*Editorial*

# All screening is universal

There is often a debate over the relative benefits of universal and selective (or "targeted") screening. For example, in antenatal screening for sickle cell disease performing a blood test on all pregnant women is regarded as universal screening but limiting the blood test to women of Afro-Caribbean descent and, as appropriate, other specified ethnic groups, is referred to as selective screening.

The distinction is false. The initial process of selection within a population is itself screening. Each enquiry about belonging to a specified ethnic group because that group is at high risk of the disorder in question is itself a screening test, with its own detection rate and false-positive rate. The detection rate in a given population is the proportion of all individuals with the disorder that occurs in those who belong to the specified ethnic group and the false-positive rate is the proportion of all unaffected individuals who belong to that ethnic group.

The use of the terms universal and selective screening probably arose because screening was thought to imply laboratory testing rather than the use of a question, such as a person's ethnic background or their age.

There are two main reasons for abandoning the terms universal and selective screening:
(1) By making the initial selection process an explicit part of the screening process it becomes apparent that so called "selective screening" is in fact step wise screening and the overall screening performance can only be judged by estimating the detection and false-positive rates of each step—firstly that associated with determining ethnic origin and secondly that associated with performing the subsequent laboratory screening test among those who are screen positive on the first test. Considering only the laboratory test may exaggerate the effects of screening. For example, stating that the hexosamidase assay detects nearly all pregnancies associated with Tay Sachs disease among Ashkenazi Jews conceals the fact that in America there are now more children born with Tay Sachs disease to non-Jews than Jews—mainly because even though the risk in non-Jews is lower than in Jews, there are many more non-Jews in the population. Also, stating that screening women aged 50–64 for breast cancer reduces mortality from the disease by a third tends to conceal the fact that cases at younger and older ages will be missed so the overall mortality reduction from this disease will be much less. (2) It avoids taking the first screening step for granted; though this is often superficially simple and inexpensive it is often not straightforward. For example, in the determination of ethnic origin the issue of definition is complicated, particularly in a multicultural community, and can be a sensitive issue. It requires as much research and quantification as a laboratory screening test.

Sometimes information on a person's age or ethnic background is needed for the interpretation of a screening test. Ethnic status can, for example, be helpful in antenatal screening for β thalassaemia and the interpretation of maternal serum alphafetoprotein levels in antenatal screening for neural tube defects and Down's syndrome because average levels differ according to ethnic groups. However, obtaining information about ethnic background for the correct interpretation of a specific laboratory test in these cases is not a screening test: the purpose is quite different.

As has been discussed elsewhere in the editorial columns of this journal, there is a need for greater clarity in terminology used in screening. A good case has been made for abandoning the terms "carrier screening",[1] "opportunistic screening",[2] and even "genetic screening".[3] The term "selective screening" can be added to this list. All screening is, in effect, universal.

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1 Haddow JE. Why the term "carrier screening" should be abandoned. *J Med Screen* 1997;**4**:1.
2 Law M. "Opportunistic" screening. *J Med Screen* 1994;**1**:205.
3 Wald NJ. What is genetic screening anyway? *J Med Screen* 1996;**3**:57.