is Telerehabilitation ready for service delivery?

Marco Rogante, Claudia Giacomozi, Mauro Grigioni

---

Agenda

- Telerehabilitation scientific evidence?
- Telerehabilitation services
- What’s next
What – why – who

- Telerehabilitation can be defined as the set of instruments, protocols and procedures aimed at providing rehabilitation* at a distance.

  - Telerehabilitation is a subfield of telemedicine
  - “Quite new” scientific application since the first scientific article is dated 1998

*physical or cognitive treatments aimed at facilitating the recovery from a physical or mental disability to a health status as normal as possible, or at maintaining over time a patient’s status in presence of degenerative diseases

what – Why – who

- Europe and most of the industrialized countries are facing rapid demographic changes which will soon put under pressure Health Systems sustainability

  - ...just some numbers:
    - In Europe* it is estimated that in 2060, 30% of the entire population will be over 65
    - In 2060:
      - public expenditure directly related to age (pensions, healthcare, long-term care, unemployment benefits and education): + 4.1 GNP percentage points
      - expenditures for long-term care will double

- The development of new treatment modalities and paradigms seems mandatory for maintaining both adequate treatment quality and Health Systems sustainability

what - why - **Who**

Considering that the scientific literature addresses telerehabilitation to:
- provide health services in rural areas,
- widen the rehabilitation opportunities by using new instruments and tools,
- improve the quality of life,
- reduce medical costs by increasing the number of patients treated in a single day, or by a single professional unit,
- reduce travel time,
- ...

- Policy makers
  - Lowering costs while maintaining adequate level of quality of care
- Health structures
  - To lower pressure for intramural care
  - Increasing "productivity"
- Patients (family)
  - To be treated in the place of his/her need at any time
  - Reducing travel time and costs
- Market:
  - New opportunities
- ...

---

**Scientific Evidence**

*a simplified view*

- Systematic Review of RCT and Meta Analysis
- Randomized controlled trials (RCT)
- Controlled Clinical trials
- Uncontrolled data (case-report, expert opinion, …)
Telerehabilitation evidence?  
The scientific literature

- Lots of case - reports and expert opinions
- Very few randomized Controlled trials
- Wide set of clinical applications
- Lots of feasibility studies
- Application in the early stage of deployment

- Querying PUBMED using “telerehabilitation” or “tele-rehabilitation” keywords
- Articles from 1999 to December 2012
  - 105 articles retrieved (not filtered/elaborated yet)
  - 19 Clinical Trials
  - 15 Reviews
- Is evidence increasing?

Probably yes…but what’s

In an hypothetical scenario where the scientific literature produces high-quality information only, it’d possible to address the following points:

- Clinical effectiveness, at least for certain pathologies,
- Technology involved, innovation is critical to be assessed
- Patient/user satisfaction, even if evaluated in different contexts and modalities
- Cost effectiveness ???

- Weight of scientific publication bias ? → positive results are published, negative not (general problem of the scientific literature)
- Do we need technology only? What about services ? → critical issue: technology integration in the every day clinical practice
Telerehabilitation services #1

- Back to the definition:
  Telerehabilitation can be defined as the set of instruments, protocols and procedures aimed at providing rehabilitation at a distance.

(tele)rehabilitation
application/technology

Infrastrucure

Services:
- economical aspects
- reimbursement
- ...

Telerehabilitation services #2

- The scientific literature addresses only some parts and aspects related to telerehabilitation; what about:
  - Safety ?
    - Not only for patients
  - Organizational issues ?
  - Ethical and social issues ?
  - Security and Privacy ?
    - Intended or unintended violation
    - The 2012 yearly report of the Italian National Authority for Privacy, listed the main fields of interventions: among the others, online Public Administrator transparency, consumers’ confidentiality, social networks, smartphones, tablet and cloud computing systems, electronic health, telematic data flow, biometric data flow (see http://www.garanteprivacy.it/)
Telerehabilitation services #3

- Some recent scientific reviews aimed at investigating “evidence of benefit from telerehabilitation in routine care”, concluded that TR applications are successful in different operative contests: but most of the considered applications did not clearly show if and how TR might be integrated in routine care.

- Beside the current scientific evidence, the real challenges is transforming the implemented telerehabilitation applications in service delivery.
- The investigation of all those factors having an impact on the service implementation is a fundamental step for providing policy decision-makers with clear information about the overall service performances.

....and what about the

- Which technology/product to be integrated in the clinical practice is ready for the market?
- i.e. FDA/European Directives/Canadian, … on Medical Devices?
What’s next

- To widen clinical field of application and technology to be used,
- To widen the “investigation window”: clinical, technological, economical/organizational, societal aspects to be considered,
- To investigate the effectiveness TR with large RCT through the delivery of services based on TR technologies,
- To investigate the feasibility and sustainability of services delivered by using TR technologies in every day clinical practice

Health Technology Assessment approach?

Conclusions

- Telerehabilitation is considered by many stakeholders a promising approach to provide rehabilitation at a distance
- Beside the current scientific evidence on some aspects related to telerehabilitation, the integration in the every day clinical practice is still missing
- Current scientific literature evaluates just some aspects related to telerehabilitation; Health Technology Assessment approach seems mandatory to perform a thorough evaluation of all those factors having an impact on the services to be implemented
! Thank you for your attention!

Marco Rogante
Dipartimento Tecnologie e Salute (Technology and Health Dept.)
Istituto Superiore di Sanità (Italian National Institute of Health)
marco.rogante@iss.it