“Tell me who you are, and I'll tell you where you're being treated.”
Determinants of care pathways for accident patients

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Accident risk over time
Accident risk over time

Source: Unfallstatistik UVG
Are accidents still a public health problem?

6% of all deaths are caused by accidents

Are accidents still a public health problem?

9% of all lost DALYs (Disability Adjusted Life Years) are caused by accidents.

Accidents are not as random as the term suggests…

Source: benefit – Suva Jubiläumsmagazin, März 2018
Accidents are not as random as the term suggests – still today

Data: SAKE 2002: “During the last 12 months, have you suffered an accident which made you seek medical treatment?”

Accidents are not as random as the term suggests – still today

Also, **children** have different risks of suffering an accident depending on their parents’ social status.

Data: bfu Household Survey 2011, accident with subsequent medical treatment during last 12 months
Our study on care pathways of accident casualties

The Role of General Practitioners in Trauma Care in Switzerland: Variation by Injury Type, Region, Patient Profile, and Over Time

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Objectives

General practitioners (GPs) play an essential role in the Swiss health care system as the main providers of ambulatory physician care. Our study analyzes to what extent and for what types of injury GPs act as initial point of care and to what extent they act as sole care providers or refer patients to other health care providers. We examined differences depending on injury type, patient profile, region, and developments over time.

Methods

Using a claims dataset from the largest Swiss accident insurer with N=2.2 million injury cases between 2008 and 2014, we constructed individual treatment sequences to determine when and from which providers patients received care.

Diagram: Initial point of care and GP role distribution.
Objectives: Analyse care pathways of accident patients with a focus on the role of general practitioners (GPs) in Switzerland

- **General practitioners (GPs)** play an **essential role in the Swiss health care system** as the main providers of ambulatory physician care (Djalali et al. 2015).
- This also holds for trauma care. 15% of all GP consultations are related to accidents (Tschudi & Rosemann, 2010).
- **GPs provide emergency services at lower costs** than emergency departments (EDs) (Chmiel et al., 2011; Eichler et al., 2014; Eichler et al., 2010; Fritschi & Ballmer, 2014; Hugentobler, 2006).
- **Research questions:**
  - To what extent and for what types of injury do **GPs act as initial point of care**?
  - To what extent do they act as **sole care provider** or refer patients to other health care providers?
  - Are there differences depending on injury type, patient profile, region, and developments over time?
There is criticism regarding the low priority of primary care in medical education and training, on the relatively low earnings for GPs and on their undervalued status in general (Djalali et al. 2015; Tschudi & Rosemann 2010).

Low and decreasing number of GPs in rural areas, a problem that will accentuate in the near future due to a lack of young GPs that could replace an ageing GP population (Mercay 2015).

GPs perform less and less trauma-related care – with large regional variations, however (Cohidon, Cornuz, & Senn, 2015).

GPs are no longer required to cover accident surgery in their medical education.

Patients increasingly search assistance directly at emergency departments (EDs) – even if a GP could provide suitable care (Chmiel et al. 2011; Eichler et al. 2010, Eichler et al. 2013; Flaig et al. 2002; Meer et al. 2003)
Design and data

- Analysis of a claims dataset with N=2,195,559 injury cases between 2008 and 2014 from the Swiss National Accident Insurance Fund (SUVA)
- Construction of individual treatment sequences.
- Main outcomes:
  - initial care provider
  - role of GPs in the treatment
- Estimation of probabilities for the different types of initial care providers and for the role of GPs - adjusted for injury type and patient characteristics using multinomial regression.

- Data source: accident report form
Results: Initial point of care (left) and GP role in trauma care (right) overall

GPs, including emergency walk-ins, provided initial care in 56% of accidents (left) and were sole care provider in 43% (right). Overall, GPs had some part in 71% of all accident cases.

N=2.2 million accident insurance claims 2008-2014. ED: emergency department; medical specialist: e.g. orthopedic or trauma specialist.
GP role by selected injuries

Reading example first column: In 30% of knee sprains, GPs act as sole care provider, in 12% they act as initial care provider and the patient, later on, sees a medical specialist, in 18% the patient after seeing a GP subsequently receives care at an emergency department as outpatient… in 24% of the cases, the GP is not involved.
Initial point of care by patient age.
Raw and adjusted probabilities (in %)

The dashed red line indicates the mean. Adjusted probabilities are based on a multinomial model adjusting for injury type and location, time of the accident, patient’s gender, citizenship, age, and place of residence (agglomeration size). ED: emergency department; medical specialist: e.g., orthopedic or trauma specialist.
Initial point of care by patient age.
Raw and adjusted probabilities (in %)

The dashed red line indicates the mean. Adjusted probabilities are based on a multinomial model adjusting for injury type and location, time of the accident, patient's gender, citizenship, age, and place of residence (agglomeration size). ED: emergency department; medical specialist: e.g., orthopedic or trauma specialist.
Initial point of care by patient profile and region.

Raw and adjusted probabilities (in %)

The dashed red line indicates the mean. Adjusted probabilities are based on a multinomial model adjusting for injury type and location, time of the accident, patient’s gender, citizenship, age, and place of residence (agglomeration size). ED: emergency department; medical specialist: e.g., orthopedic or trauma specialist.

higher probability that GPs act as initial care provider for

- females vs. males
- Swiss vs. non-Swiss citizens
- rural vs. urban regions
Initial point of care by patient profile and region.
Raw and adjusted probabilities (in %)

The dashed red line indicates the mean. Adjusted probabilities are based on a multinomial model adjusting for injury type and location, time of the accident, patient's gender, citizenship, age, and place of residence (agglomeration size). ED: emergency department; medical specialist: e.g., orthopedic or trauma specialist.

higher probability that GPs act as initial care provider for
- females vs. males
- Swiss vs. non-Swiss citizens
- rural vs. urban regions
From 2008 to 2014, decrease in the probability of GPs providing initial care from 60% to 54% (top panel).

At the same time, increase for emergency departments (ED) being the initial point of care from 32% to 38% (in- and outpatient ED, bottom two panels).

These complementary trends hold even when adjusting for changing patient characteristics and injury types.
Initial point of care from 2008 to 2014.

Raw and adjusted probabilities (in %)

- From 2008 to 2014, decrease in the probability of GPs providing initial care from 60% to 54% (top panel).
- At the same time, increase from 32% to 38% for cases where a hospital emergency department (ED) became the initial point of care (in- and outpatient ED, bottom two panels).
- These complementary trends hold even when adjusting for changing patient characteristics and injury types.

The dashed red line indicates the mean. Adjusted probabilities are based on a multinomial model adjusting for injury type and location, time of the accident, patient’s gender, citizenship, age, and place of residence (agglomeration size). ED: emergency department; medical specialist: e.g., orthopedic or trauma specialist.
Conclusions

- **GPs play a key role in Swiss trauma care**: initial point of care in 56% of accidents, sole care provider in 43%.
- Considerable variation depending on the region, patient profile, and injury type.
- Remarkable shift over time: from 2008 to 2014, trauma patients are treated increasingly in hospital emergency departments – at the cost of GPs who provide less trauma care.

- Future research should identify the relative impact of potential causes for the observed variations and trends:
  - the role of **patient preferences, information, and health literacy**, changes in patient behavior
  - GPs’ skills, preparedness, and willingness to treat trauma patients
  - structural factors such as GPs’ opening-hours and out-of-hours availability
  - increased use of special diagnostic tools (e.g., CTs) that are not at GPs’ disposal.


Fritschi, Caroline Bovet and Peter E Ballmer. 2014. "Vergleich Der Betreuung Ambulanter Notfall-Patienten in Der Hausärztlichen Praxis Und Dem Zentrumsspital." Praxis (16618157) 103(13).


Our study on care pathways of accident casualties
Accidents over time

G19 Accidents professionnels et non professionnels donnant lieu à une indemnisation, 1918-2011
Berufsunfälle und Nichtberufsunfälle mit Leistungsfolge, 1918-2011
Infortuni professionali e non professionali indennizzati dall’assicurazione, 1918-2011
Injuries by type and location

maximum: 8.7