

Are screening principles used to inform population-based screening decisions? A scoping review and synthesis of recommendations for colorectal cancer screening

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BACKGROUND

In 1968, Wilson & Jungner published “Principles and practice of screening for disease”, a seminal work that highlighted 10 principles to be considered when making a screening decision (Table 1). Over 50 years since their publication, there have been at least 40 distinct efforts to evolve the principles. However, evidence suggests that there has been only limited linkages among these various efforts, with the original principles of Wilson & Jungner clearly the most often cited work. Despite the apparent interest in screening principles, it is not clear how often screening principles are employed in screening decisions. Therefore, we set out to examine if and how screening principles have been used as part of recommendations for population-based screening programs for colorectal cancer (CRC) over a 20 year period (1996-2016).

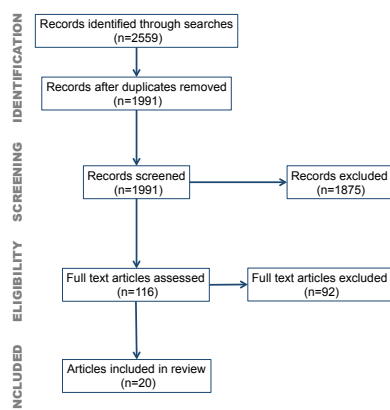
TABLE 1. Wilson & Jungner’s Principles of Screening (1968)

1. The condition should be an important health problem
2. The natural history of the condition, including development from latent to declared disease, should be adequately understood
3. There should be recognizable latent or early symptomatic stage
4. There should be a suitable test or examination
5. The test should be acceptable to the population
6. There should be an agreed policy on whom to treat as patients
7. There should be an accepted treatment for patients with recognized disease
8. Facilities for diagnosis and treatment should be available
9. The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
10. Case-finding should be a continuing process and not a “once and for all” project

METHODS

- Design: scoping review
- Inclusion criteria: population-based, programmatic screening recommendations; colorectal cancer screening; English; 1996-2016
- Databases: traditional (MEDLINE, EMBASE, Scopus), Google Scholar, Google, EBSCO’s DynaMedPlus, investigator identified
- Study selection: two-step screening process conducted independently by two team members; discrepancies resolved through discussion

FIGURE 1. Flow chart of search results



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RESULTS

TABLE 2. Included guidance documents

ID	Organization	Jurisdiction	Year
1	Alberta Health Services	Canada	2014
2	Asia Pacific Working Group on Colorectal Cancer	Asia	2008
3	Association des gastro-entérologues du Québec	Canada	2004
4	Australian Health Technology Advisory Committee	Australia	1997
5	Canadian Association of Gastroenterology	Canada	2004
6	Department of Health, The Government of the Hong Kong Special Administrative Region	Hong Kong	2010
7	Department of Health, New Brunswick	Canada	2013
8	European Commission	European Union	2010
9	Genetech	United States	2015
10	Health Information and Quality Authority	Ireland	2009
11	Intech	International	2014
12	National Advisory Committee on Health and Disability	New Zealand	1999
13	National Colorectal Cancer Roundtable	United States	2002
14	Netherlands Organisation for Health Research and Development	Netherlands	2005
15	Ontario Expert Panel	Canada	1999
16	Public Health Agency of Canada	Canada	2002
17	U. S. Department of Health and Human Services Health Resources and Services Administration	United States	[NA]
18	Union for International Cancer Control (UICC)	International	2005
19	UpToDate (Wolters Kluwer)	United States	2016
20	Veterans Health Administration	United States	2014

FIGURE 2. Principles cited in guidance documents

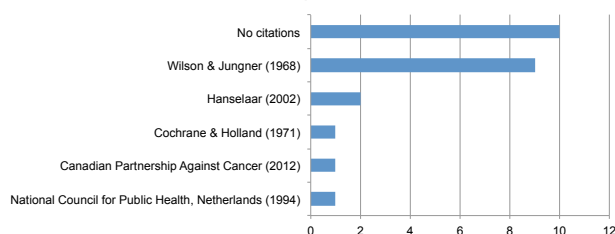
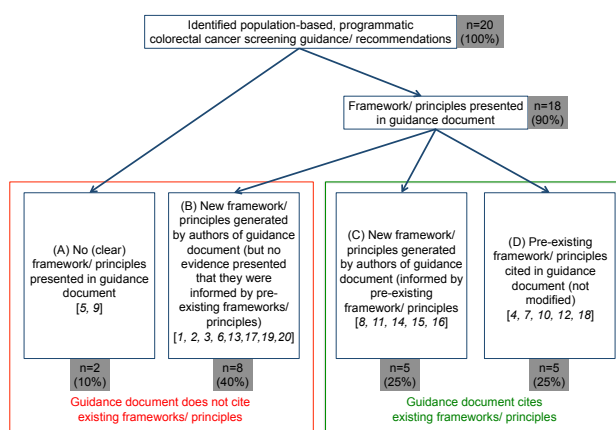


FIGURE 3. Breakdown of guidance documents by use of principles



DISCUSSION

Given longstanding interest in screening principles, there is a surprising lack of clarity about how these principles affect screening decisions. This scoping review suggests that their influence remains partial. While many CRC guidance documents cited the Wilson & Jungner (1968) principles, only a small handful of other principles were noted. And, overall, the influence of principles on recommendations for population-based CRC screening programs, or the evidence needed to inform such decisions, is generally limited.

There were a few notable exceptions that explicitly highlighted the Wilson & Jungner principles and proceeded to structure and present evidence that addressed each principle. However, even where principles clearly influenced the collection and organization of evidence on CRC screening, the linkage between programmatic recommendations and the principles was not clearly delineated. Thus, principles seem to provide structure to evidence review processes, but the extension to recommendations is more elusive. Overall, more reflection is needed as to the optimal role that principles can or should play in informing screening decisions.