Electrical injuries app

Conference on E-tools | Bilbao 9 June 2015
Agenda Electrical injuries app

• Preview of the app for accidents related to electric current
• Follow-up the questions...– our experiences
• Questions and discussion
Preview of the app for accidents related to electric current

Contains:
What do I do?
Information for the health service
Information for the employers
Extra information
Follow-up the questions

What was the overall app-development cost?

How long was the development time?

How were end-user needs identified? (app-content)

What is the intended target audience?

What is the dissemination strategy?

What was the main driver for the app development?

What was the main barrier to the app development?

Is a range of apps foreseen?

What are the main lessons learnt?

What support would be beneficial from other European OSH actors?
What was the overall app-development cost?

Main funding
– *Fund for regional safety representatives* € 24.000

Additional internal financing of development cost
– The app was developed within the organization
  - Purpose: Enhance competence and gain experience with such work
– Complicated to estimate exact internal cost that was strictly necessary for the app-development
  - Simultaneous competence-building means prolonged development time

* Financed by a fee collected from the companies in the building and construction industry. The fund board allocates funds to studies, analyses and projects within the field of workplace environment.
How long was the development time?

Prerequisite: A simple app with few features

Time estimation, including testing:
- Android: 13 days
- IOS: 25 days

Lessons learnt:
- Allocate sufficient time for developing requirements specification!
Follow-up the questions

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How were end-user needs identified?
(Why that app with those features?)

Experiences from treatment and follow-up after electrical accidents

– Feedback from the industry and individual electricians to trade associations or labour organization
  - Revealed a need for recommendations for referrals and health examinations after electrical accident
  - Identified a need for information to industry

– Clinical practice and research at NIOH Norway
Primary- and secondary accident prevention

 Prevent accidents from occurring
 Minimize adverse effects from accidents
  – The app emphasize this last aspect of prevention
Recommendations for referrals and further health examination after electrical accidents

Victims who meet at least one of the following criteria should go to hospital immediately after necessary first aid:

- Has been exposed to high voltage electricity
- Has been exposed to lightening injuries
- Has been exposed to low voltage electrical accidents with probable current pathway through the body
- Has been unconscious or confused immediately post-accident
- Has burn injuries
- Has signs of nerve injury (for instance paresis)

(Veiersted et al. Tidsskrift f Norske Legefor. 2003)
What is the intended target audience?

Main target audience: «Employees working on or near live electrical installations» (§§)
- Electricians
- Energy installers/power-supply fitters
- Others

Additional target audience
- Suppliers of safety- and first aid training
- Public health service
  - Hospitals
  - Medical doctors/General practice
  - Occupational Health Service
Target groups – stakeholders

Electricity production and distribution business

- Federations of Employers’
- Federations of Trade Unions
- Companies/corporations
- Each individual electrician

Authorities: Norwegian Directorate for Civil Protection (DSB)

Schools/Professional education of electricians
What is the dissemination strategy?

» Authorities / Industry journals
  – Information

» Annual courses in safety and first aid
  – Compulsory for employees in power production and distribution-, and electrical installation industry in Norway

« Virus model »
  – Have you heard of ......
Process ahead of distribution/dissemination was crucial for use of the app/tool

Anchoring of content in various medical specialist associations and in research-based knowledge

– Aim:
  - Improve quality of the content
  - Ensure high degree of consensus
  - Prevent disagreement/dispute over the guidelines

  » Could have reduced the credibility of the guidelines
Process ahead of distribution/dissemination was crucial for use of the app/tool

Collaboration between target groups

– Employer, employees, authorities, medical experts
  - ... rather than a pure ”expert model”

– Aim:
  - Ensure inclusion of user-relevant experience in the preparatory phase
  - Make the work/app known to possible users
Follow-up the questions

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What was the main driver for the app development?

- We already had «something» that was industry-based

- In addition: Existing dissemination methods/tools, and knowledge
  - Posters/pamphlets/wallet information/the app
  - Websites: www.stami.no/stromskader
  - Handbooks: First aid, Emergency number, Acute medicine/Paramedics
  - Scientific papers: Health Professionals/Medical Doctors
  - Media and professional papers/electricity-work
  - Direct education
  - Studies/surveys/research projects
    - To gain knowledge and enhance hospital-focus on the topic
Industry information

2002

Posters

Pamphlets

Wallet information

Strømulykker

Forulykket som oppfyller følgende kriterier SKAL TIL SYKEHUS umiddelbart etter nødvendig førstehjelp
- Har vært utsatt for høyspent
- Har vært utsatt for lynnedslag
- Har vært utsatt for lavspenstrømmenomgang med sannsynlig strømvei gjennom kroppen
- Har vært bevisstløs eller omtåket rett etter ulykken
- Har brannskader
- Har tegn på nerveskader (for eksempel lammerler)

Medisinsk nødtelefon 113

Husk å melde skaden til din arbeidsgiver

Sørg for melding til:
- Direktoratet for samfunnssikkerhet og beredskap
- Trygdelinjen
- Forsikringsselskap
- Arbeidstilsynet

Ytelige opplysninger: www.stami.no/stromulykker

Meld alltid fra til arbeidsgiver

Sørg for melding til:
- Direktoratet for samfunnssikkerhet og beredskap
- NAV Trygd
- Forsikringsselskap
- Arbeidstilsynet

Medisinsk nødtelefon 113

Strømulykker

En informasjonsbrosjyre til bedriftshelsesetjenesten

- Hva gjør man akutt?
- Oppfølging av strømsskader
- Ulykkesforebygging
- Målrettet helseovervåking
- Mulige senefolger
Available information during the course of emergency/medical treatment

Norwegian manual, Emergency call center

First aid → 113 (In Norway) → Ambulance services → Hospital → OHS/GP

The app

Tidsskrift for Den norske legeforening
LETHAL EFFECTS OF ELECTRICAL CURRENTS.

By H. LEWIS JONES, M.D., F.R.C.P.,
Medical Officer in Charge of the Electrical Department,
St. Bartholomew's Hospital.

Since the introduction of electric lighting as an industry, fatal accidents have occurred from time to time to those employed in connection with it. These have usually been the result of contacts with conductors charged to a potential of 1,000 volts or upwards, whereby the body of the victim has become the path of a considerable current, discharging in most cases to earth, but sometimes to the other conductor of the system. In ordinary engineering practice these high voltages occur in the mains of the alternate current supply systems, where the pressures range between 1,000 and 2,500 volts. In the case of one London company, the enormous pressure of 10,000 volts is reached. Direct current at high voltages is rare.

A medical man is said to have offered to submit to an electrical discharge provided only that his special method of resuscitation be carried out upon him afterwards.

Against d'Arsenval's views we would note that artificial respiration has been employed in vain in some of these accidents, and that in the post-mortem examinations upon the American criminals the heart was not found beating—I write from memory, not having a report at hand—although the necropsy was begun immediately after the execution; in fact, the stoppage of the heart's action was taken as the sign of the patient's death.

In a case reported by Dr. J. W. Brown in the New York Medical Record, 1893, the victim survived the first shock, the dynamo breaking down, and he began to recover. The published account states that the current was kept on for fifty-two seconds; the man remained apparently dead for twenty seconds more, and then gasped; five seconds later no pulse could be felt at the wrist, but after thirty seconds it was felt, breathing became gradually re-established, the pulse grew stronger, and some movements of a purposive nature were performed. He was then killed by a shock from an arc lighting machine. In this case the heart and respiration were both profoundly affected. Respiration recovered first, and then the heart.

In a report by Dr. Clowes of an accident in Brompton, the patient was seen five minutes after the accident. The discharge has been to earth the current usually leaves the...
Dissemination methods

- Old ideas and knowledge
- New technological platforms
- App method
  - User friendly and easy access
- Practical/applicable info
  - Guidelines
  - Phone numbers
  - Web-addresses
The main driver for the app development:

Improve and modernize what was already available!

- From card to app
  - Simpler
  - Cheaper (reduced long term expenses)
  - Easier to communicate and distribute
  - Increased availability for the target groups

- To be in the forefront: Strengthen Nelfo’s reputation among member companies, for making useful tools and information visible to, and rapidly available for, professionals in the electricity trade
What was the main barrier to the app development?

- Time
- Financing
Follow-up the questions

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Is a range of apps foreseen?

In this case:
- App aimed at targeting a specific industry – «a message»
- Reached a market/target population with information
- Time will tell how many downloads
- So far about 15,000 downloads

Needs:
- In line with workplace OHS-management trends/development
  - «iAvvik» – an app for the recording and processing of incidents
  - Supports and improves OHS routines in all parts of the organization
What are the main lessons learnt?

An app is primarily a tool!!
- The content/knowledge entered into the app is essential for its widespread use
- The process ahead of the app-development phase may greatly facilitate or complicate the dissemination of the app-tool

Requirements specification
- Allocate sufficient time!
- Specify target group(s)
- Consider circumstances and situations for use
- Consider user-perception and experience

What systems?
- Apple (iOS), Windows, Android?
- Norwegian experiences
What are the main lessons learnt?

» Copyright?
   – Clarify this with app-developer

» Maintenance of the app
   – Updates, responsibility and possibilities
   – Possible long-term expenses

» Effect of a «virus-distribution» - approach
   – Let time work for the app....
What support would you see as beneficial from other OSH actors in Europe?
(e.g. EU-OSHA, Commission, social partners, other institutes)

» The Electrical accidents app is «locally» based
  – For one industry
  – Based on Norwegian recommendations
  – «Completed» project – now maintenance and updating

» Exchanging information is still always useful!
  – Generates new ideas
  – May prevent pitfalls in one's own work

» We are happy to share more of our experiences with you!
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Thanks for your attention!
A variety of app-solutions

Native

All info is in the app

Use phone-facilities

Hybrid

One part in app web

Use phone-facilities

A combination of the two

Web (must have)

Book-marking

Online/hyperlink-solutions

Off-line
Discussion topics

- Regular updates of the app
  - Necessary to maintain attention and use of the app?

- Weak point: Lack of school/educational involvement in the development process?
Discussion topic

Scandinavian cooperation and mutual information ("card-info", posters, etc.)

– Societal organisation is similar
– Common language, experiences, values

– Limited differences make collaboration easier in Scandinavia
– How overcome challenges when differences are more pronounced?
Industry information

ELOLYCKOR

Upp sök alltid sjukvård efter:
• Ström genom kroppen
• Ljusbäge
• Medvetslöshet
• Domningar eller kramper
• Blixtnedslag

Första hjälp den kan rädda liv, glöm inte att undersöka hela kroppen

Larmtelefon 112

Elolyckor ska anmälas till arbetsgivare och Försäkringskassan. Arbetsgivaren anmäler olyckan till Arbetsmiljöverket.

Vägledning vid elolycka

Broschyror

Fickkort

Om en elolycka inträffar uppsök alltid sjukvård