



RERC on Telerehabilitation

is Telerehabilitation ready for service delivery ?

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RERC on Telerehabilitation at  **RST** Department of Rehabilitation Science and Technology
at School of Health and Rehabilitation Sciences, University of Pittsburgh




Agenda

- www related to telerehabilitation: **What – Why – Who**
- Telerehabilitation scientific evidence?
- Telerehabilitation services
- What's next



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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

* Source: <http://ec.europa.eu/digital-agenda/en/policies-ageing-well-12>

what – why – Who

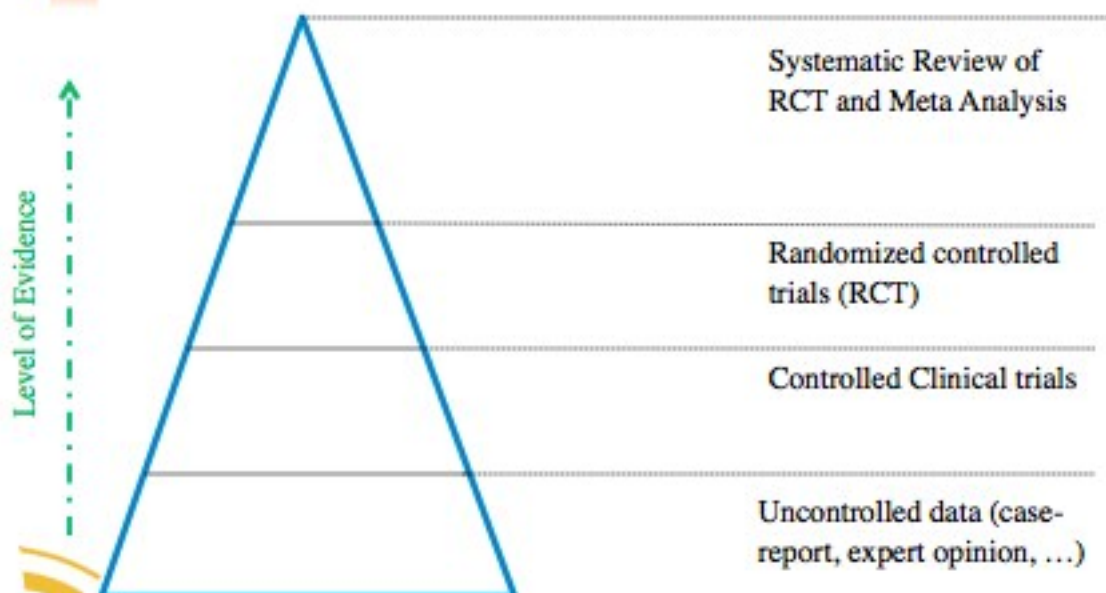
Considering that the scientific literature addresses telerehabilitation to:

- 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



Telerehabilitation evidence?

The scientific literature

1998

2008

- 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

2009

2012

- 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 ?



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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



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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)rehabilitaion
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 contexts: 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 challenge 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 !

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