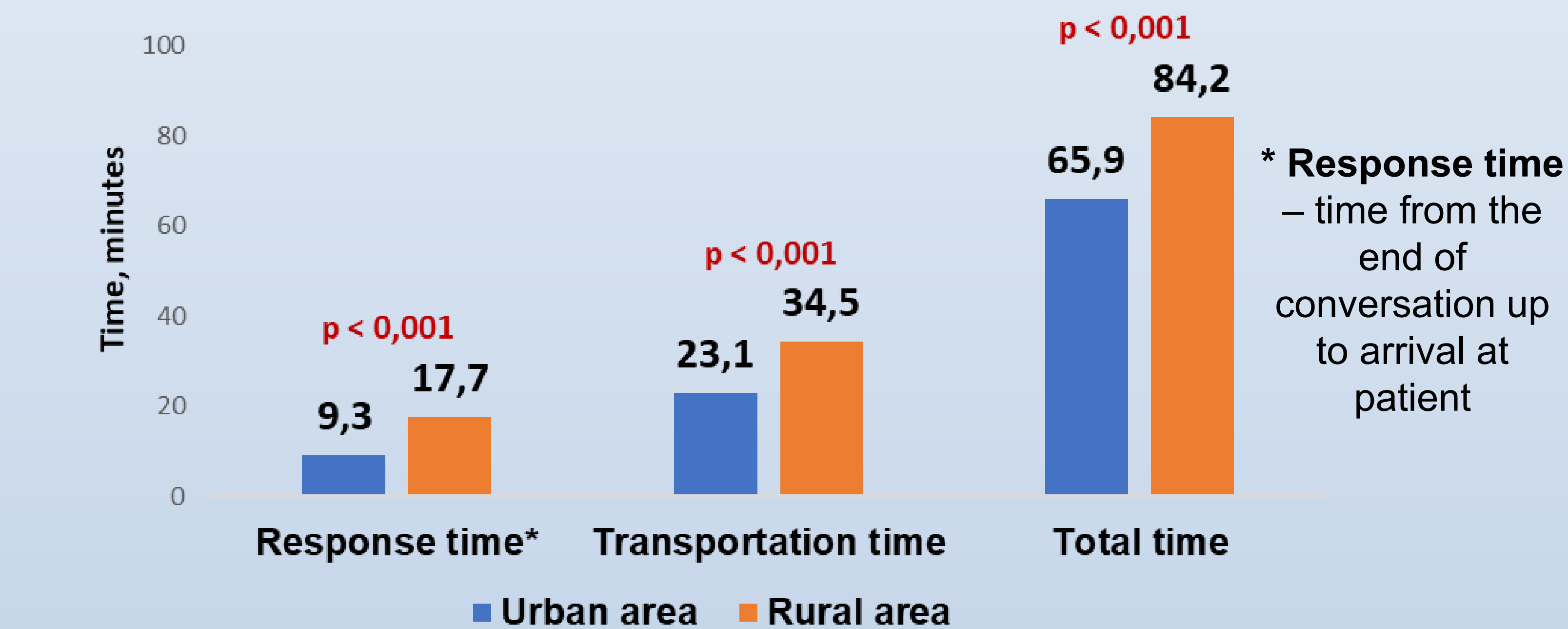


Figure 2. Average time intervals in prehospital stage, 2017

Compared to 2011, average response time in the rural areas decreased by 2.2 minutes that can be explained by changes in work organization and development of new information systems.

Total time from the end of conversation up to patient transportation to hospital in year 2017 accounts for 66 minutes in urban areas and 84 minutes in rural areas that **corresponds to time window, i.e. golden hour (90 min).**

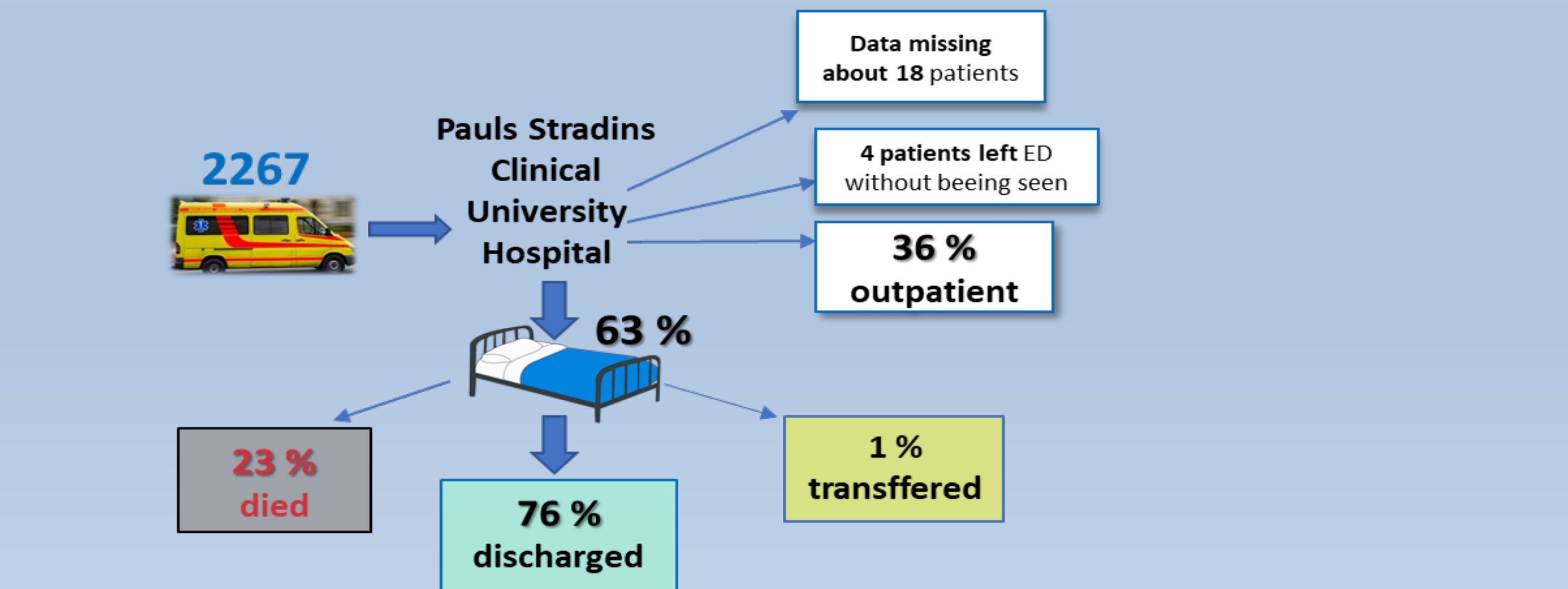


Figure 3. Stroke patient flow in Pauls Stradins Clinical University Hospital , 2017

The majority of patients transported to Pauls Stradins Clinical University Hospital were hospitalised (63%;n=1423) and 36 % (n=822) received outpatient care. 76 % (n=1078) of hospitalised patients were discharged, 23 % (n=322) died and 23 (1%) were transferred to other hospitals. **68 % of deaths (n=218)** in Pauls Stradins Clinical Univeristy Hospital **were due to stroke**. Total time from the end ot conversation up to patient transportation to hospital in these cases was 76.9 minutes (SD 23.5).

Prehospital diagnosis matched admission diagnosis in 47 % of cases (n=1063). Most common mismatched diagnoses were I69 - Sequelae of cerebrovascular disease , I10 - Essential (primary) hypertension and G40 - Epilepsy and recurrent seizures.

For hospitalised patients in **69 %** of cases (n=982) **discharge diagnosis matched prehospital diagnosis**.

Conclusion & perspectives :

In prehospital care high level of hyperdiagnosis occure as in emergency room stroke was identified in less than half of all cases and 36% of patients didn’t need transportation to hospital.

Despite timely delivery to hospital, mortality from stroke remains high in Latvia. For more precise data analysis that includes fixed time of first occurrence of stroke symptoms in patient medical records improvements in information systems must be made. Also, **unified health care database must be established** for more efficient and operative data analysis in identifying patient outcomes that would be a crucial investment in health care quality improvement in Latvia.

References

- Mortality in 2016, 11 p. Center for disease control and prevention of Latvia.
- American Association of Neurological Surgeons. Cerebrovascular Disease. Available: <http://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Cerebrovascular-Disease>
- Bayley, M., Lindsay, P., Hellings, C., Woodbury, E., Phillips S. Balancing evidence and opinion in stroke care: the 2008 best pratice recommendations. Canadian Medical Associatan journal. 2008, 179(12):1247-1249 p.
- Millers A., Miglane E., Login, I., Kenina, V. Clinical guidelines for prehospital care, diagnostics and acute treatment of cerebral infarction. 2013, 84 p.