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INNOVATIVE PARTNERSHIP
FOR ACTION AGAINST CANCER

Core Competencies in Cancer Genomics for Healthcare Professionals

PROSPETTIVE E PRIORITÀ DI INTERVENTO NEL CONTROLLO DEL CANCRO

LOCAL STAKEHOLDER FORUM ITALIANO DELLA JOINT ACTION iPAAC

13 ottobre 2021

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iPAAC - Innovative Partnership for Action Against Cancer

organisation	Country
Nacionalni institut za javno zdravje (Coordinator)	Slovenia
Institut Scientifique de Sante Publique	Belgium
Natsionalen Centar po Obshtestveno Zdrave i Analizi	Bulgaria
Hrvatski zavod za javno zdravstvo	Croatia
Ministry of Health of the Republic of Cyprus	Cyprus
Ustav Zdravotnickych Informaci a Statistiky Ceske Republiky	Czech Republic
Terveyden Ja Hyvinvoinnin Laitos	Finland
Institut National du Cancer GIP	France
Bundesministerium fuer Gesundheit	Germany
Dioikhsh Ygeionomikhs Perifereias Krhths	Greece
Orszagos Onkologiai Intezet	Hunga
Department of Health	Irelan
Istituto Superiore di Sanità	Italy
Ministry of Health of the Republic of Lithuania	Lithuania
Ministry for Health – Government of Malta	Malta
Institutul oncologic din moldova	Moldova (Republic of)
Rijksinstituut voor Volksgezondheid en Milieu	Netherlands
Oslo Universitetssykehus HF	Norway
Narodowy Instytut Zdrowia Publicznego-Panstwowy Zaklad Higieny	Poland
Ministerio da Saude – Republic Portuguesa	Portugal
Institutul National de Sanatate Publica	Romania
Institut za javno zdravje Srbije "Milan Jovanovic-Batut"	Serbia
Institut Catala d'Oncologia	Spain
Biomedicinske Centrum	Slovakia

Sub-contract

Project partners	
Belgium	Bulgaria
Croatia	Cyprus
Czech Republic	Finland
France	Germany
Greece	Hungary
Ireland	Italy
Lithuania	Malta
Moldova	Netherlands
Norway	Poland
Portugal	Romania
Serbia	Slovakia
Slovenia	Spain

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- WP1 Coordination of the action
- WP2 Dissemination
- WP3 Evaluation of the action
- WP4 Integration in national policies and sustainability
- WP5 Cancer prevention
- WP6 Genomics in cancer control and care
- WP7 Cancer information and registries
- WP8 Challenges in cancer care
- WP9 Innovative therapies in cancer
- WP10 Governance of integrated and comprehensive cancer care

Task 6.4:
'Direct to Consumer' genetic testing (DTC-GT)

- Update the literature review on the DTC-GT **legislation** in EU Member States
- Systematic review on **European citizen knowledge**, attitude and behavior
- **Survey health care professionals** belonging to EUPHA on the knowledge, attitudes and behavior

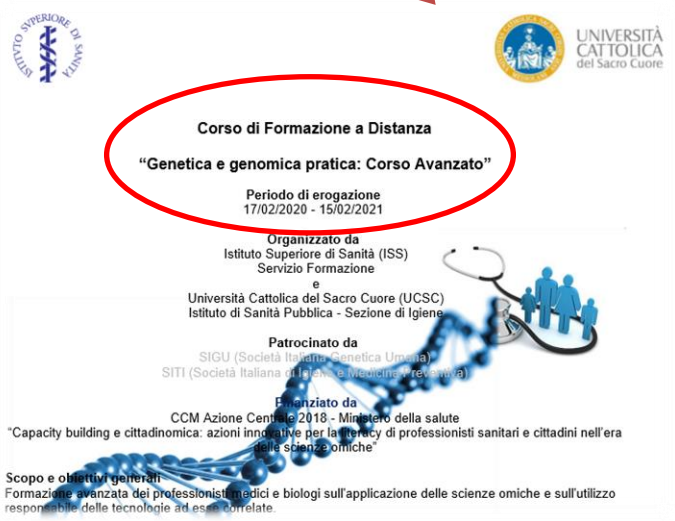
Task 6.5:
Education and training on cancer genomics for healthcare professionals

- Systematic review on **core curriculum** for health care professionals in the field of cancer genetics and genomics
- Systematic review of the past and ongoing funded initiatives at EU level, in the field of genomic **education courses** and tools for health professionals

PROGETTO CCM 2018 - AZIONE CENTRALE: *Capacity building* e cittadinomica: azioni innovative per la *literacy* di professionisti sanitari e cittadini nell'era delle scienze omiche

2 CORSI FAD

I corsi sono erogati sulla piattaforma EDUISS - Formazione a distanza dell'ISS - https://www.eduiss.it



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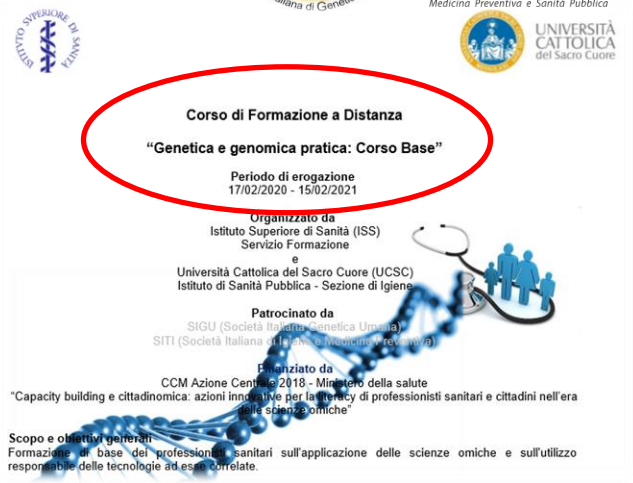
Destinatari e numero massimo di partecipanti: 5.000

Accreditamento ECM previsto per le seguenti figure professionali:
Professioni: Medico Chirurgo, Biologo.
Discipline: tutte.

Il Corso prevede l'erogazione di 30 crediti ECM.

FREE COURSE

PATROCINI:



Destinatari e numero massimo di partecipanti: 10.000

Accreditamento ECM previsto per le seguenti figure professionali: Odontoiatra, Farmacista, Veterinario, Psicologo, Chimico, Fisico, Assistente sanitario, Dietista, Educatore professionale, Fisioterapista, Igienista dentale, Infermiere, Infermiere pediatrico, Logopedista, Ortottista/assistente di oftalmologia, Ostetrica/o, Podologo, Tecnico audiometrista, Tecnico audioprotesista, Tecnico della fisiopatologia cardiocircolatoria e perfusione cardiovascolare, Tecnico della prevenzione nell'ambiente e nei luoghi di lavoro, Tecnico della riabilitazione psichiatrica, Tecnico di neurofisiopatologia Tecnico ortopedico, Tecnico sanitario di radiologia medica, Tecnico sanitario laboratorio biomedico, Terapista della neuro e psicomotricità dell'età evolutiva, Terapista occupazionale

Il Corso prevede l'erogazione di 16 crediti ECM.

Core Competencies in Cancer Genomics for Healthcare Professionals

- **Increased use** of genomics technology by non-genetic healthcare professionals
- Appropriate and effective implementation of cancer genomics **requires literate healthcare professionals**
- **Limited levels of genomic literacy** in clinical cancer genomics
- **Less confidence in communication skills** about genetic testing for hereditary cancer in non-genetic healthcare professionals
- **Low confidence** in the ability to record and collect patients' information
- NO core competencies available

› Fam Cancer. 2016 Apr;15(2):341-50. doi: 10.1007/s10689-015-9852-6.

Non-genetic health professionals' attitude towards, knowledge of and skills in discussing and ordering genetic testing for hereditary cancer

Kirsten F L Douma [1], Ellen M A Smets [2], Dawn C Allain [3]

› BMC Med Genomics. 2018 Feb 13;11(1):18. doi: 10.1186/s12920-018-0337-y.

Adopting clinical genomics: a systematic review of genomic literacy among physicians in cancer care

Vu T Dung Ha [1], Julie Frizzo-Barker [2], Peter Chow-White [2]

Affiliations + expand

PMID: 29433521 PMCID: PMC5810117 DOI: 10.1186/s12920-018-0337-y

› BMC Womens Health. 2017 Dec 16;17(1):132. doi: 10.1186/s12905-017-0488-6.

Health care professionals' attitudes towards population-based genetic testing and risk-stratification for ovarian cancer: a cross-sectional survey

Katie E J Hann [1], Lindsay Fraser [1], Lucy Side [1 2], Sue Gessler [1], Jo Waller [3], Saskia C Sanderson [3 4], Madeleine Freeman [3], Ian Jacobs [1 5], Anne Lanceley [6], PROMISE study team

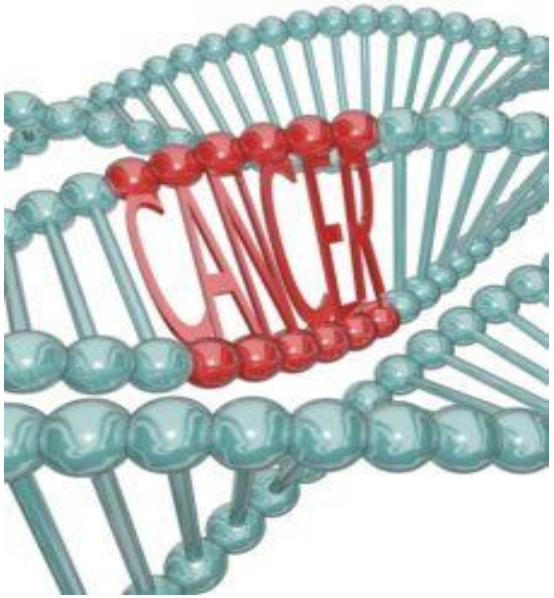
Core Competencies in Cancer Genomics for Healthcare Professionals

2-Phases Process:

- **Phase 1:**
  Systematic literature review
  To identify the core curriculum for health care professionals in the field of cancer genetics and genomics

- **Phase 2:**
  Delphi Methodology
  To define a final set of core competencies!

*A qualitative research method, aiming to reach a consensus among experts through a series of reiterated questionnaires on a given topic.



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Phase 1: Literature review to identify the core curriculum for health care professionals in the field of cancer genetics and genomics

METHODS:

❑ Search startegy

- **Search database:**
  PubMed, SCOPUS, Web of Science
- **Search terms:**
  Physicians, Health Personnel, genetic, genomics, cancer, oncology, malignancy, tumor, neoplasm, knowledge, education, competencies, curriculum, attitude, ability, skills
- **Search period:**
  2000 – 2018
- **English or Italian language published articles**
- **According to PRISMA Guidelines**

❑ Eligibility criteria

- set of competencies in cancer genetics or genomics for graduated healthcare professionals
- set of competencies according to 3 domains: theoretical knowledge, relational attitudes, and practical abilities
- description of the methodology used to identify the competencies

❑ Data extraction

first author, publication year, country, target professionals, topic (cancer genetics/ genomics or genetics/genomic in general with a sub-focus on cancer), the methodology used to obtain the competencies.

Phase 1: Literature review to identify the core curriculum for health care professionals in the field of cancer genetics and genomics

DEFINITIONS

- **Competencies**
  healthcare professionals' ability to apply knowledge, attitudes and abilities successfully in performing a specific task in a manner that yields desirable outcomes

- **Knowledge**
  healthcare professionals' level of understanding facts and procedures

- **Attitudes**
  Psychological tendency of healthcare professionals that is expressed by evaluating a particular entity with some degree of favor or disfavor

- **Practical Abilities**
  Attributes that a health care professional has inherited or acquired through previous experience and brings to a new task

Phase 1: Literature review to identify the core curriculum for health care professionals in the field of cancer genetics and genomics

RESULTS

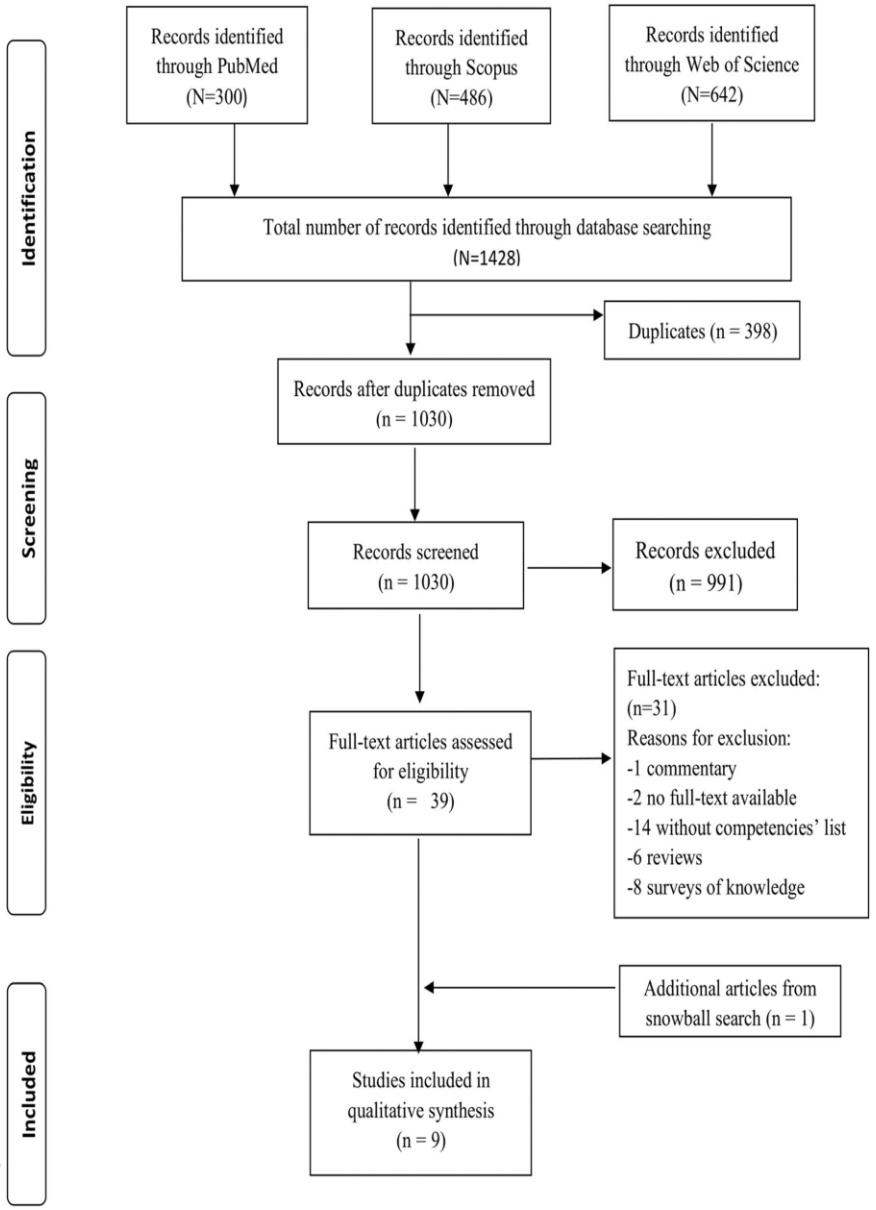
- **9 eligible studies in the systematic review**
  4 USA; 3 UK; 1 ESMO+ASCO; 1 Germany

- **Study focus:**
  -4 on cancer genetics and genomics
  -4 on genetics/genomic in general (sub-focus on cancer)
  -1 on oncology (sub-focus on genetic counselling)

- **Target professionals:**
  -2 studies on medical oncologists
  -3 studies on non-geneticist physicians
  -3 studies on oncology nurses
  -1 study on nurses/midwives

- **2 sets of curricula: Physicians; Nurses**

- The contents of the curricula organized in **3 areas:**
  Theoretical knowledge; Attitudes; Practical Abilities



Phase 2: Delphi method to define the core curriculum for health care professionals in the field of cancer genetics and genomics

- Web-based modified Delphi survey
- Invited 8 international experts (UK, Italy, Belgium and Slovenia) in genetics and genomics
- E-mail invitation
- anonymously conducted
- **6 (75%) experts** participated in the 1st and 2nd round.
- **Respondents' characteristics**:
  -median age 56 years (range 46– 61)
  - median time-period of professional activity in genetics 22.5 years (range 5-35).
  - F:M=1:1
  - 4 medical geneticists, 1 preventive oncologist, 1 medical specialist
- Respondents' characteristics were the same in both Delphi rounds, suggesting that the same experts completed the questionnaire.

Phase 2: Delphi method to define the core curriculum for health care professionals in the field of cancer genetics and genomics

Delphi first-round questionnaire

- **3 sections**
  1. Experts' demographic information
  2. Physicians' competencies
  3. Nurses' competencies

- **Physicians' curriculum:** Knowledge: 12 items; Attitudes: 10 items; Abilities: 22 items
- **Nurses' curriculum:** Knowledge: 7 items; Attitudes: 18 items; Abilities: 31 items

- The participants were asked to rate the competencies as:
  -"Important" (*to be included in the curriculum*)
  -"Not important" (*to be excluded)*
  -"Other" (*to be modifie*d *)*

- Threshold for inclusion: **70%**

Phase 2: Delphi method to define the core curriculum for health care professionals in the field of cancer genetics and genomics

Delphi first-round questionnaire

- **6 Experts (75%)** responded

- Excluded 7 items:
  - 2 items at Nurses' knowledge
  - 5 items at Nurses' abilities

- Modified 17 items:
  - 5 items at Physicians' knowledge
  - 4 items at Physicians' attitudes;
  - 4 items at Physicians' abilities;
  - 2 items at Nurses' knowledge;
  - 2 items at Nurses' abilities

- Included, additional:
  4 items at Physicians' knowledge

Phase 2: Delphi method to define the core curriculum for health care professionals in the field of cancer genetics and genomics

Delphi second-round questionnaire

- Physicians' curriculum: Knowledge: 16 items; Attitudes: 10 items; Abilities: 22 items
  Nurses' curriculum: Knowledge 5 items; Attitudes: 18 items; Abilities: 26 items

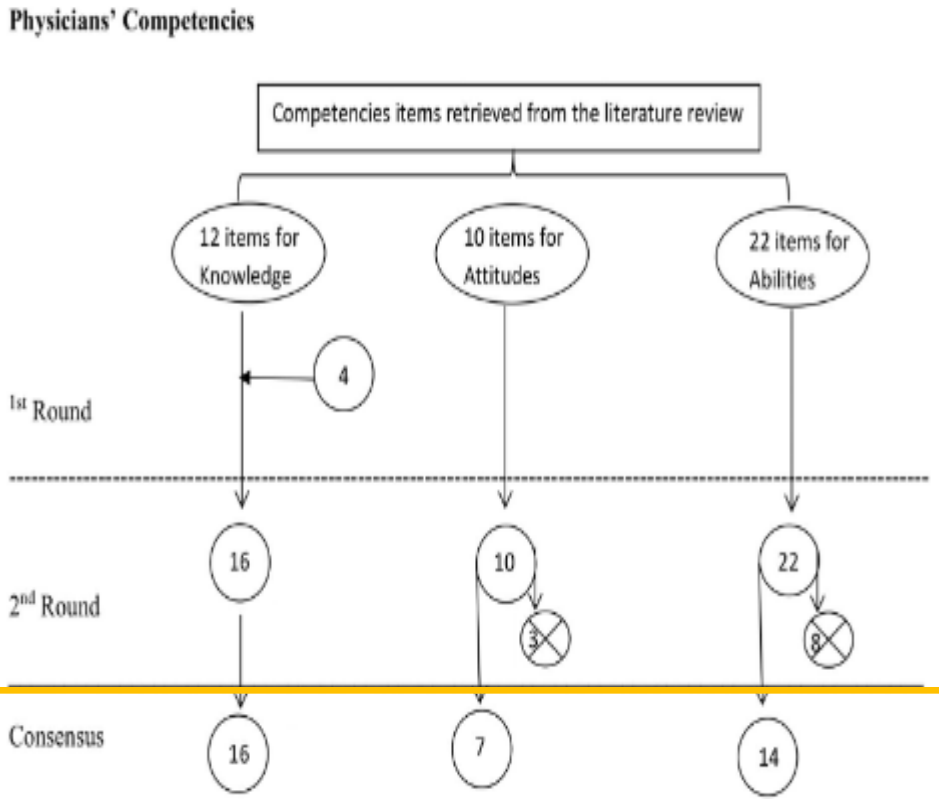
- Experts rated each item as:
  -"important" (to finally be included)
  -"not important" (to finally be excluded)

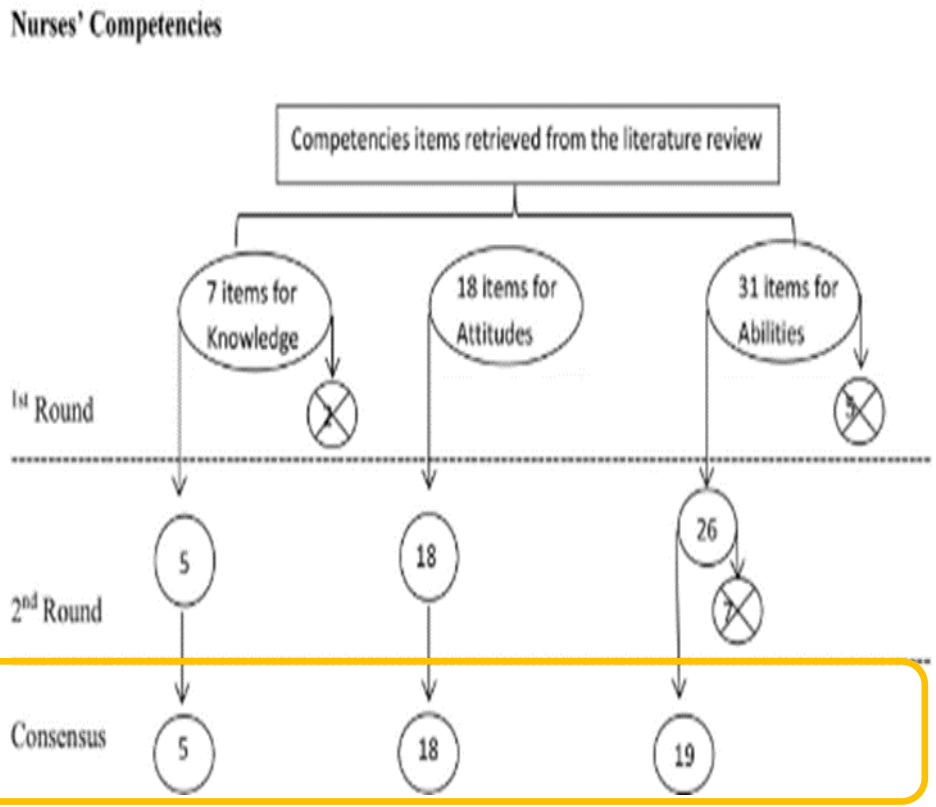
- **6 Experts (75%)** responded

- **83.3% - Inter-agreement rate for inclusion**

Phase 2: Delphi method to define the core curriculum for health care professionals in the field of cancer genetics and genomics

Delphi second-round questionnaire





- Physicians' curriculum: Knowledge: 16 items; Attitudes: 7 items; Abilities: 14 items
- Nurses' curriculum: Knowledge 5 items; Attitudes: 18 items; Abilities: 19 items

PHYSICIANS' Core Curriculum:

KNOWLEDGE competencies

- Basic genetics in the clinical practice
- Concept of somatic genetic change
- Role of genomic changes in cancer pathophysiology
- Hereditary predisposition to cancer
- Major hereditary cancer syndromes
- Characteristics of hereditary cancer syndromes
- Genomic testing use to guide therapy
- Availability of screening tests
- Genetic testing results' interpretation
- Incidental findings from somatic tumor profiling
- Characteristic of tumor spectrum of known syndromes
- Overlapping phenotypes for the common syndromes
- Importance & Interpretation of family history
- Hereditary and nonhereditary cancer differences
- Risk-reducing measures in high-risk patients and relatives

ATTITUDES competencies

- Updated on **cancer diagnosis and treatment**
- **Acknowledging the impact of genetic information** on the patients and their family
- **Recognizing the need for consents**
- **Recognizing the importance of multidisciplinary work**
- **Using appropriate language and cultural skills** with patients
- **Confirm that tissue biopsy procedures are coordinated** to ensure that appropriate and sufficient material is obtained for testing
- **Keeping up a dialogue** with the clinical laboratory

ABILITIES competencies

- Draw & interpret a pedigree
- Integrate GT results into the patient-care plan
- Communicate by using language and cultural awareness skills
- Advice and discuss cancer preventive screenings
- Make risk reduction recommendations
- Use genomic information to guide the diagnosis and management
- Describe the elements of pretest consent for cancer susceptibility testing
- Contribute to multidisciplinary case presentations
- Illustrate the benefits and limitations of somatic GT to the patient
- Communicate to patients' potential implications for their family
- Make appropriate referrals to specialists
- Collaborate with other specialists
- Work with genetic counselors/clinical geneticist

NURSES' Core Curriculum:

KNOWLEDGE competencies

- Common adult conditions that suggest a genetic predisposition
- Role of genetic factors in maintaining health and preventing disease
- Role of genetic factors in the manifestation of cancer
- Evidence-based high-risk level for different inherited cancers
- Basic inheritance patterns

ATTITUDES competencies

Awareness on:

- **Uncertainty associated with genetic information**
  Handling genetic information responsibly
- **Sensitivity and psychosocial issues**
- **Unique aspects of genetic information**
- **Attitudes and values of genomic science**
- **Critical thinking in cancer genetics** practice
- **Boundaries of knowledge**
- **Importance of updating the knowledge**
- **Values of research-based practice**
- **Genetics** research findings
- **Inclusion of genetic information into patients' lives**
  Patients' access to desired genomic services
- **Importance of tailoring genetic and genomic information**
- **Autonomous** genetic decision making
- **Consequences of cancer**
- **Impact of genetic information on patients' family**
- **Patients' rights for informed genomic-related** decision-making
- **Importance of** the **willingness to collaborate**
- **Handling genetic information** responsibly

ABILITIES competencies

- Draw & interpret a pedigree
- Integrate GT results into the patient-care plan
- Communicate by using language and cultural awareness skills
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Task 6.5 Output: Education and training on cancer genomics for healthcare professionals

Cizitens' literacy and healthcare capacity building in Italy

STATUS	Implementation completed	LAST UPDATE	Italy ● NATION-WIDE

PROBLEM & OBJECTIVE

PROBLEM

The rapid advancements in Personalised Medicine approaches and technologies emphasizes the need for education strategies addressing citizens' literacy, and also the continuum improvement of healthcare professionals' knowledge in this field. Non adequate literacy obstacles the adoption of these advancements into healthcare system

OBJECTIVE

Implementation of innovative actions for the literacy of healthcare professionals and citizens on omics sciences. Development of education strategies to increase citizens' literacy and strengthen healthcare professionals' capacity building, that could led to their engagement in all levels of decision making.

REFERENCES & DOCUMENTATION

Intesa Stato Regioni; Policy of PHG in Italy; 2017 Italian National Plan; Distance learning course Italy 2015; Citizens' Attitudes, Knowledge and Educational Needs in the Field of Omics Sciences; Genetics and Genomics: The Effectiveness of an Italian Distance Learning Training Course

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KEY COMPONENTS / STEPS

- The 2010-2012 National Prevention Plan, published by the Italian Ministry of Health and the regions, aimed at defining the best instruments for the promotion of genome-based knowledge among health professionals and citizens.
- The National Plan for Public Health Genomics (NP-PHG), published in 2013 by the Ministry of Health, included two major pillars: education and capacity building of physicians; and the promotion of basic genomic health literacy for general population
- For the implementation of NP-PHG, the Italian Centre for Disease Prevention and Control (CCM) financed two different lines of projects, which aimed to: 1) institute accredited training courses, workshops and seminars addressed to general practitioners, public health specialists, oncologists, gynecologists and neurologist; and 2) to evaluate training courses on PHG in postgraduate medical residency programs of Public Health and/or Community medicine in Italy.
- T National Plan for Innovation of the Health System based on omics sciences, was published in 2017 and aimed to increase the awareness of all stakeholders on the innovation of omics sciences.

KEY CONTEXTUAL FACTORS

- The Italian Centre for Disease Prevention and Control (CCM) act as a technical advisor for all the genome related technologies with a potential health related application.
- For the implementation of NP-PHG, CCM funded a project that started in 2015 and aimed at the development of a Distance learning course in Italian language, entitled "Practical Genetics and Genomics", directed to general practitioners, aiming to train them in the appropriate use of omics technologies.
- For the implementation of the Italian National Plan for Innovation of the Health System based on omics sciences, CCM beside updating the past educational activity on genomics for physicians and opening the distance course also to biologist.
- For the implementation of the Italian National Plan for Innovation of the Health System based on omics sciences, a survey with the collaboration of the Cittadinanzaattiva was conducted, aiming to evaluate Italian citizens' knowledge on the main topics related to genomics in public health (DTC-GT, oncogenomics, pharmacogenomics, etc).

MAIN IMPACTS / ADDED VALUE

- Understanding the citizens' literacy towards omics sciences is necessary for the planning and development of educational strategies among general population.
- The educational interventions could increase the citizens' awareness and comprehension of genetic and genomic information and genetic tests, enabling the citizens to make appropriate and well-informed health decisions, leading to a decrease number of unnecessary medical visits and procedures.
- Genetic/genomic education programs among healthcare professionals contribute to improve the appropriate use of the genomic knowledge and genomic technologies.
- A previous distance learning course on genomic and genetic tests for healthcare professionals in Italy, available from 2013 to 2015, showed a significant improvement in the level of knowledge at the post-test evaluation.

LESSONS LEARNED

- Involvement of all stakeholders at all levels in decision making and organizational strategies is crucial for an appropriate implementation of genomics and Personalized Medicine in healthcare
- Professional education and definition of a core curriculum of "basic" skills for trainers and medical prescribers of genetic tests is essential to ensure optimal translation to healthcare delivery of research
- Considering the Italian experience, distance learning courses in genetics/genomics are an effective,

J Cancer Educ. 2021 Jan 13. doi: 10.1007/s13187-021-01956-w. Online ahead of print.

Core Competencies in Cancer Genomics for Healthcare Professionals: Results From a Systematic Literature Review and a Delphi Process

Ilda Hoxhaj [1], Alessia Tognetto [2], Anna Acampora [2], Jovana Stojanovic [2 3 4], Stefania Boccia [2 5]

Affiliations + expand

PMID: 33442861 DOI: 10.1007/s13187-021-01956-w

Abstract

The continuous development and use of genomic sequencing requires healthcare professionals to constantly integrate these advancements into their clinical practice. There is a documented lack of cancer genomics contents in the teaching and learning programs. We aimed to identify the core competencies in cancer genomics for non-genetic healthcare professionals. We performed a literature review in PubMed, SCOPUS, and Web of Science databases to retrieve articles published from 2000 to 2018, in English or Italian language. We included articles that reported the competencies for non-genetic healthcare professionals in cancer genomics. A web-based modified Delphi survey was conducted, aiming to define, through consensus, a set of core competencies that should be covered in the curricula. The international expert panel included specialists in genetics, genomics, oncology,

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Thank you for your kind attention