

Industry association against senseless inspections

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This is a weird title, don't you agree? Still, it appeared a few weeks ago in the news in the Netherlands. Well, almost. I have changed a few words to trigger you as a reader. If you read this as an asset manager, then I think a lot of asset managers would be surprised. I heard the news on the radio: "Doctors against senseless body scan.¹" Health and asset management are both hot topics and in this column we are going to merge these two areas once again and look at what insight that leads.

Some searching in newspapers made clear that doctors are against body scans that lead to no result and which are therefore meaningless². What it is about? On her website the Dutch College of General Practitioners (NHG) states the next: "Our Minister Schippers of Health, Welfare and Sport considers to allow a preventive medical research by means of a total body scan in the Netherlands, under certain conditions"³. In the Netherlands, a body scan is now not allowed because it does not meet the generally accepted criteria. More on that later.

Furthermore at the site of the NHG can be read that currently there is more emphasis on preventive medical examination because "interventions have become available that are proven effective, or for which it is likely to be effective." Also is stated that the increasing supply should be evaluated for risk factors and an appropriate response based on the state of the science. Now this looks a lot like we do in our asset management field.

On its website the NHG provides a number of objections to medical scans for people without symptoms. It is suggested that the probability of detecting something with the body scan that requires a medical intervention is very small. How small is not indicated, but we will do so some assumptions. In addition, a test may give a wrong result with unintended effects. If anyone has an unhealthy lifestyle, then a good test result may lead to the continuation of that lifestyle. Or someone can hear that there may be something going on, whereas this is not the case. That person is unnecessarily worried and that person has to conduct pointless follow-up investigation that costs scarce money and manpower, wherein during that investigation complications may occur.

Let's do first have a brief and simple calculation. In statistics a truth table is applied for this, in which I avoid the terms "positive" and "negative" on purpose to prevent confusion between the different fields (in the engineering and business something is called positive what is negative in the medical world and vice versa).

		Result body scan	
		No deviation	Deviation found
Actual condition person	Good	<i>Correct decision</i>	<i>First type of error (probability α)</i>
	Not good	<i>Second type of error (probability β)</i>	<i>Correct decision</i>

In the table there are four cells. Is someone healthy and there is nothing strange as a result from the test, then the decision is correct (and that person happy). However, the body scan can find a wrongful deviation (error of the first type, also called α), or no deviation is found where it should have been (second type of error or β). Finally, the decision may also be correct if an abnormality is found and there

¹ I suppose this source http://www.telegraaf.nl/binnenland/24022523/_Artsen_tegen_zinloze_bodyscan_.html

² <http://www.nrc.nl/nieuws/2015/05/09/artsenfederatie-knmg-waarschuwt-voor-risicos-bodychecks/>

³ <https://www.nhg.org/nhg-standpunt-over-medische-check-ups-bij-mensen-zonder-klachten>

is actually something wrong with the person going (not to be confused with the result of that decision, which is not so nice).

Suppose the probability that actually something is wrong with a person is 5% (ie once per 20 years, assuming that older people apply a scan a bit earlier than younger people), and thus 95% that nothing is going on. Suppose that the reliability of the scan is 80% (now I move on thin ice because I did not find data; I therefore also provide figures with a reliability of 95%⁴). If anything with the person is going on, there is a 80% probability that the body scan indicates this correctly. However, for people whose condition is good, there is a 20% likelihood that an abnormality is found. The truth table of conditional probabilities will then look like this:

		Result body scan	
		No deviation	Deviation found
Actual condition person	Good	80%	20%
	Not good	20%	80%

With the 5% probability in mind that there is actually something going on, the absolute table looks very different.

		Result body scan	
		No deviation	Deviation found
Actual condition person	Good	76%	19%
	Not good	1%	4%

Before we read that the probability that there is actually something detected for which an intervention is needed, is very small. This is also evident from this: of the deviation found in only 17% of cases (4% compared to 19%) there is really something wrong. At a reliability level of 95% of the body scan, the chance is still debatable: 50%. NHG asks (considering these numbers, I think correctly) whether it is ethical to offer people a scan, for which the likelihood is great that it provides these people nothing.

The criteria to be used to allow a preventative scan in the Netherlands, are those of Wilson and Junger, as can be read on the NHG site. One is the criteria is the method should be efficient given the cost. About costs in the medical sector we have written once⁵, but in numbers of this example, I have my doubts about that. Now a further study is launched into the usefulness and necessity of the body scan and I'm very curious about the results.

Going back to our asset management area. In asset management, truth tables are only rarely used in inspections and defining measures. This example shows that with a relatively simple table the strength but also the weakness of inspections can be made clear. I call to apply the truth table more often in order to get the probability of a wrong decision and the impact of it more clear. That in order to prevent the title above will really appear once in the news. Regarding the body scan I hope that such an analysis is also used in the study. But a bit more thorough than in these two A4 pages please.

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⁴ At 50% one could consider to toss by just throwing a coin

⁵ <http://www.assetresolutions.nl/en/column/you-are-worth-the-prize>