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Commentary

Questioning the method and utility of ranking drug harms in drug policy

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ABSTRACT

In a 2010 Lancet paper Nutt et al. propose a model for evaluating and ranking drug harms, building on earlier work by incorporating multi criteria decision analysis. It is argued that problems arise in modelling drug harms using rankable single figure indices when determinants of harm reflect pharmacology translated through a complex prism of social, and behavioural variables, in turn influenced by a range of policy environments. The delphic methodolgy used is highly vulnerable to subjective judgements and even the more robust measures, such as drug related death and dependence, can be understood as socially constructed. The failure of the model to dissaggregate drug use harms from those related to the policy environment is also highlighted. Beyond these methodological challenges the utility of single figure index harm rankings is questioned, specifically their role in increasingly redundant legal frameworks utilising a harm-based hierarchy of punitive sanctions. If analysis is to include the capacity to capture the complexity relating to drug using behaviours and environments; specific personal and social risks for particular using populations; and the broader socio-cultural context to contemporary intoxication, there will need to be acceptance that analysis of the various harm vectors must remain separate – the complexity of such analysis is not something that can or should be over generalised to suit political discourse or outdated legal frameworks.

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In a recently published paper in The Lancet, Nutt, King, and Phillips (2010) outlined a detailed model for the evaluation and ranking of the physical and social harms from different psychoactive drugs. Building on earlier work by Nutt et al. (2007) to rank drug harms, this subsequent model has refined and revised the original project by introducing a multi criteria decision analysis (hereafter MCDA) model to recognise the relative weighting given to a range of different drug related harms. Originally devised as a method to facilitate effective decision making in complex policy arenas by Philips and colleagues (e.g. Dodgson, Spackman, Pearman, & Phillips, 2000), this second version of the MCDA model to rank drug harms has increased the number of harm criterion from nine to 16 (including nine harms to the self and seven to others), and also allowed each harm to be given a proportionate weighting. The decisions on which criterion to include and their relative weightings were made by a group of scientific 'experts' at two two-day workshops, held by the Advisory Council on the Misuse of Drugs (ACMD, 2010a) and then by the Independent Scientific Committee on Drugs established by Nutt in 2009, both facilitated by Phillips. By publishing this revised ranking model, Nutt and colleagues hold the model open to scrutiny and debate both regarding the final rankings of twenty of the most commonly used legal and illegal drugs inserted into the model – with alcohol ranked as the most harmful – and also regarding the model itself.

Challenging ranking systems

We would argue that drug risk/harm assessments can serve two primary functions: firstly, to inform policy development and secondly, to support public education, both with the aim of minimising drug-related harms. The Nutt et al. papers (2007, 2010) have provided an engaging and credible methodology for making such evaluations. In doing so they usefully highlight many of the flaws in the current UK drug classification system, notably the incongruity between scientific harm evaluations and the three tiered ABC classifications as assigned under the Misuse of Drugs Act 1971 (hereafter MDA), and in the case of alcohol and tobacco, the relationship between harm and legal status more broadly. Whilst Nutt et al. (2007, 2010) have provided a UK-based analysis, their model has clear international implications for harm evaluations, scheduling systems and the wider drug policy debate. The emergence of new psychoactive substances or so called 'legal highs' such as mephedrone and naphyrone, for example, has led to attempts to standardise risk assessments in order to provide a minimum evidence base for policy decision making (e.g. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2010)).

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The added sophistication of Nutt et al.'s MCDA model's improved harm categorisations and increased sensitivity (regarding harm weightings) are welcome developments, yet key conceptual challenges remain. Central to these are the problems evident in attempting to analyse drug harms using a model focused on producing objective and rankable single figure harm indices, when in reality the determinants of risk/harm reflect pharmacology translated through a complex prism of social, behavioural and environmental variables, in turn influenced by a range of differing policy regimes, from prohibition through to legal regulation. This complexity is not practically captured with a single figure index, nor is such an exercise necessarily useful for the policy challenges at hand.

The social construction of drug-related harms

Ranking individual harms primarily by pharmacology crucially fails to capture the behavioural aspects of drug use that are key determinants of risk (only briefly alluded to by Nutt et al., 2010). These include, most obviously; dosage, frequency of use, and drug preparation/route of administration (injection, smoking, insufflation or oral ingestion) for each individual drug, but also issues of set (user's mindset) and setting (using environment). Inclusion of variables such as these in drug risk analysis was proposed some years ago by Coomber (1999). Certain specific physical or mental health vulnerabilities will also vary, sometimes markedly, between individuals or certain population subgroups, further calling into question the utility of the generalisations implicit in Nutt and colleagues' model, although it is recognised that individual level risk assessments by service providers using MCDA-type modelling are a possible application of this model.

An additional tier of complexity is added by polydrug use (mentioned only in passing by Nutt et al.); it being important to note that single drug use in isolation (the focus of the model and ranking) is the exception rather than the norm for many users (EMCDDA, 2009). Also implicit in the model, again perhaps reflecting the influence of the pharmaco-medical risk paradigm, is the suggestion that the drug itself is the key risk determinant. This arguably overlooks the increasing body of work which argues that social relations (Lash, 1993) and the wider socio-cultural and policy environment (Rhodes, 2002) are central to our conceptualisation of risk.

Whilst certain forms of pharmacological risk, such as acute toxicity or propensity to induce dependence, are relatively easy to quantify and thus rank in a pharmaco-medical model, even these are arguably subject to a degree of social construction. Take for example drug-specific mortality rates, positioned as the first and most robust measure in Nutt and colleagues' model. Definitions of drug-related deaths in the UK are cause for concern. Corkery (2008) and Beynon, Bellis, Church, and Neely (2007) have called into question the accuracy of drug-related death data both in the UK and across Europe, suggesting that it fails to include some deaths which could be attributed to drug misuse such as blood-borne viruses, yet includes accidental and poisoning deaths from non-problem drug users. Furthermore, Cruts (2000) has illustrated the potential subjectivity of identifying causality in drug-related deaths, whilst Bartley, Davey Smith, and Blane (1997) case study of the historical development of the Standardised Mortality Ratio shows how individual measurements can be combined to create new truths, leading them to ask whether "*perhaps true facts and correct methods of measurement are as much an outcome of the policy process as a possible influence upon it?*" (1997, p. 147).

Dependence, the fifth criterion in Nutt et al.'s MCDA model, has also been seen to be contingent on social factors, from animal experiments such as Alexander's (2001) infamous Rat Park which suggested that animals might consume significantly less morphine when given access to social and sexual relationships, through to the experiences of heroin-using Vietnam war veterans, the majority of whom ceased use when they returned to a less stressful social environment (Robins, 1974). The 'essential' nature of heroin dependence has also been questioned in contemporary studies of occasional and regular heroin users in the UK (Davies, 1992; McSweeney & Turnbull, 2007).

A further issue exists with the 'overall harm' index, when the rankings of different harms are conflated, whilst being demonstrably non-congruent. For example, cigarettes present low acute risks but high chronic risks, whilst arguably the opposite is the case with most opiates. Whilst the MCDA model allows for this variation to be interrogated to a degree, the 'overall harm' index – which inevitably forms the locus of political and public attention – indicates one drug to be apparently 'more harmful' than another and therefore begins to lose its meaning in this context.

The vulnerability of Nutt and colleagues' model to subjective error is potentially exacerbated by an over reliance on value judgements (albeit by 'experts'), rather than on arguably more robust external criterion (acknowledging that such external measures naturally come with their own methodological challenges). The vulnerabilities of this delphic approach are then magnified by the use of ratio scoring combined with value-based swing weighting. Nutt et al. have argued that 'the group process, known as a "decision conference", is specifically designed to minimise bias' (2011, p. 555) but there is also an absence of established indicators of reliability of measurement, such as inter-rater reliability between the experts involved. Cohen's (2010) critique of Nutt and colleagues' ranking model specifically focused on the subjectivity of the experts and asked whether repeating the panel with different members might change the ranking. Nutt has already expressed an eagerness to roll out a participatory panel process, in the UK and elsewhere, utilising a broad church of academic, professional and user groups. User assessments of drug harms have already produced similar results to the ranking by 'experts' (Morgan, Muetzelfeldt, Nutt, & Curran, 2010). This does not tackle the deeper criticism, however, regarding the ways in which the creation and use of evidence is inevitably intertwined with value judgements, made by scientists and politicians (e.g. Stevens, 2011; Valentine, 2009). Thus the socio-cultural context to attitudes to both drugs and harm means that any determination of the relative risks, or benefits, of drugs is *fundamentally* a subjective and political enterprise.

A final point to note regarding risk assessment, as identified by Stirling (1998) when discussing environmental risk, is the fundamental challenge of how to incorporate "ignorance" into such models. For many newly emergent psychoactive substances, the so-called 'legal highs', there is a negligible scientific evidence base with which to make such assessments, as noted by the ACMD when reviewing mephedrone (2010b) and naphyrone (2010c). Indeed it could be argued that ignorance of the effects of psychoactive drugs is enshrined in drug policy in the 'precautionary principle'. Moreover, the extent to which we recognise our ignorance or instead 'don't know what we don't know' has been noted by Stirling as itself being "intrinsically subjective and value laden" (1998, p. 103).

Disaggregating drug use harms from drug policy harms

The social harms criteria included in the model go some way towards capturing the non-pharmacological determinants of harm but again, the focus remains, somewhat confusingly, on a ranked single index that conflates physical and social harms. Significantly, the model largely fails to disaggregate the harms associated with use per se from the harms that result from the policy environment. Consider, for example, two injecting heroin users; the first is committing high volumes of crime to fund their illicit habit, using

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'street' heroin (of unknown strength and purity) with dirty, possibly shared needles in unsupervised and unsanitary environments. Their supplies are purchased from a criminal dealing/trafficking infrastructure that can be traced back to illicit production in Afghanistan. They have HIV, Hepatitis C and a long, and growing, criminal record. The second uses legally manufactured and prescribed pharmaceutical diamorphine of known strength and purity in a supervised, clinical setting, with clean injecting paraphernalia. There is no link to failing drug producer states; no criminality, profiteering or violence involved at any stage of the drug's production, supply or use; no blood borne disease transmission risk; a near zero risk of overdose death; and no offending to fund use.

Globally, and even within the UK, these two policy regimes (prescribed/supervised and illicit supply/use) exist in parallel, so a real world harm comparison is possible, but only by re-running the harm analysis for these different policy contexts (a suggestion that has been welcomed by Nutt in subsequent public debate, 2010). This is an opportunity missed in the recent reworking of the MCDA model, but one which could potentially be undertaken to usefully inform the policy debate in future, for example by feeding into a wider impact assessment (IDPC, 2009) and consideration of policy alternatives (Rolles, 2010).

International researchers have already gone some way towards addressing the conflation between the harms arising from drugs and from drug policy. MacCoun and Reuter (2001), for example, recognise the conflation-disaggregation dilemma in their taxonomy of drug-related harms. Their model identifies forty-six harms, divided into four categories ('health', 'social and economic functioning', 'safety and public order' and 'criminal justice'). In tabular form they then identify six population group headings ('users', 'dealers', 'intimates', 'employers', 'neighbourhood', and 'society') and note which of these 'bears the harm/risk'. Whilst they do not specifically apply this model to individual drugs (although possible, they consider all illegal drugs) they do usefully identify the 'primary source of harm' for each population in a separate column, from three options: 'use', 'illegal status' and 'enforcement'. Other drug harm indexes have focused instead on drug policy (see Ritter for review, 2009).

Relating rankings to drug policy

There is a related wider structural concern here regarding how harm rankings are translated into policy via the UK MDA and associated legislation. The UK Government (HM Government, 2010) states that "the current drug classification system has a dedicated purpose – to set a framework within which criminal penalties are set with predominant reference to the harm caused by a drug". Therefore regardless of how 'scientifically' such harms are evaluated and ranked (and leaving aside the anomalous status of alcohol and tobacco), the fact remains that the "dedicated purpose" of rankings, at least in the UK policy context, is to determine criminal penalties for production, supply and possession, for those drugs covered by the MDA as currently administered.

Yet the evidence on the efficacy of such an approach is weak, compounded by systemic poor evaluation (House of Commons Public Accounts Committee, 2010). We appear to be developing increasingly rigorous and sophisticated science at one end of the policy making process contrasted with almost none at the delivery, implementation and evaluation point. Even worse, many harms that are a direct result of policy (particularly the criminality around the illegal trade, and offending by dependent users to raise funds to meet the inflated costs of an illegal drug habit), by being conflated with user harms, are then used to bolster the threat-based narrative that underpins the punitive paradigm.

There is no reason why the kind of scientific rigour now being deployed in the UK to assess drug harms (e.g. by the Advisory Council on the Misuse of Drugs and the Independent Scientific Committee on Drugs) could not be similarly applied to evaluating drug policies and legal frameworks more broadly using established methodologies. The same point can equally be applied to similarly tasked entities internationally, such as the EMCDDA, the US National Institute on Drug Abuse, or the World Health Organisation.

The cost–benefit analysis

Finally, it could be argued that both policy development, and decisions on personal use need to balance any attempted analysis of drug harms, both personal and social, against actual or potential benefits. This would theoretically require, at least, that a similar parallel exercise to the MCDA harm assessment/ranking be undertaken for benefits. Pleasure remains both an underdeveloped concept in drug research and conspicuously absent from much mainstream drug policy discourse despite its evident centrality to drug using motivations (Moore, 2008; Moore & Measham, 2011). The money that users are prepared to spend on drugs is perhaps the most obvious user-valued benefit indicator and has been explored in behavioural economics (e.g. Sumnall, Tyler, Wagstaff, & Cole, 2004). More conventional economic analysis to establish the benefits of the economic activity that drug markets represent is also clearly possible. Estimating the broader social benefits of drug use to both the user and wider society – for example, the positive role of dance clubs in creating a sense of 'community' or 'identity' (Moore, 2010) – is another area that warrants consideration. Moreover, it could be argued that attempts to refine the model by attempting to quantify the benefits of non-medical drug use – which can be intrinsically nebulous and difficult to measure – are doomed because cost–benefit analyses are themselves embedded within a limited and individualistic neo-liberal discourse which positions the drug user as a rational actor. Cost–benefit analyses (on an individual or population basis) tend to overestimate the rationality (Measham, 2004) and underestimate the social and emotional nature of drug decisions (Pilkington, 2007).

Beyond rankings and classifications

Beyond the methodological challenges of comparative drug harm index models is the more critical wider question of their utility. We would argue that even if refinements continue to improve such models, the degree of generalisation involved, and the personal, social and policy environment context largely overlooked as a result, suggest that the use of such models is limited, and likely to become increasingly so.

The overemphasis on such models reflects the historical alignment of individual drug harm estimates with the hierarchy of punitive sanctions implicit to the prohibitionist paradigm. At the very least there is a need for the public and political discourse to move beyond the historic preoccupation with the single index harm rankings entrenched by the three tier ABC drug harms/punishments classification model (and international variants). This legal/policy framework is itself an artefact of the 1961 UN Single Convention on Drugs, the main text of which was drafted in the 1950s. It is important that the evolving discourse around drug harms can escape these rigid structures that have constrained it for over half a century.

Future debate will need to be able to engage in a more nuanced fashion with how risks are influenced by social context and policy environments as well as disentangling the various pharmacological vectors of physical drug harm in ways which can be clearly understood by users or potential users. Index rankings will no doubt

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continue to have a role, although perhaps more to augment other forms of risk analysis, or with their utility increased, for example by incorporating or being used in conjunction with some of the contextual analysis such as MacCoun and Reuter's taxonomy of drug harms. However, it seems likely to become increasingly less important as recent trends in drug enforcement away from punitive user-level responses continue (Jelsma, 2009), or if harm assessments are 'decoupled' entirely from determining punishments, as was recommended by the UK Parliamentary Science and Technology Select Committee (2006).

If analysis is to include the capacity to capture the complexity relating to drug using behaviours and environments; specific personal and social risks for particular using populations; and the broader socio-cultural context to contemporary intoxication, there will need to be acceptance that analysis of the various harm vectors must remain separate – and the innate complexity of social policy analysis is not something that can or should be over-modelled or over generalised to suit political discourse or outdated legal frameworks. The wider structural problems with the classification system and the MDA additionally demand that a more substantive evidence-based review of drug policy and law be instigated by government in the UK, and by implication similar systems elsewhere, including the UN scheduling system on which most of the national systems are modelled.

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Conflict of interests statement

Measham is a member of the Advisory Council on the Misuse of Drugs and the Independent Scientific Committee on Drugs and attended both MCDA workshops. She receives travel expenses only for these advisory roles. She writes here in her capacity as Senior Lecturer in Criminology at Lancaster University. The views expressed here do not represent those of the ACMD or ISCD.

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