keep stock of different drugs from different companies. Further, such an understanding often comes with a rider, a request for pushing something in which the chemist is interested; a general tonic, for example.

What I do now is to write the brand name in capital letters and as far as possible ask the patient to come back to show the drugs purchased. It involves additional time spent both for me and for the patient, and additional auto fare for the patient, but I do not see any other option at present.

The 'middle path' and the perils of moderation in medicine

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INTRODUCTION

The 'middle path' has been touted as a virtue in life and in medical practice, much more so in India, perhaps because of the cultural influence of the *Gita* (*akarma*, inaction) and the teachings of the *Budhha* (*madhyamâ-pratipada*, the middle way). While being moderate is in general a good trait in a medical practitioner, it can sometimes lead to inappropriate clinical decisions if these are guided solely by considerations of moderation. The chances of such an occurrence are high, given that medicine is an inexact science and often we do not have convincing evidence for or against a particular treatment or practice, and the doctor's personality and personal convictions play a major role in determining the course of action. Even though practitioners exhibit the entire behavioural spectrum from therapeutic nihilism to cowboyish aggression, the large majority of doctors can be described as being moderate. Therefore, potentially more (albeit unintended) damage may be caused by this large group of well-meaning practitioners if they uncritically adopt a middle path for apparently no reason other than the fallacious assumption that moderation is always good.

MODERATION MAY MISLEAD

The middle path in medical practice is treacherous for at least two reasons. First, as illustrated by the *Golden Mean Fallacy*, a compromise between two extreme options may not represent the optimal course of action in a given clinical situation. Second, even if one assumes that the middle path is the optimal one, clinical decision-making requires the balancing of numerous risk–benefit trade-offs simultaneously. Therefore, in a given situation, there may not be one single middle course that addresses all the risk–benefit considerations. Further examination of these reasons in the context of commonly encountered clinical scenarios may help clarify why adopting a middle path solely for the sake of moderation can lead the clinician astray.

The middle path may not be the optimal path

The foundation for unconditional faith in moderation is perhaps the belief that 'too much' of anything is bad. This belief is reinforced by the fact that in life, the middle course is often the correct one. But the problem with the middle path in medicine is that it cannot be determined independently and is necessarily defined by the extreme options. The range of options may change with accumulating knowledge and the middle ground may shift with it, without having any legitimacy of its own. As an example, early in the evolution of the treatment of non-valvular atrial fibrillation (AF), after the introduction of adjusted-dose warfarin, the use of antiplatelet drugs alone represented a middle path, between giving warfarin and not doing anything, to balance the risk of bleeding and stroke. As was shown in due course, the uncritical acceptance of this middle path resulted in substantial harm.[1] Subsequently, the use of a combination of aspirin and warfarin adjusted to a lower international normalized ratio (INR) (1.2–1.5) came to represent the middle ground between the 'extreme' options of aspirin alone or warfarin (adjusted to an INR of 2–3). Once again, this 'moderate' approach failed to show any benefit.[2] The shifting of the low density lipoprotein (LDL) cholesterol target to progressively lower levels (with the middle ground shifting along with it) provides another example of the failure of an approach adopted simply because it represents the middle path.

There are several plausible explanations for the failure of moderate approaches in general. The effects of interventions are often non-linear, making it nearly impossible to determine the middle ground. In addition, the relationship of an intervention with harms and benefits may be qualitatively and quantitatively different and the middle paths for harms and benefits may not coincide. These illustrations do not predicate that the middle path must not be chosen because it is always wrong; they simply make the case that the middle path may not be the optimal option merely because it represents moderation. In fact, the middle path may occasionally turn out to be the best choice as in the case of long-standing diabetes where a more 'moderate' HbA1c target results in the optimal risk–benefit balance.[3]

There may be no meaningful middle path

A middle path is theoretically not possible when the choice is between carrying out or not carrying out an intervention, e.g. angioplasty. In such cases, the intuitive search for a middle path results in a course of action which fallaciously appears to represent a moderate path (e.g. do angioplasty later rather than now). The case of invasive treatment for acute coronary syndromes (ACS) amply illustrates the pitfalls involved in such choices. A few decades ago, the dilemma was whether or not to perform early intervention (or surgery) in these patients. The middle path was a 'conservative strategy' of non-invasive testing before contem-

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plating any intervention. However, there is really no possible meaningful middle ground in this situation. First of all, since an intervention would *not* be performed initially, this could not be a middle path in the acute phase of the illness. Second, a delay introduced another risk– benefit trade-off that was not factored in. Most major cardiac events tend to occur early after ACS. Therefore, the delay meant that some patients who would have benefited from the invasive approach suffered these events early, and many of the patients who underwent non-invasive testing were self-selected survivors who would have benefited little from the intervention. This results in a double hit for patients, and sure enough, the conservative approach did not stand the test of time.[4]

The solution to the ACS dilemma was to intervene invasively early in all high-risk patients and follow a delayed approach in others. Post ST segment elevation myocardial infarction (STEMI) risk-stratification is another scenario in which the following clinical course is commonly adopted in the name of moderation. Stable patients who present 24 hours after thrombolytic therapy for STEMI are often advised to undergo non-invasive testing after 2–4 weeks before deciding on their further course of action (presumably to allow for a 'cool down' period as testing pre-discharge is considered an 'extreme' approach). As in the case of ACS, the highest risk of major cardiovascular events is in the period immediately following STEMI and the risk falls rapidly thereafter. Thus, only the self-selected survivors, who are less likely to derive benefit from intervention, are left to undergo non-invasive testing. The correct approach should be to identify patients who are most likely to benefit from intervention, by risk-stratifying, as early as possible. As in the case of ACS, the widespread adoption of this middle path in STEMI results from ignoring the implicit risk–benefit trade-off (e.g. the high initial risk, the low risk of non-invasive tests in the post-STEMI setting and the higher net benefit of early intervention in patients with positive non-invasive test results).

A CALL TO QUANTITATIVE THINKING

These arguments should not be misconstrued as a call to abandon moderation in medical practice. The intention is to dissuade clinicians from hedging their bets by choosing the middle path as a default. As discussed, it may be impossible to determine the middle path in complex clinical scenarios, and even if such a path is clearly discernible, it may not provide the best outcome for the patient. This is a call for including quantitative thinking in clinical decision-making. When uncertain, the clinician should take a less subjective, more quantitative approach by explicitly weighing the risks and benefits relevant to the specific clinical situation before deciding on the best course of action. It is unrealistic to expect that we will have objective evidence to guide decision-making in every clinical scenario. But we often do have sufficient information on risks and benefits to objectively estimate the potential net benefit or harm in most commonly encountered conditions. Dealing with numbers in the context of patients is often discouraged as being pedantic and unbecoming of a clinician. But using estimates of risk and benefit, with an awareness of their precision and validity is probably the most appropriate, and definitely a more humble approach to clinical decision-making. In any case, it is better than lazily plumping for the middle path and hoping for the best.

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