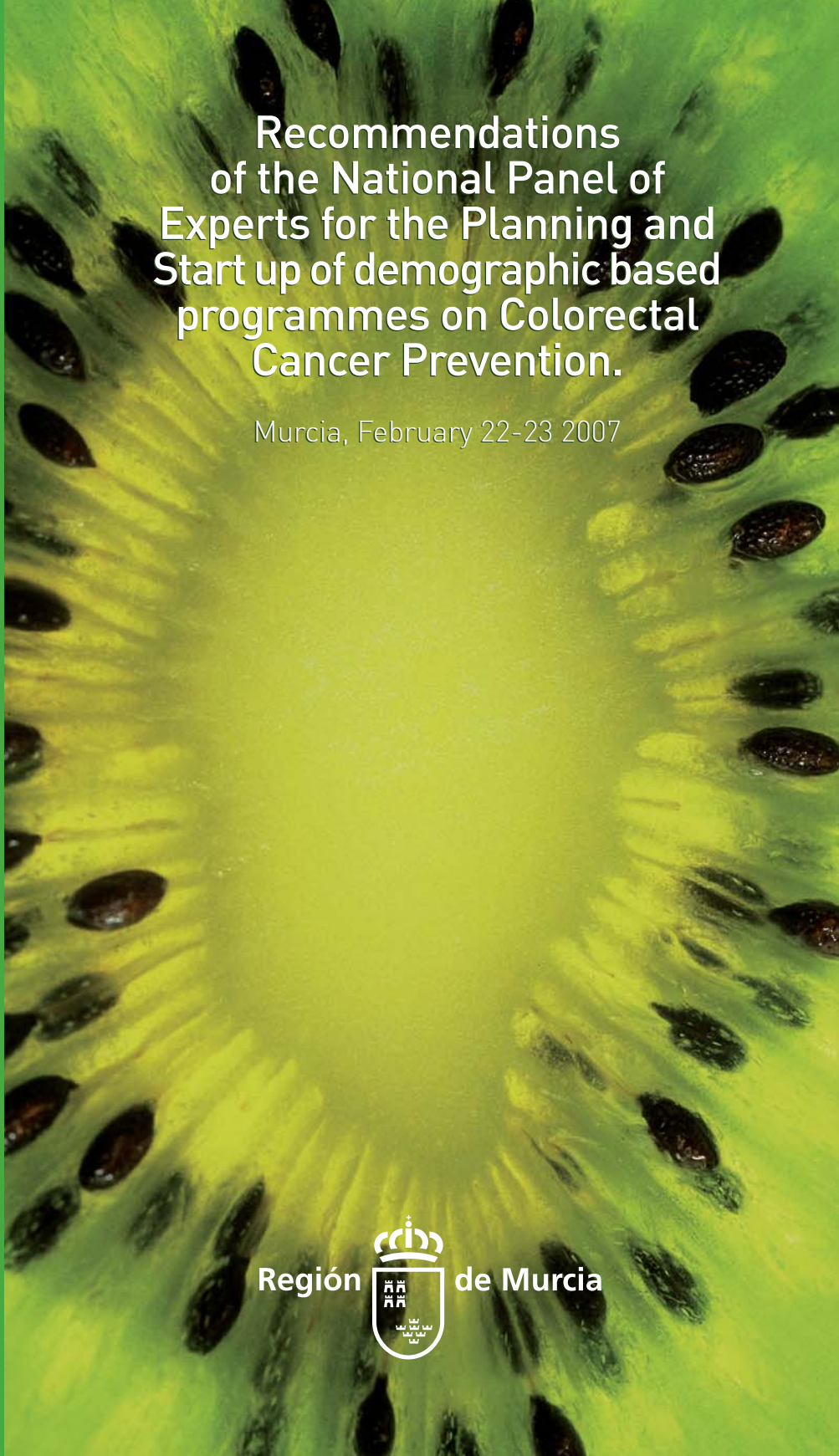
INFORMES 49

Educación para la Salud

Recommendations of the National Panel of Experts for the Planning and Start up of demographic based programmes on Colorectal Cancer Prevention.

Murcia, February 22-23 2007



Región de Murcia

Recommendations of the National Panel of Experts for the Planning and Start up of demographic based programmes on Colorectal Cancer Prevention.

Murcia, February 22-23 2007

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Recommendations of the National Panel of Experts for the planning and start up of demographic based programmes on Colorectal Cancer Prevention.

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Recommendations of the National Panel of Experts for the planning and start up of demographic based programmes on Colorectal Cancer Prevention.

BACKGROUND

BACKGROUND

Colorectal cancer has become an important sanitary problem in Spain (1), due to the high incidence and mortality as well. Many different preventive strategies have been proposed for early colorectal cancer diagnosis and treatment(2), however the only strategy that has demonstrated its efficacy in community based studies is the faecal occult blood test (FOBT) in a screening fashion followed by optical colonoscopy as a diagnostic confirmation tool.

Four community based studies (1,2,3,4) and a metanalysis (5) of them has confirmed colorectal cancer mortality rate can be reduced up to 16% with such strategy. On the other hand, Mandel et al, have reported in the Minnesota study that colorectal cancer incidence was reduced in 20% after 18 years of follow up by annual screening, 18% reduction in biennial screening and up to 68% in the polypectomy group.

The Council of the European Union (9), by proposal of the commission , includes the FOBT as the screening test which meets the criteria for population based organized programmes in the recommendations for the member states regarding 2003 cancer screening. In Spain, the National Healthcare system's Cancer Strategy (2006), remarks the

significance of colorrectal cancer prevention and the necessity to initiate pilot programmes with such profiles. In this sense, three pilot programs are ongoing; the first one in Catalonia which started in 2000 is carried out by the Catalonian Institute of Oncology being the target population of nearly 68.000 inhabitants having initiated its third round. A second one in Valencia which started in 2005, with a target population of 75000 inhabitants and a third one in Murcia initiated in 2006, having a target population of 30000 inhabitants. All programs were carried out with FOBT as the screening test and colonoscopy as the test of choice for diagnostic confirmation.

In this sense, due to the unique characteristics of a decentralized Spanish sanitary system, it is convenient to establish a consensus on basic characteristics of population based programs to prevent colorectal cancer before they are launched by each Ministry of Health, specially regarding its organization and the process of diagnostic confirmation so that basic indicators can be settled, and therefore information of different programs can be gathered for evaluation and investigation purposes.

Recommendations of the National Panel of Experts for the planning and start up of demographic based programmes on Colorectal Cancer Prevention.

OBJECTIVES AND WORKING PLAN

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Main objective:

To establish criteria, indicators and basic procedures which population based programs should meet for colorectal cancer prevention.

Specific objectives:

1. To establish basic characteristics related to organization and management of such programs and evaluation indicators.
2. To propose collaborative models among the Primary Care Units in colorectal cancer prevention programs which guarantee continuity of care with specialized healthcare services.
3. Settle criteria and basic quality indicators as well as recommended procedures in the process of diagnosis and treatment through optical colonoscopy.
4. To define the characteristics samples must meet for histological evaluation as well as basic characteristics and contents of the corresponding report.

Working plan:

- *Place and date*: Murcia, 22 y 23 February 2007.
- *Participants*: a total of 44 panelists, 24 representing 13 Autonomous regions, 7 representing 5 scientific societies and 18 experts selected by experience and relevance in the field.

• Methodology:

• Lecture by Jack S. Mandel: "Critical aspects in planning and evaluation of colorectal cancer prevention programs to guarantee and measure effectiveness".

• Panel of experts: to facilitate the debate among participants, two panels were organized.

1. Organization, management and evaluation panel: objectives 1 y 2.

2. Diagnostic y treatment panel: objectives 3 y 4.

The meeting was carried out according to the following working plan:

• Before the meeting, three experts of each panel were asked to present a review of the literature (at the beginning of the meeting) which was used as reference for the debates.

• Two plenaries with all participants:

- Introduction, presentation and objectives.

- Roundtable of reports. Two tables each per panel.

- Final, presentation and approval of conclusions.

• A specific plenary per each panel of experts.

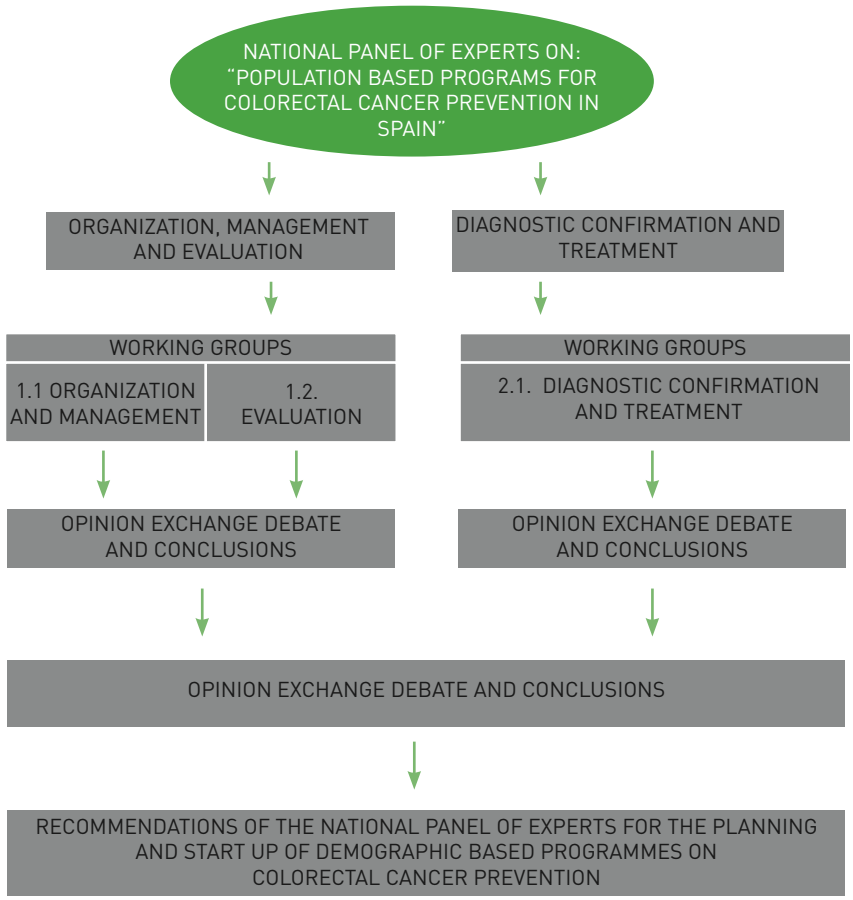
- Presentation and approval of conclusions.

• For the working group, each panel of experts was subdivided in two groups, with one coordinator/ commentator per panel. Each lecturer of the panel participated in the working group as moderator of the debates. Each group had a secretary to record the conclusions of the debates.

• All experts were provided with bibliographical material before the meeting, material which was available to the working groups.

• The final document was sent to all participants for review before edition.

Figure 1. Panel organization



Recommendations of the National Panel of Experts for the planning and start up of demographic based programmes on Colorectal Cancer Prevention.

RESULTS

RESULTS

It has already been mentioned that the **recommendations of the panel are established for population based programs which use fecal occult blood test as the screening method and colonoscopy as the test of choice for diagnostic confirmation with polyp removal as main recommendation.**

1. Organization and management.

1.1. Target population inclusion criteria.

Residency.

Being the program, population based, and the first inclusion criteria are:

To be registered in the geographic area where the program is settled.

Age.

The Council of the European Union, by proposal of the commission9, recommends offering a population based screening for the prevention of colorectal cancer to men and women between 50 and 74 years of age. This recommendation is fundamented by results of community based trials.

However, due to the less aggressiveness of cancers diagnosed in those with advanced ages and the life expectance of people among 70 and 74 years, it is not clear whether screening will be of benefit for people of this age, specially when screening is systematically performed at a younger age. Furthermore, Mandel et al have reviewed the efficacy of

screening at this age. For which reason, it is recommended to:

• **Initiate pilot studies or screening programs in men and women with age between 50 and 69 years. Once the program is extended to the whole territory an expansion up to 74 years can be evaluated.**

1.2. Target population exclusion criteria.

There are two types of exclusion criteria; definite ones and those where it is not recommended a definite exclusion but for the present screening phase or during a settled period.

Definite exclusion criteria are established as follows:

• **Personal history of colorectal cancer.**

• **Family history of colorectal cancer with high risk criteria* on specific surveillance condition. People who are not under specific surveillance and are detected by the program, must be excluded and directed to risk appropriate attention.**

• **Personal history of colorectal disease which requires specific colonoscopic followup (inflammatory bowel disease, attenuated FAP).**

• **Personal history of adenomas.**

• **Terminal disease.**

• **Severe disease or impairment which contraindicates colon examination or requires a specific follow-up.**

Not definite exclusion criteria can be considered:

• **Disease or impairment which presently contraindicates colonoscopic examination if possible recovery is considered.**

• **Endoscopic examination (sigmoidoscopy or colonoscopy) done in the last 5 years.**

*Family history of polyposis syndrome (adenomatous or hammartomatous) or Hereditary Nonpolyposis colorectal cancer (Lynch Syndrome) or family history of colorectal cancer (2 first degree relatives affected with colorectal cancer independently of age of diagnosis or one first degree relative diagnosed before age 60).

Figure 1. Panel organization.

Inclusion criteria:
1. Men and women registered in the geographic area where the program will be launched.
2. Age between 50 and 69 years (with possible expansion to 74 years in the future).

Definite exclusion criteria:
1. Personal history of colorectal cancer.
2. Family history of colorectal cancer with high risk criteria*
3. Personal history of colorectal disease which requires specific colonoscopic follow up (inflammatory bowel disease, attenuated FAP).
4. Personal history of adenomas.
5. Terminal disease.
6. Severe disease or impairment which contraindicates colon examination or requires a specific follow-up.

Not definite exclusion criteria can be considered:
1. Disease or impairment which presently contraindicates colonoscopic examination if possible recovery is considered.
2. Endoscopic examination (sigmoidoscopy or colonoscopy) undergone in less than 5 years.

*Family history of polyposis syndrome (adenomatous or hammartomatous) or Hereditary Nonpolyposis colorectal cancer (Lynch Syndrome) or family history of colorectal cancer (2 first degree relatives affected with colorectal cancer independently of age of diagnosis or one first degree relative diagnosed before age 60).

1.3. Screening test and periodicity.

Community based trials which demonstrated efficacy used guaiac fecal occult blood tests. Subsequently, alternative methods were developed based on immunochemical tests which allow detection of human blood and therefore, dietary restriction is not required [2,11,12,13]. Furthermore, immunochemical tests have demonstrated to have a higher sensitivity in cancer detection[14], as well as adenoma detection[15], with no decrease of specificity rate, allowing a quantitative, automatized measure and range modification[16] in order to classify participants in positive or negative. However, these tests are more expensive even though studies on cost effectivness[17,18,19] have shown both methods are efficient. **Since immunochemical tests have not been proved in community based trials** this panel of experts has no preference. Presently, among the three ongoing pilot Studies, two are based on guaiac tests while the remaining one uses the immunochemical test. Regarding

periodicity, the authors of the meta-analysis[7] of community based trials propose, according to the results, to repeat the test every two years. It is recommended:

• **To perform faecal occult blood testing (FOBT) as a screening method and repeat every two years in those negative ones.**

1.4. Models of management.

Two models of management can be proposed basically, a centralized and a decentralized one. As previously mentioned, the National Healthcare system of Spain has been developed in a way that does not allow a centralized model. Therefore, the debate between these two models should be considered for the autonomous community. In this sense, a centralized organization offers the following advantages:

• Make resources profitable, organization, knowledge, experience.
• Guarantees equity in the access and quality of process.
• Guarantees the use of common criteria for organization, quality and evaluation.
• Facilitates the coordination among institutions, units and involved professionals.
• Facilitates the homogenization of information to the community.
• Enables having a common information system which facilitates planning, management and evaluation of the program.
• Enables having evaluation markers to compare results.

A decentralized system allows adjusting better to the real needs and possibilities expected in a decentralized level as well as more rapidness in decision making which affect the process. Therefore, it is recommended:

• **Those programmes which will be initiated can have a decentralized process of management as long as they have a homogeneous information system and general criteria for organization, quality and evaluation.**

1.5. Recruitment strategies.

Before initiating a demographically based screening program it is necessary to have a computerized database of the target population with demographic information[20,21,22] which allows to send individualised invitation and reminders. Data related to the family physician should be included. Therefore, it is recommended:

• **The first recruitment strategy consists in an individual mail invitation. Consequently, the screening programs must have a computerized database of the target population and a "screening office" which elaborates invitations and the appropriate reminders.**

It is convenient to plan reinforced additional strategies, especially

those which include available sources in Primary Care Setting as well as others aimed to encourage recruitment in an unspecific way, in other words, to create a positive attitude towards participating.
Reinforced additional strategies will be assessed:

• **By Primary Care Unit:** in clinical records information regarding screening should be included so that professionals can inform and advise individually.

• **Collaboration with companies,** in health checks. For this purpose, it is recommended that the management system should coordinate the information to ensure continuity of the process.

• **Spreading and information** regarding characteristics of the program to professionals directly involved:

  • **Primary Care Units.**
  • **Pharmaceutics.**
  • **Gastroenterologists.**

• Use of mass media for information and to promote participation.

• Promote collaboration of non-sanitary entities (city councils, mutual help groups, neighbourhood groups, etc.).

1.6. Information to the community.

• **The objective of providing information to the community is to get an informed participation,** where benefits, risks and uncertainty regarding the screening process and its consequences should be described and explained in an objective, clear and understandable way. The necessity to perform studies in order to know the participation determinants and the type of information each document must have are suggested (invitation letter, posters, leaflets...).

1.7. Information characteristics.

• **The target population must be informed regarding the important of colorrectal cancer screening and the diagnostic methods.** This information should be provided by the program organization.
Regarding the importance of colorectal cancer screening, it is recommended that the following issues should be developed:

• Learn about the impact of colorrectal cancer.
• Prevention is possible.
• Early detection improves the prognosis.
• How the system is organized.
• How to participate.
• What is a screening test.
• Instructions to follow for the test.
• Interpretation of results.

Regarding the diagnostic tests, minimal information material should be provided on the following:
What is a colonoscopy?
Colonoscopy with sedation.
Diagnostic and therapeutic colonoscopy.
Informed consent.
Bowel preparation for colonoscopy.

Perform previous tests.
Where it will be done.
What to do if pain or any other symptom occurs.

1.8. Coordination between healthcare levels and management.

Due to the unique features of the National Healthcare system and the Healthcare Systems of each autonomous community, coordination is a critical issue among the different healthcare levels as well as in healthcare management. Regarding healthcare levels, the necessity of coordination between Primary healthcare, specialized healthcare and Public health should be taken into consideration to a different extent, as well as among the different management levels in healthcare system, local area and regional area. In other words, it is recommended:

- **Involvement of Primary Care units in the design and organization of the screening program.**
- **Inclusion of screening in the health objectives of Primary Care units.**
- Create the figure of a **cancer screening coordinator (or generic form of cancer) in a territorial scope, a bridge between the "screening office" and the Primary Care units, Primary healthcare and specialized healthcare.**
- **Regular information to Primary Care units** and especially prior to invitation, targeted to improve knowledge about **organization** and to communicate the results of **the evaluation markers.**

Table 2. Recommendations on organization and management

Screening test and periodicity:
- Faecal Occult Blood testing (FOBT).
- Biennial test in negative cases.

Organizational model:
- Information systems, general criteria for organization, quality and evaluation: centralized.
- The process of management may be decentralized.

Enrollment:
- Main strategy: individualized postal invitation (informatics data base is required as well as a "screening office".
- Additional strategies:
  - o Spreading and information by:
- Primary healthcare groups.
- Pharmaceutics.
- Gastroenterologists.
  - Collaboration of companies (in health check exams).
  - Use of mass media to inform and promote participation.
  - Promote collaboration among non sanitary entities (councils, groups of mutual help, community groups, etc.).

Coordination:
- Involve primary healthcare groups in the design and organization.
- Include screening in the sanitary objectives of Primary Healthcare groups.
- Create the role of a cancer screening coordinator (or generic form of cancer) in each site, which would act as a bridge with the "screening office", primary healthcare and specialized healthcare services as well as improves the abilities and knowledge in cancer.

Information:
- The purpose of information towards population is to get informed participation.
- Regular information to primary Healthcare groups (regarding organization and the results of the indicators of evaluation).
- Information to the patient with a negative result: by mail.
- Information to the patient with a positive result: by telephone, setting the following appointment.
- Information to the family physician: about the participation, the result, as well as colonoscopy result and the treatment performed.

Informed Consent:
- To anticipate and define the information sequence for the informed consent for colonoscopy as well as polypectomy.

Basic requirements:
- Double guarantee of continuity.
  - Any participant who undergoes a screening test must have a diagnostic confirmation and treatment.
  - Each participant must continue in the screening program until scientific knowledge limits its validity.
- Have an information system which:
  - Enables the management of target population.
  - Has a single personal identification.
  - Allows monitorization of the process and evaluation of results.
  - Facilitates the connection with the units which participate in the screening as well as with the patient's clinical records.
- Ellaboration of a program of quality control.

1.9. Communication of results:

The results of fecal occult blood testing should be communicated to participants as well as to the family physician. Communication of the result must be done as soon as possible with indications to follow according to results.

As it will be discussed later in detail, there are two organizational models to connect with participants with a positive test with the diagnostic and treatment unit, even though a prior consultation is proposed before colonoscopy. Therefore, it is recommended:

Notification to participant with negative result: by letter post, with a short explanation of the meaning of a negative result and a recommendation to repeat the test in two years, except those cases where the participant is out of target population due to its age.

Notification to participant with a positive result: by telephone, making an appointment for the following consultation. When telephone contact is not possible, a letter post will be sent with indications of how to contact for the following consultation.

Notification to the family physician: regarding participation, the test result, may this be positive or negative as well as the results of colonoscopy and treatment performed. Notification to family physician must be done in computerized fashion and, if possible it should be added to the patient's clinical records.

1.10. Colonoscopy informed consent.

There are two models of information of positive results and informed consent in the present pilot projects. In the first, the primary care physician is in charge of informing the participants who have a positive fecal occult blood test, giving indications for bowel preparation for colonoscopy and obtaining the informed consent. After the process the endoscopist informs of the result. In the second model, a nurse, who is in charge of consultation in the diagnostic confirmation center, is responsible of informing the positive results, giving the indications for anterograde bowel preparation and offering information in order to get the informed consent which is finally obtained in presence of the endoscopist who performs the colonoscopy. In any case it is recommended:

All information must have planned and settled the information systems for the informed consent, for colonoscopy and polyp removal as well. Nevertheless, it must be done prior to colonoscopy and with enough time so that the patient can meditate about the study in absence of healthcare professionals.

1.11. Basic requirements to start a screening program.

The panel of experts has meditated about those requirements

which must be followed before initiating a screening program of these characteristics. As basic requirements the following are proposed:

• **Double guarantee of continuity:**

• **Of the diagnostic process and treatment:** all participants who have a screening test done must have a diagnostic confirmation and treatment guaranteed.

• **In time:** being this a program and not a campaign, prior to its initiation it is necessary to guarantee financial feasibility as well as material and human resources to ensure the participant's permanence until scientific knowledge limits its validity.

• **Have an information processing system which enables management of the target population and includes a single individual identifier allows the monitorization of the process and the evaluation of the results, facilitates the connection with the different units which participate in the screening process as well as with the clinical records of the patient.**

• A **quality control program** must be elaborated with specific criteria which include quality standards defined with minimal criteria.

2. Evaluation and information systems.

The main objective of this group is to get a consensus in data and indicators which allow those programs which are already on -going and those who will be implemented, to evaluate its activity and results, be able to compare and if necessary add more data. The panel group debated some general and specific issues regarding evaluation and got to a consensus about a minimal group of data which are attached (the elaboration of a guideline for data registry and indicators is pending). As a previous issue, the group considers that a system of information[20,24] must be established following the quality guidelines[25] in the screening programs which allows management and evaluation of the program. Following, some remarks and recommendations are described regarding evaluation:

2.1. General remarks:

• Use a source for the community database which guarantees the access of the program to all the population.

The census meets such requirement; however it does not provide data regarding Primary care units. The healthcare card provides such information even though it does not include the total population. Other alternatives such as crossing both sources of information or the use of the healthcare card allowing expansion to people not included in them can solve the problem. In any case, if other data sources not corresponding with the census are

used, it is convenient to validate them and know the population coverage of the database used instead of the census.
The population selection criteria and causes of exclusion, temporary and definitive ones are reflected in the conclusions of the management group, thus, two groups were consensuated.
• **A tumor registry or information system on cancer must be elaborated** for proper evaluation of the program results, especially to identify interval cancers as well as the sensitivity **and specificity of the program.**
• **Participation is one of the most essential aspects to evaluate screening programs.** Programs may use different invitaron systems. It is convenient to evaluate them through the **participation rate.**

Participation is especially important in the colorectal cancer program, therefore it must be analyzed based on all the **sociodemographical variables available such as: age, sex, residence place, birth place** (if possible or an approximation), studies achieved...

A person is considered participant when a test has been performed and an invitation is considered valid when the performed tests were done to participants without exclusion criteria and the invitation sent by mail has not been returned by the post office.
• **The analysis regarding the test will be done per person and not per test.**
The criteria for a positive test must be defined in each program in order to be able to compare them.
For quality assurance it is important to evaluate the percentage of repeated tests due to technical problems as well as to include validity indicators: positive predictive value, sensitivity and specificity of tests. This is the reason why it is recommended to have information systems about cancer or population based registry. Such indicators will allow to compare different types of tests.
• **Colonoscopy is the test of choice for diagnostic confirmation and therefore it is important to evaluate the acceptance and quality of this technique.**
To evaluate the acceptance of the test, the rate of colonoscopies performed compared to the indicated ones, will be calculated.
Colonoscopy will be considered of no indication in case of severe disease, physical impairment and recent colonoscopy. These aspects will be evaluated by the gastroenterologist (initially these criteria are reasons for exclusion from the screening program.
The criteria of complete colonoscopy and other quality indicators such as type of sedation used, adverse effects, location reached in the colon, will be registered in the diagnostic and

treatment area, **as a standardized colonoscopy report.**

- **As a result of the screening process, the rate of detection of invasive cancers, low grade and high grade adenomas are recommended to be measured, since part of the benefit of colorectal cancer screening is obtained from early treatment of adenomas.**
- **The use of TNM classification is recommended for colorectal cancer staging.**
- **As an indicator of early diagnosis and to prevent bias due to early diagnosis, which can occur in screening programs, the use of rate (%) of advanced stage cases is recommended.** The progress of this indicator (which should be decreasing) will inform us if early detection is improving.
- **Cost effectiveness studies are necessary in order to compare the use of different tests, appointment systems, etc.** Research workgroups are invited to collaborate in this program and investigate these aspects.

2.2. Basic indicators of evaluation of colorectal cancer pilot programs.

An established data and minimum of indicators will be collected by the colorectal screening programs, colorrectal, disaggregated according to groups of age and sex (table 1). These data and minimum of indicators can be developed as long as these programs settings evolve.

The following are recommended:

Age will be calculated for all indicators as the difference between the date of birth and the date the round is initiated.

Target population: men and women with residency in the referenced geographical area and appropriate age established by the program with no reason for exclusion criteria.
Exclusions. Number of subjects of the target population with any reason for exclusion (Absolute + temporary exclusions).
Valid invitations: number of subjects with an invitation which are not considered census errors or do not belong to any of the groups of exclusion criteria. Census error are defined as those subjects who have no residence in the address indicated in the database due to information provided by the post office or by the primary care unit or due to direct management of the program organization.

Coverage rate: 100 X valid invitations/ (Target population-Excluded ones)
This is the rate of the target population of the whole territory in an autonomous community which has received at one invitation at least.

- The target population in the denominator is included in the program database en the reference age group for the whole autonomous

community, obliges to offer additionally the rate: population database/census.
• Exclusions are deleted from the numerator and denominator.

Number of participants with a valid test: those subjects with a bad quality test which was not repeated and those weak or borderline positive results which have not concluded the process will be excluded from programs including a specific protocol for these test results.

Participation rate: 100 X participants with a valid test/total of people with a valid invitation.

Number of individuals with tests with technical errors: subjects with a test which could not be analyzed due to technical errors, even though another valid test was returned in the same round subsequently.

Rate of technical errors: 100 X number of subjects with a test with technical errors/total of participants.

Number of subjects with a positive test: number of subjects with a valid test who meet the criteria of a positive test and therefore, the protocol to rule out a colorectal cancer is followed.

Positive test rate: 100 X subjects with positive test/participant subjects with valid tests.

Number of indicated colonoscopies: number of subjects in whom optic colonoscopy was indicated, that is, subjects with a positive test who do not meet criteria of exclusion for optic colonoscopy.

Number of colonoscopies performed in or out of the program: number of subjects with an optic colonoscopy initiated, thus, includes other subjects where for any reason colonoscopy was incomplete.

Rate of acceptance of colonoscopy: 100 X performed colonoscopies/indicated colonoscopies- exclusions).

Rate of complete colonoscopies: rate of colonoscopies with ileocecal valve intubation.

Number if invasive cancers detected: number of subjects with at least one invasive cancer detected. Not cancers but subjects are counted. Therefore, when two invasive cancers are detected in one subject (in different polyps) it is screened as one.

The classification of adenomas must be done with the colonoscopy report together with the Histopathological one since sometimes high risk polyps are diagnosed during colonoscopy and histopathology does not confirm the result.

Number of high risk adenomas detected: number of subjects with

findings which meet any of the criteria for high risk adenoma[26,27]:
Presence of three or more adenomatous polyps of any size;
Adenoma of size 1cm or more;
Adenoma with villous component (20/% or more);
Presence of high grade dysplasia (equivalent to carcinoma in situ);
Any combination of the previous.

Number of low risk adenomas detected: number of subjects with adenomas which do not meet the previously mentioned criteria.

The following three indicators exclude reciprocally, therefore, one subject can only belong to one group and will be assigned to the most unfavorable one.

Rate of invasive cancer detection: 1.000 X number of subjects with invasive cancer/participants with valid test, both corresponding to study period.

Rate of high risk adenoma detection (HRA): 1.000 X number of subjects with high risk adenoma/participants with valid test, both corresponding to study period.

Rate of low risk adenoma detection (LRA): 1.000 X number of subjects with low risk adenoma/ participants with valid test, both corresponding to study period.

Number of cancers in Stage III or IV of the TNM classification[28]: number of subjects with cancer classified in stages III or IV according to the TNM. In order to prevent bias of diagnostic foresight which in colorectal cancer is also influenced by adenoma detection and treatment, this data was considered for the minimal indicators. This does not exclude that each program evaluates all stages.

Rate of cancers detected at advanced stage (TNM): 1.000 X number of subjects with invasive cancer at advanced stage/participants with valid test, both corresponding to study period.

Table 3. Equivalencies between Stage and TNM[28]

Stage	Size (T)	Lymphnode Metastases (N)	Distant Metastases (M)
0	Tis	N0	M0
I	T1	N0	M0
	T2	N0	M0
IIA	T3	N0	M0
IIB	T4	N0	M0
IIIA	T1-T2	N1	M0
IIIB	T3-T4	N1	M0
IIIC	Any T	N2	M0
IV	Any T	Any N	M1

Table 4. Basic indicators for evaluation of colorectal cancer prevention programs

Age groups	50-54 women	50-54 men	55-59 women	55-59 men	60-64 women	60-64 men	65-69 women	65-69 men	70-74 women	70-74 men	Total women	Total men	Total
Target population													
Exclusions													
Nº valid invitations													
Coverage rate													
Nº participants (with valid test)													
Participation rate %													
Nº subjects w/ valid tests													
Nº subjects w/ positive tests													
Nº subjects test w/technical error													
Positivity rate of test %													
Technical error rate %													
Nº of indicated colonoscopies													
Nº of complied colonoscopies													
Rate of colonoscopy acceptance													
Nº detected invasive cancers													
Nº detected high risk adenomas													
Nº of detected low risk adenomas													
Nº cancers in Dukes C y D/ Stage III y IV													
Invasive cancer detection rate per 1000													
Detection rate for high-risk adenoma (HRA)													
Detection rate of low-risk adenoma (LRA)													
Advanced stage cancer rate according to TNM													
Observations													

3. Diagnostic confirmation and treatment.

Reporting and initial appointment with positive subjects.

The two forms of notification of results were already mentioned. Satisfactory results for acceptance of colonoscopy are obtained with both methods, even though when Primary Care physician is the notifier of the positive result and informs the subsequent stages of the program, as it is done in Valencia, the family physician gets more involved and keeps the regular procedures of connection between Primary and Specialized Care. On the other hand, in the health care units which are regulary busy this may result in an assistance overload. In any case, a strong commitment from Primary Care is necessary even with more centralized alternative models, either from Health care centers or specialized devices which patients receive from different centers such as in Catalonia and Murcia. For such purpose, integration of Nurses and the presence of Public Health in the process coordination are essential at this stage. Independently of the model used it is recommended:

• **Detailed planning of the first consultation with positive subjects,** since this is a critical issue to guarantee the adherence of the patient to the diagnostic process. Interval since the first consultation until colonoscopy should not be longer than 4 weeks.

Invitation and information prior colonoscopy.

There are two active models. The first one is feasible by allowing Primary Health physician to perform medical records, giving the patient specific indications for bowel preparation and the inform consent to be signed. The second one, is a centralized consultation where a nurse staff of public health, working in collaboration with endoscopists of the screening colonoscopy unit performs patients registry in the program database, completes guided clinical records, obtains inform consent signed, explains and hand over the indications for bowel preparation, schedules colonoscopy examination as well as an appointment for the exam results information. In both models, it is recommended that the **contents of the first consultation** should include:

Information regarding the sequence to follow.

Information regarding colonoscopy and removal of polyps in order to get informed consent.

Recommendations for bowel preparation for colonoscopy.

From the consensus, anterograde solutions as bowel preparation in different trends are accepted to be more effective, obtaining the best results if **administered in the last 12 hours prior to colonoscopy[29]. Iron should also be discontinued** some day before examination.

Table 5. Recommendations on quality of colonoscopy:

Preparation for colonoscopy
- Information of the procedure, colonoscopy and polyp removal.
- Informed consent.
- Anterograde solution administered in the last 12 hours.
- Withdrawal of oral Iron tablets someday before colonoscopy.

Type of colonoscopy:
- Complete colonoscopy (visualization of ileocecal valve or appendix orifice).
- When colonoscopy is incomplete:
- Colonoscopy with deep sedation;
- Double baloon enteroscopy;
- Double contrast enteroscopy;
- CT colonography (in available locations).
- Optimal time for colonoscopy of quality: between 60 y 75 minutes (depending on other variables: sedation time, recovery stay time, changing time).
- Removal of all lesions detected (unless it was not recommended according to the good practice rules) and retrieval of them for pathological evaluation.
- Tattoo of an area suspicious of carcinoma.
- The colonoscopy report should include the rest of the endoscopical findings and specify the location of each diagnosed lesion.
- Sedation will be necessary as technical support indicated, either by the endoscopist when it is superficial or by anesthesiologist when deep sedation is required (unless contraindications do not allow it).

Standards of the quality of colonoscopy:
- Complete colonoscopy: visualization of ileocecal valve → = 90%.
- Polypectomy during diagnostic colonoscopy → 85%.
- Incidence of post-polypectomy bleeding which may require transfusion ← 1%.
- Incidence of colon perforation due to colonoscopy ← 1:1000.
- Incidence of post-polypectomy perforation ← 1:500.
- Incidence of adverse events which may require hospitalization ← = 3:1000.
- Withdrawal time of colonoscopy → 6-10 minutes.
- Removed polyps 100% (this might be achieved in more than one colonoscopy examination).
- Retrieved polyps 95%.

Types of colonoscopy: quality control.

It is assumed colonoscopy must be complete, with visualization of the ileo-cecal valve or the appendiceal orifice.

If colonoscopy is incomplete other diagnostic alternatives are considered such as: firstly, perform **colonoscopy with deep sedation** because it enables to intervene on detected lesions. Secondly, **double balloon enteroscopy or double contrast enteroscopy** are also considered. **The CT colonography** is another choice to be considered when available.

The estimated appropriate time to perform a high quality colonoscopy would fluctuate between 60 and 75 minutes depending on other variables which may intervene in the process (time for sedation, recovery room, dressing).

If the guidelines of good practice allow it, colonoscopy should be contemplated as with therapeutic intention. Therefore, **all lesions should be completely removed and retrieved for histopathological evaluation.**

It is convenient to tattoo the area where a lesion suspected of carcinoma is located, for better identification when surgical resection is eventually decided.

Colonoscopy report must fulfill a minimum of quality among which is essential to contemplate the remaining endoscopic diagnosis per area of each one of the located lesions.

Sedoanalgesia indicated by endoscopist or deep sedation with assistance of the anesthesiologist is considered necessary to support the endoscopic procedure, with exception of specific cases where they are contraindicated.

Even though it is open to debate whether a screening colonoscopy should be considered different in concept from a standard colonoscopy in terms of work methodology, it is accepted that screening colonoscopy must fulfill some quality conditions which include:

Complete colonoscopies >= 90%

Polipectomies performed during diagnostic colonoscopy > 85%

Rate of post-polypectomy bleeding which may require transfusion ←1%

Rate of perforation due to colonoscopy <1:1000

Rate of post-polypectomy perforation <1:500

Rate of complications which require hospitalization <= 3:1000

Diagnostic criteria.

Histopathological diagnosis is a critical link in the diagnostic process

which depends of an appropriate endoscopic procedure regarding removal and processing of lesions. Furthermore, it is essential for decision making regarding treatment and follow- up of each patient. Therefore it is recommended:

The pathologist must relieve the sample with a report indicating the number, size and location of the lesions. Each lesion must be identified separately. When received, samples must be paraffin embedded.

Microscopic diagnosis will be performed following the OMS classification year 2000 and pTNM for colorectal cancer.

In case of invasive carcinoma, where tumor was completely removed **the Histopathological report should include prognosis criteria: grade of cellular differentiation, vascular and lymphatic involvement, distance of carcinoma to the resection margin since they are essential data for therapeutic decision making.**

Table 6. Recommendations for pathological diagnosis

The pathologist must have detailed information of: number of lesions, size, location of the lesions. Each lesion should be identified separately. Each simple will be processed in paraffin. The microscopic diagnosis will be performed following the OMS classification of year 2000 and pTNM for colorectal cancer. When an invasive cancer is diagnosed by the pathologist in a polypectomy specimen, the pathological report should include: • Grade of celular differentiation. • Vascular and lymphatic permeation. • Distance of carcinoma to the resection margin. In invasive cancers diagnosed by biopsy, the pathological report of the surgical specimen should include, with the previous criteria: Perineural permeation. Resected lymphnodes and those affected ones. Evidence of obstruction or intestinal perforation.

Adenoma surveillance.

Regarding adenoma surveillance, the Guidelines of Clinical Practice for colorectal cancer prevention of the Spanish Society of Gastroenterology and the SEMFYC and Iberoamerican Cochrane Center26 based on the available evidence are the following:

"Natural history of colorectal adenomas".

• The majority of colorectal cancers (CRC) arise from an adenoma and, even though not all colorectal adenomas progress to cancer, they should be considered a premalignant lesion.

• High grade dysplasia in adenomas is associated with the size of the lesion, the proportion of villous component and the patient's age.

• Screening strategies should be intended for early detection of advanced adenomas (lesions larger than 10 mm, with villous component or high grade dysplasia).

Polypectomy: endoscopic treatment

• Colonoscopy is the exam of choice for diagnosis of colorectal polyps. All polyps identified during colonoscopy must be removed either by endoscopic polypectomy or surgically.

• Endoscopic polypectomy is the treatment of choice for colorectal adenomas.

• In patients with a colorectal adenoma with low or high grade dysplasia (carcinoma in situ) treated by endoscopic polypectomy, the resection must be considered curative.

• Endoscopic polypectomy may be considered appropriate in patients with a colorectal adenoma with invasive cancer, as long as the resection margin is free of cancer, cancer is hystologically well to moderately differentiated and there is no vascular or lymphatic involvement.

This recommendation must be considered when colonoscopy, performed due to screening is done through the conventional health care system. On the contrary, the therapeutic decision regarding a pT1 tumor must be referred to the regular healthcare system.

Polypectomy: surgical treatment

In patients with a large sesile adenoma or broad base, an individual evaluation must be done, considering surgical resection as initial treatment of the lesion.

Post polypectomy surveillance, intended to detect synchronic lesions missed during initial colonoscopy as well as metachronic lesions, must be performed with colonoscopy.

Periodicity of surveillance endoscopy alter polypectomy depends on the

findings of initial examination.
If a colonoscopy was incomplete or with an inadequate bowel preparation, patients diagnosed of one or more adenomas must undergo another colonoscopy.
Patients with a colorectal adenoma with invasive cancer who underwent endoscopic polypectomy must be followed up in a period of 3 months with colonoscopy and biopsies must be taken to confirm complete resection of the lesion. This recommendation does not imply that these colonoscopies must be undertaken by the screening program.
In patients with an advanced adenoma, (>=10 mm or villous component, or high grade dysplasia), multiple adenomas (>=3), the first follow up colonoscopy should be performed 3 years after initial examination, while in those with 1 or 2 small tubular adenomas (<10 mm), colonoscopy can be postponed up to 5 years if complete resection can be guaranteed.
The interval alter repeated follow up colonoscopy will depend on the findings of prior examination.
Prevention of recurrence in colorrectal adenomas:
"Available scientific evidence does not justify specific preventive interventions (high fiber and low fat diets, fiber, calcium, carotene, vitamin E supplements, salicylic acid) to prevent recurrence of colorectal adenomas."
Decision making in endoscopic therapeutics.
There are no objective data which limits or determines a therapeutic decision making regarding the diagnosed lesions.
The polyp (protruded lesion) must be removed in a single fragment, with exception of particular features (large size, broad base) which suggest a piecemeal resection.
Inclusion in the clinical pathway of colorectal cancer.
The pathway to surgery department must be the same for all patients where cancer was diagnosed, whether the patient comes from the screening process or not.
Follow up criteria.
It is accepted that patients with preneoplasic lesions endoscopically treated must be followed up according to the criteria of the guidelines of Clinical practice of the Spanish Gastroenterology Association, SEMFyC and the Iberoamerican Cochrane Center.
Patients with invasive carcinoma where surgical intervention is indicated will use the clinical pathway of colorectal cancer developed in each hospital.

Proposal of colonoscopy quality indicatiors.

The group of Murcia has defined several quality indicators as a tool to evaluate the quality in endoscopic technique, based on the recommendations developed by the American Gastroenterologist Association, with selection of the following issues:

Type of sedation: superficial, deep or none.
Cecal intubation grade: surpass the ileo-cecal valve.
Withdrawal time: 6-10 minutes.
Compliance of guidelines: anesthesia risk, anticoagulant treatment, prophylaxis with antibiotics.
Bowel preparation grade: Good, satisfactory, regular, poor.
Resected polyps (100%), recovery of polyps (95%).
Registry of complications.

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