DRUG & ALCOHOL FINDINGS *Research analysis*

This entry is our analysis of a study considered particularly relevant to improving outcomes from drug or alcohol interventions in the UK. The original study was not published by Findings; click Title to order a copy. Free reprints may be available from the authors – click prepared e-mail. The summary conveys the findings and views expressed in the study. Below is a commentary from Drug and Alcohol Findings.

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▶ Modelling the cost-effectiveness of alcohol screening and brief interventions in primary care in England.

Purshouse R.C., Brennan A., Rafia R. et al.

Alcohol and Alcoholism: 2013, 48(2), p. 180–188.

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Simulation study calculated health care cost savings and benefits for patients in England which make routine GP-based screening and brief advice for excessive drinking look an unmissable bargain, but the key assumptions derived from studies divorced from how interventions would routinely be implemented.

SUMMARY This simulation study estimated per £ patient benefits and net costs from a hypothetical ten-year programme of screening to identify actual or suspected adult hazardous drinkers attending primary care services in England, followed immediately and for all the identified patients by brief advice or counselling. Estimated costs of the programme were combined with other costs and savings to the national health service and to personal social services (such as in the costs of treating alcohol-related disease and injuries) over the 30 years following the intervention to assess the net cost of the programme to these public services, enabling the analysts to say whether for the services implementing the programme, it would pay for itself by reducing other costs. Benefits to the recipients of brief interventions were assessed as years of life gained due to the intervention, adjusted for how well the patient was expected to feel and how well they would function during those years, a measure of quality-adjusted life expectancy known as QUALYs. QUALYs gained per patient were combined with net costs to estimate how much gaining each of those extra/better years cost public services, a way of assessing whether the interventions were good value for money. The full costs and benefits of the programme were included in the analysis, effectively comparing it to a situation where no screening and brief interventions were conducted at all.

The hypothetical programme took two major forms: screening and offering brief interventions only when patients moved far enough to newly register with a primary care practice, an option reflected in current policy; or implementing the programme for all patients the next time they visited their primary care service, an option which would reach far more people more quickly. It was assumed that if patients were screened, this would only be once during the ten years, and that the sample screened would be a random selection from the population adjusted for the sex and age of people most likely to move house or attend primary care services.

Inducing identified hazardous drinkers to reduce their drinking was the mechanism through which brief interventions were expected to increase

Key points
From summary and commentary

The study estimated per £ patient benefits and net costs to health services from a hypothetical ten-year programme of screening and brief intervention for adult hazardous drinkers attending GP services in England.

Screening only patients newly registering with a practice would identify up to 40% of all hazardous drinkers; screening all at their next visit, about 80%.

By averting alcohol-related illness, immediate brief advice/intervention would generate substantial cost savings for health services and cost-effectively prolong and

quality-adjusted life expectancy and reduce costs to public services; the greater the reduction in drinking, the greater the gains on both fronts.

On the basis of research on primary care brief interventions, the core assumptions were that over the year following a five-minute brief intervention by a practice nurse, consumption would fall by just over 12%, then gradually return to pre-intervention levels over the next six years, achieving seven years of reductions in total. Alternative assumptions were fed into the simulation model to test whether gains would change if screening/interventions were less effective and/or more costly.

improve patients' lives.

These calculations hinged on the extent and persistence of drinking reductions, estimates derived not from similar programmes but from controlled studies implementing standardised interventions in selected practices with selected patients.

Based on research findings, it was calculated that the various brief screening questionnaires which might be used by primary care services would correctly identify between 67% and 95% of hazardous (or worse) drinkers, and correctly identify from 75% to 96% of patients as not drinking in a hazardous or harmful manner, and that screening would take from 30 seconds to nearly five minutes. The core assumption was that patients would be asked whether they drank and if they did, then asked the three questions of the AUDIT-C screening questionnaire, occupying from 30 seconds for abstainers to three minutes for drinkers.

Main findings

Screening only newly registering patients would reach about 2.5 million people annually cumulating over ten years to about 40% of the adult population, at an average annual cost of about £10 million. In contrast, screening all patients the next time they attend would rapidly reach about 80% of the population in the first year and much fewer in each succeeding year, until all but a few per cent of the population would have been screened at a cost of £700 million, most expended in the first year. Taking into account how well the various screening instruments identify hazardous (or worse) drinkers, over the ten years a new-registration programme would identify 33% to 40% all adult hazardous drinkers in the population, while a next-visit programme would identify 71% to 89%.

Based on the study's core assumptions (▸ above), in the final year of a new-registration programme, consequent drinking reductions would have prevented about 4800 cases of alcohol-related illness, including about 2500 cases of chronic diseases in people aged 45 and over, about 1200 cases of alcohol abuse or dependence, and 600 injuries arising from intoxication. Spread over the 30 years after the intervention, such changes would mean public services would save £215 million in alcohol-related costs such as hospital admissions, while the screening and brief intervention programme itself would have cost the same services just £95 million. Patients who received the brief interventions would gain in total 32,000 extra years of life adjusted for quality (QUALYs). The combined result would be that the health service would improve health by implementing the programme, and at the same time save money.

Again based on core assumptions (▸ above), switching from a next-registration strategy to screening on next visit would substantially increase both costs and benefits. The programme would cost five times as much (£497 million) but generate three times the savings in NHS costs over the 30 years following intervention (£682 million), and also gain patients who received brief interventions three times as many extra years of life adjusted for quality. In itself and compared to a next-registration strategy, it would gain health benefits and at the same time save health services money.

In terms of net £ spent per QUALY gained, the programme would exceed accepted value-for-money benchmarks only if its costs were greatly and unrealistically increased yet effectiveness was less than expected, for example, if GPs themselves delivered much longer interventions, which were about half as effective as assumed in the core calculations, and whose effects persisted for three rather than seven years.

The authors' conclusions

As other studies have calculated for the USA and the Netherlands, the conclusion is that alcohol screening and brief intervention in primary care in England is likely to meet the standard criterion for cost-effectiveness in terms of net £ spent per QUALY gained, even

assuming the costs and effects associated with the most pessimistic scenarios. Compared against a no-screening option, the current policy of screening new registrations would provide additional health benefits at reduced cost to the health service. A next-visit strategy would further improve health and save money, but would be a very large-scale implementation, with front-loaded resourcing needs, delivering interventions to almost 80% of hazardous and harmful drinkers over 10 years.

On this basis it can be recommended that decision-makers implement such a programme, while recognising that the resource implications of universal screening will require careful management. Policymakers and local decision-makers will need to balance the timing and scale of impact on the NHS of implementing such programmes against the health costs and health gains expected to accrue.

FINDINGS COMMENTARY Given the calculated economic and health gains, the implication of the analysis is that health service planners would be irrational were they not to insist on universal screening for risky drinking followed by as-needed brief interventions in GPs' surgeries. Rather than diverting resources from other health programmes, this would free up resources if implemented in the most cost-effective manner through a five-minute intervention by a practice nurse. Both the featured analysis and the results of the SIPS trial of alcohol screening and brief interventions in primary care in England give commissioners no reason to fund more than this minimal intervention, supported by a review which found using less expensive nurses rather than doctors has not been shown to reduce effectiveness.

The next-registration strategy modelled by the analysis is directly relevant to current policy in the UK. From April 2015 alcohol screening is required of every GP practice in England for all newly registered patients as part of the core national contract for primary care services. As anticipated in the featured study, initial screening is to be done with the three or four questions of the FAST or AUDIT-C questionnaires, but followed up for positive-screen patients with the full ten questions of the AUDIT questionnaire. Based on the risk level indicated by AUDIT responses, patients should be offered brief advice, more extended counselling, or referral to specialist services. From the featured analysis, this strategy would be a worthwhile start, but over ten years would not reach the majority of the adult population. More would be spent but much more gained too from screening at the next visit.

However, both the modelled strategies could only create the calculated gains if they really do reduce drinking and/or change drinking patterns in ways which reduce harm and prolong and/or improve patients' lives. This they might well do, but the evidence relied on in the analysis is not robust enough to be confident of this key element in the calculations; more ▸ below. Costs too might be considerably greater. To induce GP practices to screen every patient at the next visit might take substantial incentive payments and/or costly procedures to check the work really had been done to an acceptable standard, neither seemingly costed in to the calculations. Offered £9 per patient screened and offered brief advice, in the English SIPS primary care trial, still nine of the 14 practices did not recruit the targeted 31 patients over the 15 months of the trial.

Weak evidence base for real-world drinking reductions

On the cost side of the equation only a programme based on brief screening and brief and inexpensive intervention seem warranted, but there remains the issue of whether these really would generate the benefits the analysts calculated. Their calculations hinged on the estimated average drinking reductions of just over 12% in the first year, eroding over three or seven years. From these were calculated to flow improved health leading to the QUALY gains for patients and the cost savings for public services which made screening and brief intervention look like a bargain for patients and health services, and on that basis for society as a whole. However, the estimated reduction derived not from large-scale national programmes similar to those envisaged by the featured analysis, but from controlled research studies implementing standardised interventions in selected practices with selected patients.

The estimated drinking reduction figure derived from an synthesis of the results of primary care brief intervention trials. It attempted to answer the crucial question of whether effects would transfer from tightly controlled research studies to the kind of routine implementation envisaged in the featured analysis. The verdict that they would rested largely on the finding that impacts in more real-world trials did not significantly differ from those of trials further divorced from routine practice, but how real-world any of the trials were has been questioned.

Eleven years later the synthesis was updated and the attempt to assess real-world applicability repeated. Overall the estimate of the effectiveness of brief interventions in reducing drinking had substantially reduced, results which in turn would have reduced the benefits envisaged by the featured study. In terms of grams of alcohol, the impact estimate was half that of the earlier analysis and in % terms had fallen from 12.7% to 8.2%, a cut of just over a third. Worse still, when the estimate was tracked by date of publication of the study, by 2014–2015 a 'best fit' graph suggested studies were on average finding zero effect.

In the later analysis, again the classification of trials as more or less 'real-world' suggested the findings would apply to routine practice. But around the same time another comprehensive review of primary care and emergency department brief interventions covering essentially the same studies saw things differently: "… it seems that some of the benefits of [brief interventions] could be lost when translated from a special research condition to the natural conditions of typical clinical practice. Indeed, a common criticism of [brief intervention] trials is that they are efficacy studies (optimizing internal validity) rather than pragmatic trials."

Notably (more in these background notes) the 'real-worldness' of the amalgamated trials applied mainly to their brief intervention phases. Before this came the selection of sites and of patients at those sites willing to participate in the trials, and the crucial screening process without which the brief interventions could not have targeted appropriate patients, which often supplied data for use in the interventions, and which was typically done by research staff. For example, the trial assessed as most relevant to routine practice recruited only a quarter of the practices it approached (many said they had no time) and just over 1 in 10 contributed data to the analysis. The results cannot be assumed to be representative of what would happen in a typical practice less motivated or less well placed to join and complete a brief intervention trial. Once patients were in the trials, further whittling usually did or may have happened, further reducing confidence in the applicability of the findings to patients overall.

Additionally, there was substantial variation between the outcomes of the trials. As a result the analysts treated each as having its own characteristic impact, rather than one which merely reflected chance variation from the general impact of brief interventions. Given that this was how the review's findings were generated, it cannot be assumed that every implementation of a brief intervention will achieve results similar to the average; each programme will have to demonstrate this for itself.

The US Veterans Affairs medical service for former military personnel provides a rare example of a national health service implementing and evaluating near-universal alcohol screening and brief intervention in primary care. Described more fully in an Effectiveness Bank hot topic, their evaluations showed that despite this achievement, most risky drinkers were not identified because did not admit to their doctors drinking as much as they really did, and among those who were identified, there were at best only minor impacts on drinking. However, if those minor impacts were real (the non-randomised study left considerable room for bias in the results) they probably would have been enough to reap the lower gains estimated in the featured analysis from drinking reductions half those assumed in the core model.

The Veterans Affairs study highlights another question over the featured

analysis – whether the screening tests would identify hazardous drinking patients as well as they do when patients respond in confidence to researchers. Its figures suggest that over twice the time may need to be spent on screening to identify each hazardous drinker as suggested by studies where researchers ask the questions.

The featured study's assumption that drinking reductions would persist for up to seven years is based on a US study. However, the study only followed up patients for four years, and by this time there was no statistically significant reduction in drinking attributable to the evaluated brief intervention. The last year there was a significant reduction was the three-year point, making the featured study's alternative assumption of three years as the decay period the safer one to use. Moreover the study tested a multi-session intervention rather than the one-off, five-minute intervention in the core model in the featured analysis. Patients were counselled for 15–20 minutes by their family doctors and were scheduled for a second session a month later. Further reinforcement came in the form of five-minute phone calls from the practice nurse two weeks after each session. Given that family doctors undertook the interventions, it would be surprising if they did not continue to check and address the patients' drinking when they revisited the surgeries. Interviews with patients suggested this was done for under 10%, but it is unclear whether this figure applied to the counselled patients or was averaged across all patients. The whole package could easily have exceeded the longest intervention time assumed in the featured analysis.

Looking beyond primary care, across the spectrum of populations targeted, settings and intervention methods, truly real-world trials of brief interventions are few (1 2 3) and tend to find that the interventions are often not delivered and do not affect drinking to a statistically significant degree.

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