Researchers meeting students and communities: 
*a win-win agreement for science and society*

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Researchers were concerned with the dissemination of scientific information only among peers...

Ivory towers, Publish or perish, Impact factors

Other stakeholders that would most benefit from research results were generally disregarded

Policy makers, General public, Students

Scientists need communicate science beyond the scientific community

Citizens become part and parcel of the knowledge dissemination cycle, widely facilitated by digital technologies

→ → → Responsible Research and Innovation
A new challenge

Responsible Research and Innovation (RRI)

- an **approach** that anticipates and assesses potential implications and societal expectations, with the aim to foster the design of **inclusive and sustainable** research and innovation

- **all societal actors** (researchers, citizens, policy makers, business, third sector organisations, etc.) are involved to **work together** in order to better **align** both the process and outcomes of research and innovation with the values, needs and expectations of society
Objectives of the presentation

1. **show how researchers**
   can contribute to fill the gap between science and society by **communicating science outside the scientific community**
   
   → *use strategies, tools and languages that can be easily understood by lay people*

2. **demonstrate the value**
   of a **multidisciplinary approach** to scientific research which needs integrate scientific and social-cultural knowledge for a win-win agreement between science and society
Basic concepts....

• Take **responsibility** to communicate science

• Focus on a **holistic & sustainable approach** to address new challenges in science literacy

• Foster more **accessible, better adapted** scientific information dissemination systems
it is important to stimulate researchers to develop science communication initiatives addressed to different stakeholders as an integral part of their research commitment
A selection of initiatives to foster science literacy

Examples are provided to show how researchers can be engaged on different grounds

Initiatives promoted by National Institute of Health (ISS) within national and international partnerships

Extensive data reported for 3 ongoing projects
- School-work alternating system (Italy)
- CASA project (international)
- E-Bug project (international)
Istituto Superiore di Sanità

Main governmental research body for public health in Italy (about 2000 people)

MISSION

Promotion and protection of national and international public health through research, surveillance, regulation, control, prevention, communication, counselling and training

produces knowledge and disseminates it to different stakeholders

HEALTH FOR ALL
Ask researchers to...

engage in writing books for students and teachers...

ISS has been publishing handbooks for schools since 2001
Ask researchers to...

take part in workshops and meetings addressed to students & teachers

Since 2010 ISS has been organizing workshops *Tuesday School &health* on health literacy addressed to school teachers

18 workshops, 40 researchers, 80 teachers

Conferences and meetings addressed to school students

20 researchers, 400 students
Ask researchers to take part in exhibitions for the general public

ISS at Science Pic Nic
Warsaw, 2011, 2014

Games to involve the general public on the importance of correct life styles

Mediterranean diet, physical exercise, etc.
In 2014, ISS entered a network of academic and research institutions to promote scientific culture.

Workshops and Labs on drinkable water
In 2015 and 2016, ISS took part in Genoa International Science Festival and organised Interactive initiatives in current scientific issues

8 paths
54 researchers
300 students
Over 50 events (conferences guided tours, exhibitions) involving over 1,000 people and 250 researchers

European Researchers' Night

EC-RRI project to discover science, meet researchers and have fun!

ISS took part in this initiative in 2016 and 2017

30 SETTEMBRE 2016
18.00-23.00

ECIL Conference • Workplace Information Literacy • Saint Malo, France • 18-21 September 2017
It envisages specific agreements between schools and private or public bodies, including research institutes to carry on school-work alternating programs.

Innovative teaching methodology requiring high school students to spend a period of time in a workplace to contribute orienting them towards responsible future choices.

ISS participated in such programs since 2016

- Pilot project → 4 schools
School-work alternating system

ISS project

Multidisciplinary approach

Red thred scientific method

Communicate science... outside the scientific arena

Pilot project started in 2015...
School-work alternating system
Which advantages?

Integration and aggregation
Inside and outside the institution
allows to

• promote new value-centred culture
• maximise researchers training ability
  by investing in a training alliance addressed to school students
• improve relationships within the geographical area
  by creating new values and awareness on research institutes
• increase awareness on researchers social responsibility

ISS: reference point for school-work alternating system
Active role to updating schools on:
• health issues
• health-related placement opportunities and challenges
ISS scientific paths in School-work WAS

4 areas and 50 paths:

- Environment & health
  - 11

- Diseases: from biology to clinic
  - 18

- Prevention & life styles
  - 14

- Science communication
  - 7

- Training on work safety (compulsory)

Specific risks at ISS workplaces
Introduzione ai criteri di valutazione dei requisiti di idoneità delle acque dal punto di vista microbiologico

Applicazione di tecniche analitiche per il rilevamento quali/quantitativo di batteri e virus in campioni di acqua di diversa qualità

Esercitazioni: le analisi microbiologiche e virologiche delle acque

Normative di riferimento sulle acque: significato dei parametri microbiologici. Quali ricercare e come interpretare e come utilizzare e come utilizzare e come

Valutazione della qualità delle acque e relazione sui dati acquisiti

Risultati del percorso

Acquisizione di competenze teorico-pratiche di base per la valutazione del rischio microbiologico e virologico nelle acque ed elaborazione di pieghevoli a carattere informativo.
Alternanza Scuola Lavoro in ISS

Guida alla scelta dei percorsi

anno scolastico 2016-2017

percorso AS2

Alimenti e mangimi geneticamente modificati: valutazione della sicurezza d’uso

**Teoria**

Conoscere gli alimenti e i mangimi geneticamente modificati, cosa sono, come si creano e quali sono i loro usi e tutelano la sicurezza.

**Pratica**

Impiego di tecniche di biologia e biochimica per la caratterizzazione del DNA.

percorso BCA

Dalla proliferazione cellulare: la ricerca nella malattia e nel tumore

**Teoria**

Conosciamo la distrofia muscolare, cosa sono le cellule muscolari satellite, qual'è il loro ruolo nel muscolo sano e quali sono le disfunzioni causate dalla malattia.

**Pratica**

Tecniche di biologia cellulare, molecolare e biochimica per lo studio delle differenze tra cellule sante e distrofiche.

percorso PS8

Vaccini e malattie prevenibili da vaccinazione

**Teoria**

Capire cosa sono i vaccini, i loro requisiti essenziali e i principali tipi di vaccini disponibili in commercio. Imparare i principali steps necessari per il rilascio in commercio di un lotto di vaccino (qualità, sicurezza/innocuità, efficacia) dalla segnalazione di un caso di malattia infettiva (es. meningococco) alla caratterizzazione molecolare del ceppo responsabile.

**Pratica**

Uso della bioinformatica per il disegno di un vaccino e la caratterizzazione molecolare dei ceppi virali responsabili di malattie infettive.
Figures of the ISS Alternating program

<table>
<thead>
<tr>
<th></th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paths</td>
<td>26</td>
<td>50</td>
</tr>
<tr>
<td>Schools</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Students</td>
<td>80</td>
<td>180</td>
</tr>
<tr>
<td>Tutors</td>
<td>86</td>
<td>230</td>
</tr>
</tbody>
</table>

13.500 hours
35 schools in waiting list
ISS guidelines – 2016 (produced after the pilot stage)

How the system works

Recommended Organization

Stage 1. Preparatory activity
Stage 2. Implementation (50 hours)
Stage 3. Evaluation and dissemination

best-practice for research institutes

Voices (Students, teachers, tutors)

Sample models

Each stage is described in detail

http://www.iss.it/binary/publ/cont/Alternanza_ISS__Best_practice___online.pdf
Documents ASL ISS
http://www.iss.it/publ/index.php?lang=1&id=2984&tipo=15

Website realized by students
Global health path including tutors’ presentations
www.globalhealthgroup.net/asl/

Videos realized by students
https://youtu.be/jDlJwwy1cBM
The first nation to be involved in the CASA – project is Ethiopia also by virtue of the historical relations between Italy and that nation. The Italian contribution has, indeed, proved one of the most significant in the ambit of the fight against poverty in Ethiopia, involving sectors of crucial importance, such as, education, energy and health services organization.

Communicable diseases (CDs), including tuberculosis (TB), malaria, HIV/AIDS, respiratory infections, diarrheal diseases and nutritional deficiencies contribute to the high disease burden in Ethiopia. HIV/AIDS is still one of the main health challenges to be faced.

Although HIV prevalence is not very high, and the country recently experienced a major reduction in new HIV infections, it still has a large number of people living with HIV (PLWH): in 2014 (latest estimated data) the adult prevalence was 1.2% [1.0%-1.5%], with an estimated 730,000 [600,000-970,000] PLHIV.
CASA PROJECT OBJECTIVE

Improve the quality of care of patients with HIV and related co-infections in Tigray Region (Ethiopia) through Research and training

Training focused on
- Communication
- Clinical aspects on HIV/AIDS

Addressed mainly to
- Health workers (CBO)
- Nurses

Perfect example to show how improved communication and science literacy can contribute to improve health outcomes
TEACHING & LEARNING are strictly connected

ITALY
National Institute of Health
Istituto Superiore di Sanità

ETHIOPIA
Tigray Health Bureau
Mekelle University, Health facilities

different backgrounds

TRANSLATION ACTIVITY FROM
Scientific to lay language
One culture to another culture
One language to another language
CASA

Operational research

Retention in Care of Adult HIV Patients Initiating Antiretroviral Therapy in Tigray, Ethiopia: A Prospective Observational Cohort Study

BMJ Global Health, 2017

Predictors of attrition from care at 2 years in a prospective cohort of HIV-infected adults in Tigray, Ethiopia

BMJ Global Health, 2017
CASA

training strategy

2014-2015

1. study of the local scenario
   → informal meetings, focus groups, workshops to
   → analyse information needs of target groups
   → define ad hoc training programs

2016

2. training program implementation
   continuous adjustments according to feedback

3. evaluation of results achieved
   consideration of sustainability issues

MORE ➔ ➔ ➔
Details of the training strategy

All decisions taken in in accordance with ISS, THB and MU

- **ad hoc training programs** for each target group
- **ad hoc training material** (including local pictures)
- **translation** whenever necessary
- tested before implementation and then adjusted according to the feedback received

- **a facilitator** was appointed for training
- implementation at local level in collaboration with the local coordinator and data managers
- distribute booklets in hospitals and HF's, monitor program, collect feedback

- **written and oral examinations**
- Overwhole evaluation and certificates

- **workshops and informal meetings**
- Clinical issues and topics of general interest
Teaching material: CASA toolkits

Health workers

1. COMMUNICATION
   - Basic training course for health workers and patients' associations
   - Paola De Castro

2. HIV/AIDS BASICS
   - Training course for patients' associations to improve communication with patients
   - Paola De Castro, Federico Maggi, Paola Tafarel

Nurses

3. CLINICAL ASPECTS OF HIV/AIDS
   - Basic training course for nurses
   - Edited by Stefania Bencivenga, Vincenzo Frappi and Paola De Castro

4. ADVANCED CLINICAL ASPECTS OF HIV/AIDS
   - Training course for nurses
   - Edited by Stefania Bencivenga, Vincenzo Frappi and Paola De Castro
USER- FRIENDLY MATERIAL: Examples From Toolkit 2

Basic information

- ART is the best weapon against HIV.
- As any other treatment, ART can cause side effects (bad reactions after taking it).
- Usually, side effects are mild and last few weeks after starting ART.
- The most frequent side effects are: headache, abnormal dreams, insomnia and diarrhea.
- In presence of these symptoms, patients should not stop ART. They should talk about these problems with nurses or doctors.
- Rarely, severe side effects may happen (e.g., allergy, kidney failure). In these cases, patients should quickly refer to the health service.

Multiple choice questions

1. Why is it so important for HIV patients to adhere to therapy?
   a. To control the infection and have a longer and healthier life
   b. Adherence is not important and patients can take pills only when they are sick
   c. To make nurses happy

2. How often should ART be taken?
   a. Once a week
   b. Every day, at the same time
   c. Once a month

Real life situations

4.2. Communication with patients

Now we report a possible situation where you can establish a positive communication with a patient on the basis of the newly acquired scientific knowledge on ART side effects and their management.

The situation is followed by a dialogue that may take place between a patient and you.

A patient has developed an ART-related side effect, so he/she wants to stop it. You have to explain him/her how to manage this situation.

Patient: Since I started ART, two weeks ago, I have had strange headaches, I read, but do not be scared. This is not dangerous.
You: OK, but I see that you are worried.
Patient: OK, but I see that you are worried.
You: I understand. I am not worried. I understand.

Multiple choice questions

1. Why is it so important for HIV patients to adhere to therapy?
   a. To control the infection and have a longer and healthier life
   b. Adherence is not important and patients can take pills only when they are sick
   c. To make nurses happy

2. How often should ART be taken?
   a. Once a week
   b. Every day, at the same time
   c. Once a month
Two booklets were translated in Tigrinya
Translation will help to fully understand and use the contents of the booklets
All lessons included

- Take home messages
- Suggested tasks for discussion
- Pictures from local settings

2.6. Facial expressions and tone of the voice

We can express the same concept, using the same words, but with a different facial expression or tone of the voice which may completely change the meaning and feeling of what we are saying. The tone of the voice as well as the content of speech or other expressions of the body language can provide useful clues for the individual emotional status. For example, lower self-esteem may be reflected by hesitancy in the voice; higher self-esteem shows major command of the voice and clarity of speech.

TAKE HOME MESSAGES FROM LESSON 2

Basic knowledge on communication
- Communication involves different activities, not only speaking
- Effective communication involves listening to the other person
- Non-verbal communication provides useful feedback to evaluate the effectiveness of communication
USER-FRIENDLY MATERIAL: Examples From Toolkit 2

Basic information

- ART is the best weapon against HIV.
- As any other treatment, ART can cause side effects (bad reactions after taking it).
- Usually side effects are mild and last few weeks after starting ART.
- The most frequent side effects are: headache, abdominal pain, insomnia and diarrhea.
- In presence of these symptoms, patients should not stop ART. They should talk about these problems with nurses or doctors.
- Severe side effects may happen (for example, acute skin reactions). In these cases, patients should quickly refer to the health service.
- Before taking other drugs, patients on ART should ask to nurses. Indeed, antiretroviral drugs and other medications can interact (affect each other), making the treatment ineffective or toxic.

Real life situations

4.2. Communication with patients

Here we report a possible situation where you can establish a positive communication with a patient on the basis of newly acquired scientific knowledge on ART side effects and their management.

The situation is followed by a dialogue that may take place between a patient and you.

A patient has developed an ART-related side effect, so he/she wants to stop it. You have to explain him/her how to manage this situation.

Patient: I see, but do not be scared. This is not dangerous.
You: OK, but you have to know that...
Patient: I understand.
You: I wonder...

Multiple choice questions

1. Why is it so important for HIV patients to adhere to therapy?
   a. To control the infection and have a longer and healthier life
   b. Adherence is not important and patients can take pills only when they are sick
   c. To make nurses happy

2. How often should ART be taken?
   a. Once a week
   b. Every day, at the same time
   c. Once a month
FOR NURSES ONLY

- Selected articles on HIV
- Videos of the lessons of Toolkit 3 & 4 lessons

available on USB to complete training
Training duration

6 months for both Nurses and CHWs

**CHW** ➞ Toolkit 1 and 2 + workshops, informal meetings

**Nurses** ➞ Toolkit 1, 2, 3, 4
  + additional reading of scientific articles
  + workshops and informal meetings

Training started in April 2016 (workshop)
Terminated in October 2016 (workshop)
Participants in training activities received continuous support from ISS and local staff.

- **A facilitator (contact person between ISS and course participants)** collected questions and suggestions arising during the course implementation.

- **ISS provided answers** to course participants through the facilitator.

- **Continuous contacts** between ISS staff and facilitator contributed to the success of the training program.
Certificate of Attendance
for all those who took part in training

Certificate of Accomplishment
for those who passed the exam
answered correctly
70% of questions
**Community Health Workers**

April-October 2016

<table>
<thead>
<tr>
<th>ALL PARTICIPANTS</th>
<th>49</th>
</tr>
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<tbody>
<tr>
<td>Completing the course</td>
<td>42</td>
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<tr>
<td>Passing written examination</td>
<td>29</td>
</tr>
<tr>
<td>Admitted to oral examination</td>
<td>14*</td>
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</table>

**FINAL SELECTION**

14

* Only participants with highest scores were admitted

*Exams at Mekelle, October 2016*
Nurses
April-October 2016

ALL PARTICIPANTS 73

Completing the course 50
Passing written examination 48
Admitted to oral examination 45*

FINAL SELECTION 21

* Only participants with highest scores were admitted

Exams at Mekelle, October 2016
### CASA training 2015-16

<table>
<thead>
<tr>
<th>Participants</th>
<th>CHW</th>
<th>%</th>
<th>Nurses</th>
<th>%</th>
<th>TOTAL</th>
<th>%</th>
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<td>Admitted to oral exam</td>
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<td>28.6</td>
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<td>61.6</td>
<td>59</td>
<td>48.4</td>
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<td>Passing the final exam</td>
<td>14</td>
<td>28.6</td>
<td>21</td>
<td>27.4</td>
<td>34</td>
<td>27.9</td>
</tr>
</tbody>
</table>

**A very selective process to focus on future trainers**
From training to intervention

CHW WERE ASSIGNED SPECIFIC TASKS closely associated with what they learned about communication & clinical aspects of HIV

EXAMPLES

1) Go and Search patients missing to follow up
(based on a list (paper format) received by case managers on Monday, each week)

2) Report on the same paper form why patients did not show
(Return the same, the duly filled, format, to case managers, on Friday, each week)
Supporting CHW intervention activity

Memo cards were designed to help CHW memorize their tasks.
 Patients missing for more than 1 month from next visit date

<table>
<thead>
<tr>
<th>S.N</th>
<th>Patient card number</th>
<th>Patient Name</th>
<th>Address</th>
<th>Phone number</th>
<th>Date of last visit</th>
<th>Date of next visit</th>
<th>Did you trace the patient?</th>
<th>How did you trace the patient?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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**Filled by CASE MANAGER**

**Filled by PATIENT ASSOCIATION**

If the patient has been traced, what did he/she tell you?
1. He/She will return to the HF (write Yes)
2. He/She will NOT return to the HF (write No)

If the patient told you that he/she would not return to the HF, why?

 Patients data filled in by case managers

Answers to be provided by CHW after tracing patients

Health Facility: ____________________________  Patient association focal person (name): ____________________________

Date of extraction of this patient list (indicate both): Ethiopian calendar: __________  European calendar: __________
The ISS is partner of the project currently led by Public Health England, involving 28 countries.

**Aim**

to *educate* children and young people about correct use of antibiotics, microbiology, hygiene and the spread, treatment and prevention of disease.

**Benefit**

Being part of an international network permits to *share* experiences and *grow* together.
E-BUG, a game to empower students on prudent use of antibiotics (microbiology)

Introduction

Health information literacy is pivotal to promote life skills and healthy styles among different target audiences. Libraries, web sites, and research scientists can develop collaborative initiatives addressed to teachers and schoolchildren to improve awareness on health information literacy and contribute to create informed and empowered citizens. In this context, the European project e-Bug, developed by the Public Health Research Agency of the UK, represents an interesting case. It provides school education resources to face antimicrobial resistance, an emerging key issue in public health.

Objectives

- Improve young people’s understanding of the importance of responsible antibiotic use, thus helping society as a whole.
- Offer school libraries sound and reliable information to help students in their study on microbes, hygiene, spread and prevention of infections.

Methods

Educational packs on microbes, hygiene, spread and prevention of infections, together with a website with interactive games allow students to learn about responsible antibiotic use while having fun. The Instituto Superiore di Sanità, as Italian e-Bug partner, translated and adapted all web material to fit contents to the Italian context and disseminated e-Bug project in Italy through participation in:

- conferences
- organization of meetings
- publications
- production of leaflets

Conclusion

Now e-Bug project consists of a consortium of 28 countries thus guaranteeing a wide diffusion throughout Europe. During 2013 Italian e-Bug website had more than 3400 visits.

OUR COMMITMENT
Create, translate and adapt scientific contents in a different context
Since 2009 ISS translates and adjusts available material to the Italian context.

Website addressed to:
- students
- teachers
- communities

Welcome to e-Bug for Junior Schools

Use the links on the left to access and download each section of the teaching pack individually or click on the appropriate icon below to download the whole pack. This may take a few minutes.

Key Stage 2 pack England
Key Stage 2 pack Scotland

If preferred, many of the student handouts are also available as downloadable whiteboard presentations to limit the amount of photocopying required.

Visit the student site to see the range of interactive activities and revision guides accessible to students at home. All of the online resources have been designed to cover the same learning outcomes as the pack, and can be used to assist learning in a fun and interactive way.

This educational pack and support material supports the majority of recommendations for schools, educational and residential settings for children and young people in the NICE guideline on antimicrobial stewardship.

National Institute for Health and Care Excellence January 2017
Welcome to e-Bug! Navigate through the sections to find advice, hot topics, animations and videos covering antibiotics, vaccinations and the spread of infection.
**Italian involvement**

Italy has been involved in the project since its very beginning. The Istituto Superiore di Sanità (ISS, Italian National Institute of Health) became partner in 2010.

**Activity**

We are translating web material from English into Italian. In 2015 we carried out informal dissemination. We are now engaged in:

- evaluating the new young adults resources;
- promoting the website through links to other projects on antimicrobial resistance (e.g., the Euromed Project, financed by the Italian Ministry of Health);
- organizing training events for national and international partners.

**Major challenges**

The translation of original English texts has to consider the various scenarios where e-Bug material will be used to fit different socio-cultural realities.

**Short term plans**

In the framework of the new Italian school legislation (2015) we will host high school students at the workplace to introduce them to e-Bug and antimicrobial resistance.

We would like to establish a closer connection with Italian Regional authorities (in charge of healthcare) and the National educational authorities.

We would like to launch a survey among e-Bug partners to investigate cultural differences in the translation process and in the use of e-Bug material in different contexts.

**Requirements for the future**

- strengthen the Italian team and network of collaboration;
- find new resources to allow a better implementation of e-Bug activities.

→ RRI
FINAL CONSIDERATIONS

It is important to create **awareness** on the role of science literacy in society and **engage researchers** to commit in science communication addressing **different stakeholders**.

This commitment will contribute to create a **more equitable world** where everybody can have access and properly use available information and services.

**THANK YOU!**

paola.decastro@iss.it