EDITORIALS

Assertive community treatment in psychiatry

May not reduce inpatient visits, but its success in engaging marginalised patients should not be ignored

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Assertive community treatment is a specific model of intensive community mental health care and a key component of the national service framework for mental health in England. Over 220 new teams using this model have been implemented since 1999.[1] Assertive community treatment originated in the United States, evolving from a pioneering approach to delivery of treatment for people with mental health problems in the community.[2] The treatment has been extensively researched. Good evidence exists for its efficacy outside the United Kingdom,[3] but results in England have been disappointing.[4-7] Possible reasons for this include differences in adherence to assertive community treatment and differences between the US and the UK in the comparison group of standard community mental health care.[8 9] However, even in the UK, clients seen as being "difficult to engage" (those with whom community mental health services have found it difficult to arrange meetings) find assertive community treatment more acceptable than standard community care in terms of satisfaction with services and the amount of contact they have with them.[3 7]

In this week's *BMJ* a systematic review of randomised controlled trials by Burns and colleagues compares the impact on the use of inpatient services of various forms of intensive case management (including assertive community treatment) compared with standard community mental health care. It finds that the way in which the team organises its approach to the work and whether it is implemented in an area with high use of inpatient services accounts for the differences in findings regarding inpatient service use.

The assessment of the organisation of the team was based on whether the team was the primary therapy for its clients; was based off the hospital campus; met daily; shared responsibility for caseloads; was available 24 hours; had a team leader who was also a case manager; and offered services without a time limit. The authors state that these features reflected the extent that case managers worked as a team rather than as independent practitioners. This aspect of assertive community treatment is often referred to as the "team based approach," facilitated by the team working extended hours in shifts such that several different staff are involved in a client's care. Also, daily team meetings take place to discuss the work plan and share ideas about clinical problems. Burns and colleagues suggest that similarities in the organisation of the team between community mental health teams and assertive community treatment teams could explain the lack of efficacy in the UK, and they conclude that case managers should work as teams rather than as individuals when caring for severely mentally ill individuals.[10]

However, another important component of home treatment models, including assertive community treatment, is "in vivo" work,[11] where contact occurs at the client's home or elsewhere in the community rather than in the team office. Although home treatment teams in the US have been reported to make more in vivo visits than UK teams, community mental health teams in the UK make more in vivo visits than standard care comparison teams in the US.[9] This may also explain the lack of efficacy reported in the UK studies.

Despite these similarities between assertive community treatment and community mental health care, the finding that the former is more acceptable to a particularly marginalised group of clients should not be ignored. This may result from differences in styles of client engagement, with assertive community treatment using more recovery based practice approaches,[12] such as collaborating on agreed tasks and therapeutic risk taking rather than the more autocratic community mental health care approach of delivering treatment. This has potentially far reaching consequences for reducing social exclusion for this group. The team based approach seems to be a particularly important component for staff in assertive community treatment teams in providing supportive and constructive containment in working with challenging clients (unpublished data).

In the current financial context of the National Health Service in England, assertive community treatment is vulnerable, and the National Forum for Assertive Outreach has many examples of teams being disbanded and/or having their practitioners redeployed to provide the treatment within community mental health care teams. This makes little sense now that the critical success factors seem to have been identified (team based approach; extended hours; high proportion of in vivo visits). It is unfeasible to deliver these factors within a community mental health care team for three reasons. Firstly, the size of a community mental health care team's caseload makes shared caseloads and daily team meetings impractical. Secondly, a quorum of staff is required to work shifts to provide an extended hours service. Thirdly, protection of low caseloads is difficult in the pressured environment of a community mental health care team but necessary to ensure a high proportion of in vivo visits.

The problem for assertive community treatment in England is that reducing the use of inpatient services is seen as the main measure of success. This correlates with the cost of the service, but its great success in enabling staff to work with clients that community mental health care teams had failed to engage for years seems to be being ignored. The model is popular with staff working in assertive community treatment and with clients.[3] [7] With an increasing focus across all health specialties to provide services in the community, it seems premature to dismantle assertive community treatment teams now that we really know how they should work.

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Umbilical cord clamping after birth
Better not to rush

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Competing interests: None declared.

Provenance and peer review: Commissioned; not externally peer reviewed.

Early clamping and cutting of the umbilical cord is widely practised as part of the management of labour, but recent studies suggest that it may be harmful to the baby. So should we now delay the clamping?

Early clamping of the cord was one of the first routine medical interventions in labour. Its place in modern births was guaranteed by its incorporation into the triad of interventions that make up the active management of the third stage of labour. The earliest references are clear about the other two components of active management—oxytocin to contract the uterus and prevent postpartum haemorrhage, and controlled cord traction to prevent retention of the placenta.[1] But early cord clamping had no specific rationale, and it probably entered the protocol by default because it was already part of standard practice. When this package was shown to reduce postpartum haemorrhage in the 1980s early cord clamping became enshrined in the modern management of labour.

Changes in neonatal blood volume with increasing delay of cord clamping, with and without the use of a uterotonic. Adapted from the paper by Yao et al[6]

But it has not been accepted everywhere. In Europe, although 90% (1052/1175) of units recommend uterotonic prophylaxis, only 66% (770/1175) recommend early cord clamping and 41% (481/1175) recommend controlled cord traction.[2] The rate of early cord clamping varies from 17% (4/23) of units in Denmark to 90% (98/109) in France.[2]

So what is the evidence behind cord clamping? For the mother, trials show that early cord clamping has no effect on the risk of retained placenta or postpartum haemorrhage.[3] [4] Evidence from a Cochrane review supports this result—prophylactic oxytocin reduces the risk of postpartum haemorrhage whether the rest of the active management package is adopted or not.[5]

But what about the baby? Initially, the cord blood continues to flow, sending oxygenated blood back to the fetus while respiration becomes established, ensuring a good handover between the respiratory systems. At the time of the first fetal breath, however, the reduction in intrathoracic pressure draws blood into the lungs from the umbilical vein. So long as the cord is unclamped the average transfusion to the newborn is 19 ml/kg birth weight, equivalent to 21% of the neonate's final blood volume (figure).[6] The final amount is unaffected by the use of oxytocics or the position of the baby relative to the placenta.[6] [7] Three quarters of the transfusion occurs in the first minute after birth. The rate of transfer can be increased by the use of intravenous uterotonics (to 89%), or by holding the newborn 40 cm below the level of the placenta.[6] [8]

For the term baby, the main effect of this large autotransfusion is to increase iron status and shift the normal curve of the neonatal haematocrit to the right. This may be life saving in areas where anaemia is endemic. Here, late cord clamping increases the average haemoglobin concentration by 11 g/l at four months.[9] In the developed world, however, there
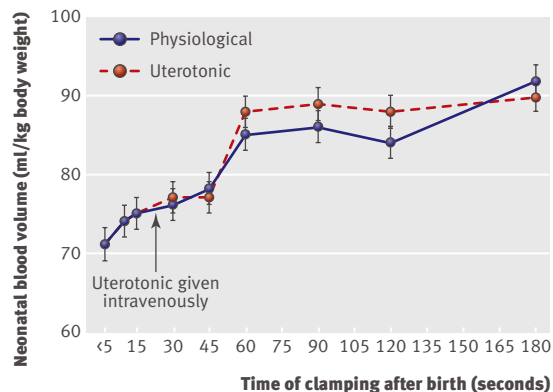
have been concerns that it could increase the risk of neonatal polycythaemia and hyperbilirubinaemia. Trials show this is not the case. Delayed cord clamping seems to drive up mean haematocrit values and serum concentrations of bilirubin, without increasing the number of infants needing treatment for jaundice or polycythaemia.[7]

For preterm babies the beneficial effects of delayed cord clamping may be greater. Although the studies are smaller, delayed clamping is consistently associated with reductions in anaemia, intraventricular haemorrhage, and the need for transfusion for hypovolaemia and anaemia.[10] The one exception may be growth restricted babies who are already at risk of hypoxia induced polycythaemia.[11]

How should we approach cord clamping in practice? In normal deliveries, delaying cord clamping for three minutes with the baby on the mother's abdomen should not be too difficult. The situation is a little more complex for babies born by caesarean section or for those who need support soon after birth. Nevertheless, it is these babies who may benefit most from a delay in cord clamping. For them, a policy of "wait a minute" would be pragmatic.[11] Indeed, this first minute is already largely spent on neonatal assessment. This could be done in warmed towels on the birthing bed or the mother's abdomen after vaginal delivery, or on the mother's legs at caesarean section. Cord clamping need only take place when transfer to the resuscitation trolley is required. For medicolegal purposes it will be important to document the time at which the cord was clamped, as delayed clamping reduces pH values in umbilical artery blood samples.[12]

There is now considerable evidence that early cord clamping does not benefit mothers or babies and may even be harmful. Both the World Health Organization and the International Federation of Gynecology and Obstetrics (FIGO) have dropped the practice from their guidelines. It is time for others to follow their lead and find practical ways of incorporating delayed cord clamping into delivery routines. In these days of advanced technology, it is surely not beyond us to find a way of keeping the cord intact during the first minute of neonatal resuscitation.

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Obstructive sleep apnoea

Trials are under way to determine the still unclear associations between sleep apnoea and cardiovascular outcomes

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Competing interests: None declared.

Provenance and peer review: Commissioned; not externally peer reviewed.

The prevalence of obstructive sleep apnoea in its severe form is about 2% and 0.5% in middle aged men and women respectively.[1] Pharyngeal collapse during sleep causes recurrent frustrated inspiratory efforts, oscillating levels of blood oxygen, and disturbed sleep, which may, or may not, lead to excessive daytime sleepiness.[2] The main treatment for moderate to severe obstructive sleep apnoea and excessive daytime sleepiness (obstructive sleep apnoea syndrome) is nasal continuous positive airway pressure applied during sleep. A meta-analysis[3] clearly showed that this treatment is highly effective in preventing apnoea in such patients, thus relieving symptoms and improving self assessed quality of life.[4]

The main debate over treatment is whether obstructive sleep apnoea is also an important independent risk factor for vascular disease (such as myocardial infarction, heart failure, and stroke), both in those with and without current vascular problems. Some of the potential mechanisms suggested include acute and long term effects on blood pressure, endothelial dysfunction, deoxygena-

tion-reoxygenation injury, increased swings in pleural pressure causing cardiac loading, and increased platelet coagulation. Unfortunately, obstructive sleep apnoea coexists with many features of the metabolic syndrome. Indeed, the condition is common in type 2 diabetes, with a prevalence of 20%,[5] and such patients tend to share a similar body shape. Obesity of the upper body provokes obstructive sleep apnoea through deposition of fat in the neck,[6] compromising pharyngeal patency, and visceral obesity also provokes insulin resistance, as well as being a better predictor of vascular risk than general obesity.[7]

This means that cross sectional and cohort studies, apparently linking obstructive sleep apnoea and vascular disease, cannot prove causation (especially as simple indices such as waist to hip ratio do not fully control for visceral fat[8]), and thus can only generate hypotheses. Obstructive sleep apnoea probably acts partly as a marker for the metabolic syndrome in such studies.

Non-randomised interventional trials have suggested

survival advantages from continuous positive airway pressure,[9] but the control populations were those who showed poor compliance with the treatment. Unfortunately, patients who are poor compliers with trial treatments have a higher mortality anyway, presumably because of poorer compliance with other treatments. Because of the imperative to treat symptomatic patients, most randomised controlled trials of treatment in obstructive sleep apnoea have been short term, looking only at surrogate end points for vascular disease, such as blood pressure, insulin resistance, inflammatory markers, and cardiac function. Hence they have not yielded robust evidence for an independent effect of obstructive sleep apnoea on vascular outcomes.

Several studies have shown a fall of up to 10 mm Hg in mean 24 h blood pressure in patients treated with continuous positive airway pressure compared with controls[3]; the largest reductions occurred in the most severe and symptomatic patients.[10] Furthermore, echocardiography and gated nuclear scanning have shown improvements in left ventricular ejection fraction[11] and indices of diastolic function.[12] However, treatment with continuous positive airway pressure does not seem to improve insulin resistance or glycaemic control in patients with both obstructive sleep apnoea and type 2 diabetes.[13]

Such surrogate end points can only hint at potential additional vascular morbidity and mortality. Thus, the recent appearance of the first mortality study in patients with heart failure (with left ventricular ejection fraction of ≤45%) and obstructive sleep apnoea is interesting, even though treatment was non-randomised.[14] This paper compared mortality in three groups: 113 patients with heart failure, but little or no obstructive sleep apnoea; 37 such patients with untreated moderate to severe obstructive sleep apnoea; and 14 with obstructive sleep apnoea treated with continuous positive airway pressure.

The presence of untreated obstructive sleep apnoea seemed to double mortality from heart failure over five years from 12% to 24%, and there were no deaths in the small group treated with continuous positive airway pressure. Although this study would have been subject to unrecognised confounders and non-randomisation bias, the size of the effect suggests that people looking after patients with heart failure should be more aware of the detrimental impact of obstructive sleep apnoea.

How can robust long term evidence be collected in this area? Patients with moderate to severe symptoms cannot be entered into placebo controlled trials because they should be offered treatment. Because no robust evidence indicates that patients with asymptomatic obstructive sleep apnoea should be treated to reduce vascular risk, clinicians can ethically randomise such patients to long term trials of continuous positive airway pressure versus no treatment. Such trials are in their infancy, and outcomes for morbidity and mortality will take a long time to gather. But without them we will not know whether to offer this treatment for vascular benefits to patients with asymptomatic obstructive sleep apnoea.

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Effects of air pollution on health

Quantifying the effect alone is not enough to change policy and improve health

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The term "smog"—a combination of smoke and fog—was invented by a British doctor a century ago. In 21st century Europe, air pollution has greatly improved by most measures but is still a substantial health problem, responsible for the early deaths of hundreds of thousands of people each year.[1] Estimates of mortality attributable to long term exposure to fine particles are now widely accepted as a key policy indicator of the effect of air pollution. A draft UK government report, written by the Committee on the Medical Effects of Air Pollution and currently open for public review, re-examines the scientific evidence underpinning these estimates.[2]

The most directly applicable evidence is provided by follow-up of large populations exposed to different long term average levels of air pollution. Findings of the first cohort studies by the American Cancer Society have been confirmed and extended by additional years of follow-up[3] and extensive reanalyses,[4] and with cohort studies in Canada[5] and Europe.[6 7] Studies of cities that have experienced substantial reductions in exposure

to air pollution as a result of policy changes (such as Dublin[8] and Hong Kong[9]) provide convincing evidence that the effects are real and not the result of unmeasured confounding.

Time series studies, although not suited to assessing effects of long term exposure,[10] provide further evidence that day to day changes in air pollution have measurable health effects at population scale, even at very low levels of ambient exposure. Slowly varying factors such as socioeconomic status or smoking history, which might bias the results of cohort studies, cannot explain the short term associations between air pollution and health seen in time series studies.

The best estimate from the Committee on the Medical Effects of Air Pollution, based on the American Cancer Society's follow-up study,[3] is a 6% (95% confidence interval 2% to 11%) increase in all cause mortality per 10 µg/m³ increase in fine particle exposure (measured as $PM_{2.5}$). The authors also report a probability distribution of a "plausible" dose response (range 0-15%). This was based on a Delphi survey that used the expert judgment of committee members to capture uncertainties in the coefficient. The committee recommends using Monte Carlo analysis to sample from the plausible dose response range when applying their findings to assessment of air pollution policy. In practice, the use of statistical confidence intervals would probably give closely similar results, as the distribution of plausible dose response coefficients is clustered within the range of the statistically derived confidence intervals.

The report by the Committee on the Medical Effects of Air Pollution is well argued and supported by working papers discussing the key uncertainties, although a few areas warrant more discussion. Firstly, the American Cancer Society's study excluded those under age 30 years,[3] and so the results do not apply to younger adults and children. Other studies that have linked infant mortality with exposure to air pollution[11 12] are included in a table but not discussed in the main text. Secondly, most epidemiological studies of air pollution have been conducted at the scale of whole cities. More recent studies, conducted at a smaller geographic scale, have reported substantially larger effects.[5 6 13] These studies have important implications for estimates of years of life lost.

Finally, evidence that the effects of air pollution are modified by social factors[14] should be reflected in health impact assessments. In the American Cancer Society's study, the effects of air pollution seemed greater in those with lower educational status. The distribution of effects between rich and poor communities is important from a social justice perspective, independently of the overall effect on health.

Quantifying the direct effect of air pollution on mortality is an important step towards effective interventions to improve health. However, policy makers need a wider perspective than that provided by the Committee on the Medical Effects of Air Pollution so that they can take into account the indirect, long term health implications of energy and transport policies.

Global climate change will have major effects on

ALBERTO BRANDJ/FOTOLIA

health that are difficult to measure using conventional approaches that look at individual aspects rather than the problem as a whole. Coal fired power stations and vehicles are major emitters of carbon dioxide, the main driver of climate change. Energy efficiency measures can have simultaneous benefits through reductions in local air pollution (particulates) and global carbon dioxide emissions. It is becoming increasingly clear that we need to stop burning fossil fuels and that we cannot afford another decade of scientific enquiry, let alone another century, before we act. Rigorous scientific assessments—exemplified by the Committee on the Medical Effects of Air Pollution's report—have an important place but are only part of the policy equation.

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Developing nurse prescribing in the UK

Prescribing should be integrated into education for advanced nursing practice

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Competing interests: AJA and VJ are co-investigators on a study of nurse and pharmacist prescribing funded by the Department of Health.

Peer review and provenance: Commissioned; not externally peer reviewed.

The United Kingdom has seen a recent major expansion in the scope of nurse prescribing, reflecting government policy[1] and the international trend towards advanced nursing practice.[2] In the 1990s it became possible for community based nurses to prescribe independently from a limited formulary, thereby facilitating their traditional roles such as wound management and bowel care. From 2000, further changes in legislation radically altered the professional restrictions on prescribing, and since May 2006 independent nurse prescribers in England have been able to "prescribe any licensed medicine for any medical condition within their competence."[3] Each stage of the development of nurse prescribing in the UK has had its advocates and detractors, but this recent initiative has proved the most controversial, fuelling debate about the adequacy of training of nurse prescribers and risks to patient safety.[4]

The training for independent nurse prescribers consists of a standalone course of 26 days of theory, 12 days of mentored practice, and five assignments. More than 8000 nurses in the UK have now been trained as independent or supplementary prescribers and thus have access to the full formulary that doctors use,[5] and many more district nurses and health visitors prescribe from a restricted formulary. Nevertheless, in England in 2005 just 0.6% of prescription items came from nurses working in the community[6]; this proportion increased to almost 0.9% in April to September 2006.[7] Figures for this later period show that those nurses with access to the full formulary were prescribing drugs previously restricted to doctors, including antimicrobial agents, asthma drugs, nicotine replacement products, and statins.[7] Comparative figures for secondary care are not available.

Early international analyses of nurse prescribing indicate that nurses prescribe within their areas of competence and according to guidelines.[8] These findings were echoed by a study of independent nurse prescribing in the UK in which an expert panel judged the appropriateness of prescribing decisions made during consultations.[9] Nevertheless, detractors are ready to pounce on any contrary findings, and an example is a recent study that raised concerns about the pharmacological knowledge and decision making ability of nurse prescribers. In this study, 25 nurse prescribers were presented with a number of prescribing scenarios.[10] Only a minority were able to identify more than half of the pharmacological problems relevant to each case and to suggest an appropriate course of action. This led *Pulse* (a weekly newspaper for general practitioners) to state that "nurses are 'floundering' in their new prescribing role."[11] In contrast, the authors suggest that the participants would have referred patients to the general practitioner for matters that were outside their area of competence.

This type of problem is at the heart of the current debate about independent nurse prescribing in the UK. On the one hand, the training and competence of nurse prescribers continues to be called into question. On the other, it is argued that nurses can diagnose and treat conditions safely and effectively within their areas of competence. While it is possible to dismiss some of the criticisms as due to doctors' concerns about nurses encroaching on their traditional territory,[12] we believe that for nurse prescribing to contribute more to patient wellbeing in the future, certain educational and practice problems need to be dealt with.

A further expansion of nurse prescribing in the UK is likely in coming years, but the extent to which it develops will depend partly on National Health Service trusts and general practices having confidence in the safety and effectiveness of nurse prescribers and their value in meeting patient needs. Some issues will be clarified by current research studies and local experiences, but concerns are likely to remain about the adequacy of the standalone training module.[1]

To deal with these concerns and bring about a further step change in nurses' contribution to health care we believe that the "task" of prescribing should be incorporated within the broader framework of the internationally recognised clinical role of nurse practitioners. The current short training course for independent nurse prescribers was designed to allow rapid expansion of a prescribing workforce among experienced practitioners. It is now time to build prescribing into the development of advanced nursing practice[2] so that it becomes a complementary part of training in assessment, diagnosis, clinical decision making, audit, evaluation, and referral. This would provide a firmer foundation for nurse prescribers and help to strengthen the case for nurses having a greater role in prescribing.

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