

A Proposal for a New Curricular Unit

Quaternary and Overdiagnosis Prevention: A Curricular Unit



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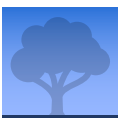


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1 Foreword

This proposal describes a new curricular unit on quaternary and overdiagnosis prevention, its objectives, study plan, and teaching methodologies. The design of this curricular unit was thought for the Master Course in Primary Health Care, a 2nd cycle course of the Faculty of Medicine of the University of Porto. It could also integrate a future Doctoral Course on Primary Health Care of the Faculty of Medicine of the University of Porto.

This pedagogical report is written according to the Portuguese Agency for Assessment and Accreditation of Higher Education (A3ES) documentation structure, including the English language terminology (e.g., study cycle, curricular unit, academic staff, and teaching methodologies) (1).

The discussion of this proposal will allow us to reflect on the justification of the competencies to be taught in this curricular unit. It will also be an opportunity to debate the importance of teaching and training health professionals about Quaternary and Overdiagnosis Prevention in the context of contemporary Primary Health Care.



2 Background

2.1. Definition and scope of Quaternary and Overdiagnosis Prevention

Medicine and the way decisions are made during medical consultations have evolved with an increasing number of medical interventions becoming available for patients and doctors. This applies to a broad range of medical activities: from screening tests and preventive activities to therapeutic activities. Beyond the growth of options, the excessive frequency that patients deem necessary to receive medical services (2-4) increases the possibility of medical interventions causing more harm than benefit (5-8). Many factors contribute to more intensive exposure to medicine (9). Often this has positive aspects, but it also has negative aspects. Disease mongering campaigns, widening a disease definition, and lowering the normal thresholds related to some chronic diseases are some of the mechanisms that turn healthy persons into patients.

Disease mongering campaigns frequently originate from and are guided by economic motivations. Such campaigns can create insecurity in healthy persons and cause them to seek unnecessary medical care. Ultimately, this can lead to overuse, overtreatment, and overdiagnosis (10).

Lowering the normal thresholds for highly prevalent pathologies, for example, diabetes and hypertension, suddenly transforms thousands of healthy persons into “pathology labeled” patients. This also contributes to the growth of multimorbidity,

polypharmacy, overtreatment, and a greater exposition to the medication's side effects and harms (11).

All of these factors contribute to a medicine that is more interventive and more invasive than ever, but, unfortunately, also with greater chances of harm. And this makes quaternary prevention more needed than ever.

Quaternary prevention is the set of actions taken to protect individuals (persons/patients) from medical interventions that are likely to cause more harm than good (12-14).

Getting false-positive diagnoses, finding incidentalomas, being overdiagnosed, and being exposed to a cascade of follow-up procedures are some of the harms that can significantly impair the quality of life of patients and, very often, of healthy people (15-17). From all these forms of harm, overdiagnosis is perhaps the most significant.

Overdiagnosis is the diagnosis of a problem that would never cause disease nor death (18). Overdiagnosis relates to the identification and treatment of diseases that, without outside medical intervention, would never have manifested clinically nor caused health problems to our patient. Accordingly, this, and its treatment, would turn out to be unnecessary, often leading to loss of quality of life for the patient and pain due to potential side effects of treatments. The dimension of overdiagnosis is considerable in various pathologies: asthma (about 30% of overdiagnosis) (19), attention deficit hyperactivity disorder (20), gestational diabetes (21), arterial hypertension (22,23), osteoporosis (24), hypercholesteremia (11), chronic kidney disease (25), breast cancer (26,27), prostate cancer (28,29), lung cancer (30), and thyroid cancer (31).

The problems related to overdiagnosis, overtreatment, and other medical interventions that might bring more harm than good have attracted the attention of researchers and many health professionals. The number of publications has increased substantially in the last decade. Figure 1 shows the evolution of the

number of papers mentioning the keyword “overdiagnosis” per year. Since 2014, the number of annual PubMed indexed papers exceeds 1000 publications.

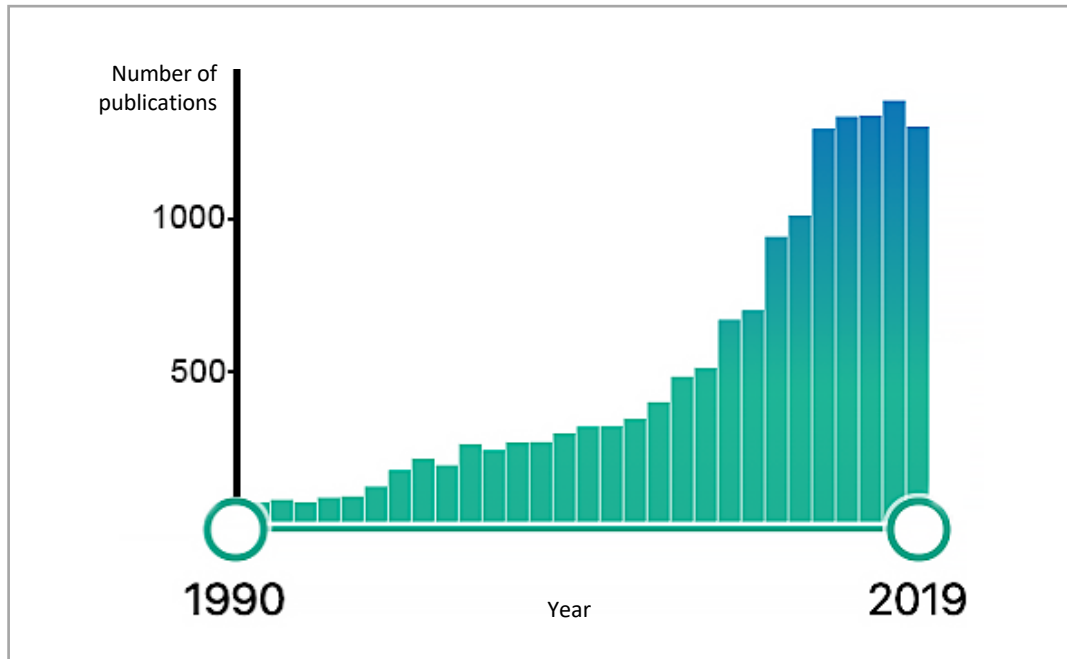


Figure 1. Evolution of the number of PubMed indexed publications mentioning the keyword “overdiagnosis” per year. Source: www.pubmed.gov

Many of the high-impact medical publications have opened new sections or series focused on these topics. For example, The JAMA Internal Medicine journal has a series called “Less Is More®” that “highlights situations in which the overuse of medical care may result in harm and in which less care is likely to result in better health” (32). Since 2002, The BMJ implemented the “Too Much Medicine” initiative, which “aims to highlight the threat to human health posed by overdiagnosis and the waste of resources on unnecessary care” (33). In 2012, the American Board of Internal Medicine Foundation, Consumer Reports, and nine medical specialty societies launched the Choosing Wisely campaign, a campaign that has developed more than 200 evidence-based recommendations and that helps doctors and patients engaging in conversations to avoid medical overuse, harm, and waste (34).

Choosing Wisely is nowadays present in 24 countries, including Portugal, with the support of the Portuguese Medical Association (35).

A central forum for the scientific and academic debate around these topics has been the annual Preventing Overdiagnosis Conference. The first edition was in 2013, hosted by The Dartmouth Institute, with a strong collaboration of the Center for Evidence-Based Medicine of Oxford. Since then, this annual conference has grown in participants and impact. Nowadays, it is sponsored by the World Health Organization and involves health-related professionals and researchers from the five continents. Since 2018, the abstracts of this conference have been published in a special supplement of The BMJ Evidence-Based Medicine journal.

2.2. The Teaching of Quaternary and Overdiagnosis Prevention

The teaching of quaternary and overdiagnosis prevention is already implemented in most medical schools. At the undergraduate level, it is often taught in the context of Primary Health Care, Family Medicine, Public Health, Epidemiology, or Evidence-Based Medicine curricular units. At the postgraduate level, it is already taught in the context of Master and PhD courses related to those subjects. Some examples are the MSc in Global Health of the University of Copenhagen, MSc in Evidence-Based Health Care of the University of Oxford, the MSc of Health Care Delivery Science of the Dartmouth Institute and the Master of Healthcare Quality and Safety of the Harvard Medical School. The Harvard Medical School also offers a continuing education course, entitled “Principles of Prevention in Primary Care Practice: Pearls and Pitfalls”, where overdiagnosis is also taught. Some medical schools are now planning to launch new master and PhD courses specifically dedicated to Overdiagnosis Prevention.



3 Syllabus and key elements

3.1. Learning outcomes

The Portuguese Higher Education Assessment and Accreditation Agency (A3ES) defines the learning outcomes as knowledge, skills, and competencies to be achieved by the students. This curricular unit aims to make primary health care professionals aware of the relevance of quaternary and overdiagnosis prevention and to give them the ability to implement these concepts in the clinical practice and to develop research in this field.

Table 1 presents the learning outcomes in accordance with the Portuguese Higher Education Assessment and Accreditation Agency (A3ES) classification.

Table 1 - Learning outcomes

Learning outcomes type	Upon successful completion of this curricular unit, students should be able:
Knowledge	To describe the major characteristics and scope of quaternary prevention To differentiate quaternary prevention from other prevention levels To identify the most common clinical practice occurrences where quaternary prevention is relevant To describe the major characteristics and scope of overdiagnosis prevention

	<p>To differentiate overdiagnosis prevention from other commonly confounding concepts: false positives, overtreatment, overtesting, misdiagnosis</p> <p>To recognize the overdiagnosis' causes and consequences in primary health care</p> <p>To list the most common overdiagnosed conditions</p> <p>To identify strategies and initiatives to implement quaternary prevention and to prevent overdiagnosis in Portugal and abroad</p> <p>To describe the major characteristics and scope of shared decision making</p> <p>To identify strategies and initiatives to implement shared decision making</p> <p>To recognize different research methods commonly used in the field of quaternary and overdiagnosis prevention</p>
Skills	<p>To compare the reality of Portugal and of the Portuguese National Health Service with other world countries under the perspective of quaternary and overdiagnosis prevention</p> <p>To critically appraise overdiagnosis and overtreatment drivers' information strategies</p> <p>To summarize the characteristics and critically appraise research methods commonly used in quaternary and overdiagnosis prevention field</p> <p>To design strategies to prevent overdiagnosis in the clinical practice</p> <p>To design research projects in the field of quaternary and overdiagnosis prevention</p>
Competencies / Attitudes	<p>To implement quaternary and overdiagnosis prevention in the clinical practice</p> <p>To implement quaternary and overdiagnosis prevention research projects</p> <p>To implement community-oriented information strategies in the field of quaternary and overdiagnosis prevention</p> <p>To engage and collaborate with a multidisciplinary team working in the field of quaternary and overdiagnosis prevention</p>

3.2. Syllabus

This curricular unit has the following contents:

- The history of prevention in medicine and its relevance in primary health care
- Prevention levels and the concept of quaternary prevention
- Harms associated with too much medicine in contemporary primary health care
- Real-world evidence of too much medicine's harms
- Factors and driving forces that generate too much medicine and turn healthy people into patients
- Definition of overdiagnosis and differentiation from other commonly confounding concepts: false positives, overtreatment, overtesting, misdiagnosis
- The impact of overdiagnosis in the individual patient
- The impact of overdiagnosis in primary health care and in the health system
- Real-world evidence of overdiagnosis: the most common overdiagnosed conditions
- Research methods commonly used to provide evidence of overdiagnosis and their critical appraisal
- Strategies and initiatives to implement quaternary prevention and to prevent overdiagnosis: "Choosing Wisely" (incl. Choosing Wisely Portugal), "Less is More" by JAMA, "Too much medicine" by The BMJ, Preventing Overdiagnosis Conference
- Designing research to implement and assess the effectiveness of quaternary and overdiagnosis prevention strategies
- The concept of shared decision making and its role in the field of quaternary and overdiagnosis prevention

- The Portuguese reality and perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making
- The implementation of quaternary and overdiagnosis prevention in the clinical practice: tools and resources
- The implementation of quaternary and overdiagnosis prevention information strategies
- The relevance of research perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making - a task for a multidisciplinary team

3.3. Demonstration of the syllabus coherence with the curricular unit's intended learning outcomes

This course leads to a set of knowledge, skills, and competencies that will allow students to manage, assess, and research in the field of quaternary and overdiagnosis prevention. The syllabus has been designed in full accordance with the proposed learning outcomes.

Topics like "The history of prevention in medicine and its relevance in primary health care", "Prevention levels and the concept of quaternary prevention" and "Definition of overdiagnosis and differentiation from other commonly confounding concepts: false positives, overtreatment, overtesting, and misdiagnosis" will allow students at an initial stage of the curricular unit to become aware of the main concepts of this unit.

Topics like "Harms associated with too much medicine in contemporary primary health care", "Real-world evidence of too much medicine's harms" and "Factors and driving forces that generate too much medicine and turn healthy people into patients" will give students the knowledge of the most common quaternary

prevention and overdiagnosis related issues and their causes and consequences in primary health care.

Topics like “The concept of shared decision making and its role in the field of quaternary and overdiagnosis prevention” and “ The Portuguese reality and perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making” will give students the knowledge of the major characteristics and scope of shared decision making, the knowledge of strategies and initiatives to implement shared decision making, and also the skill to compare the reality of Portugal and of the Portuguese National Health Service with other world countries.

At the final stage of the curricular unit, topics like “The implementation of quaternary and overdiagnosis prevention in the clinical practice: tools and resources”, “The implementation of quaternary and overdiagnosis prevention information strategies”, “The relevance of research perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making – a task for a multidisciplinary team” will allow students to develop competencies and attitudes to implement quaternary and overdiagnosis prevention in the clinical practice, to design research projects and information strategies in this field, and to meet and work with a multidisciplinary team in this field.

3.4. Teaching methodologies (including assessment)

During this course, different teaching methodologies will be applied: lectures, oriented discussion, small group work, critical appraisal of papers, and roleplay. There will be a total of eight sessions with four lectures, five small group work activities, three critical appraisals of a paper, two roleplays, and seven moments of

oriented discussion. Table 2 shows the curricular unit contents distribution by session and the respective teaching methods.

The evaluation of the students will have three components:

- a) Oral and written presentation of a research protocol related to quaternary and overdiagnosis prevention - 15% of the total classification
- b) Oral and written presentation of a patient/community education plan related to quaternary and overdiagnosis prevention - 15% of the total classification
- c) Final exam - 70% of the total classification

The two assignments, the research protocol, and the patient/community education plan will be developed in group work and will be both a relevant learning activity, and a basis for the student evaluation.

Table 2. Curricular unit contents distribution by session and teaching methods.

Session	Type	Content
1	Lecture & Discussion	The history of prevention in Medicine and its relevance in primary health care. Prevention levels and the concept of quaternary prevention.
	Small group work & Discussion	Harms associated with too much medicine in contemporary primary health care.
2	Critical appraisal of a paper	Real-world evidence of too much medicine's harms.
	Roleplay & Discussion	Factors and driving forces that generate too much medicine and turn healthy people into patients.
3	Lecture & Discussion	Definition of overdiagnosis and differentiation from other commonly confounding concepts: false positives, overtreatment, overtesting, misdiagnosis. The impact of overdiagnosis in primary health care and in the health system.
	Roleplay & Discussion	The impact of overdiagnosis in the individual patient.
4	Critical appraisal of a paper, Small group work	Real-world evidence of overdiagnosis: the most common overdiagnosed conditions. Research methods commonly used to provide evidence of overdiagnosis and their critical appraisal.

	Lecture & Discussion	Strategies and initiatives to implement quaternary prevention and to prevent overdiagnosis: "Choosing Wisely" (incl. Choosing Wisely Portugal), "Less is More" by JAMA, "Too much medicine" by The BMJ, Preventing Overdiagnosis Conference.
5	Small group work	Designing research to implement and assess the effectiveness of quaternary and overdiagnosis prevention strategies.
	Lecture & Discussion	The concept of shared decision making and its role in the field of quaternary and overdiagnosis prevention. The Portuguese reality and perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making.
6	Critical appraisal of a paper, Small group work	The implementation of quaternary and overdiagnosis prevention in clinical practice: tools and resources. The implementation of quaternary and overdiagnosis prevention information strategies.
7	Small group work	The relevance of research perspectives in the context of quaternary and overdiagnosis prevention, and shared decision making - a task for a multidisciplinary team.
	Student evaluation	Student's oral presentations of research protocols' abstracts and patient/community information plan.
8	Student evaluation	Students' oral presentations of research protocols' abstracts and patient/community information plan. Students' evaluation: final exam.

3.5. Demonstration of the coherence between teaching methodologies and learning outcomes

The chosen learning methodologies aim to give students an active role in the learning process. Lectures will be used only for sharing the main concepts. The critical appraisal and oriented discussions will help students to develop a critical insight into quaternary and overdiagnosis prevention. Roleplays will help students to connect the learned concepts to the clinical practice and to the real world, and also to develop competencies like the "implementation of quaternary and overdiagnosis prevention in the clinical practice". The small group work activities, and also the two assignments, will allow students to develop various skills and competencies, such as

“to implement quaternary and overdiagnosis prevention research projects”, “to implement community-oriented information strategies in the field of quaternary and overdiagnosis prevention”, and “to engage and collaborate with a multidisciplinary team working in the field of quaternary and overdiagnosis prevention”.

3.6. Credits, contact hours, and content of the curricular unit sessions

A total of 135 hours is allocated to this curricular unit, including 20 mandatory contact hours. Considering the European Credit Transfer and Accumulation System (ECTS), five credits will be allocated to this curricular unit.

Table 2 shows the curricular unit contents distribution for each session.

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