

Impact case study (REF3b)

<p>Institution: King's College London</p>
<p>Unit of Assessment: UoA4 - Psychology, Psychiatry & Neuroscience</p>
<p>Title of case study: 19: Supervised injectable 'medical' heroin reduces street heroin use and improves health of previously treatment-resistant heroin addicts</p>
<p>1. Summary of the impact While effective treatments for heroin addiction exist, 10% of individuals are non-responsive to treatment and suffer major health and social consequences. Although small, this severe group incur the highest cost to society. Supervised Injectable Opioid Treatment (IOT) involves administration of injectable diamorphine (pharmaceutical heroin) in supervised clinics. Research by King's College London (KCL) demonstrated that IOT is a clinically effective and cost-effective treatment of chronic heroin addiction that has previously appeared untreatable. KCL research has had a significant impact on drugs policy in the UK by providing high-quality evidence, pivotal in the Department of Health identifying IOT as a necessary second-line treatment and in their decision to expand provision of the treatment to an increasing number of clinics.</p>
<p>2. Underpinning research Heroin addiction affects an estimated 262,000 people in the UK, of whom approximately 160,000 are in treatment. However, the most severe 10% of individuals appear non-responsive to existing approved treatments (mostly methadone) and suffer major health and social consequences. Despite their smaller numbers they incur the highest costs to society. Researchers at Institute of Psychiatry, King's College London (KCL), led by Prof John Strang (1995-present, Professor of Addictions) with Prof John Marsden (1999-present, Professor of Addictions Psychology), Prof Michael Gossop (1993-2010, Honorary Professor of Addictions), Prof Michael Farrell (1993-2011, Professor of Addictions Psychiatry) and Prof Sarah Byford (2000-present, Professor of Health Economics) carried out the definitive trial assessing the effectiveness of Injectable Opioid Treatment (IOT) as a second-line treatment for chronic heroin addiction.</p> <p>In the late 1990's, KCL researchers carried out a pilot trial led demonstrating the feasibility of implementing injectable, supervised heroin treatment within the context of oral methadone services (1). Their findings eventually developed into the KCL-led, multisite Randomised Injectable Opiate Treatment Trial (RIOTT) (2) where patients received supervised injectable heroin (n=43), supervised injectable methadone (n=42) or optimised oral methadone (n=42). Treatment was provided for 26 weeks in three NHS clinics in England with injectable treatments being self-administered under direct nursing supervision and no take-home doses. Clinics were open year round for two sessions per day and all treatments were combined with psychological support. Results, published in 2010, showed that those on supervised injectable heroin were significantly more likely to achieve a major reduction in street heroin use compared to those on oral methadone (72% versus 27%) or injectable methadone (39%). Differences were evident within the first 6 weeks of treatment (3).</p> <p>A unique feature of the RIOTT study was that it was the first to incorporate objective laboratory analyses to differentiate between street heroin and pharmaceutical heroin. In collaboration with colleagues at Imperial College London, KCL researchers drove the development of a new urinalysis method capable of identifying objective markers of street heroin. Using samples from 52 opioid-dependent patients who self-reported illicit heroin use, metabolites of papaverine were identified as reliable markers of illicit heroin use (4).</p> <p>KCL researchers also conducted independent cost-effectiveness analyses which identified that supervised injectable treatments (methadone or heroin) were significantly more cost-effective than oral methadone treatment. The higher operating costs of injectable treatments (£8,995 per person per year for injectable heroin; £4,674 for injectable methadone compared to £2,596 for oral methadone) were offset by greater benefits to society, mainly through the reduction in criminal activity associated with injectable treatments, estimated at £14,000 per person per year. Injectable opiate treatments therefore correspond to a net saving of approximately £6,000 per person, per year compared to oral methadone treatments (5).</p>
<p>3. References to the research 1. Strang J, Marsden J, Cummins M, Farrell M, Finch E, Gossop M, Stewart D, Welch S. Randomised trial of supervised injectable versus oral methadone maintenance: feasibility and</p>

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six-month outcome. *Addiction* 2000;95:1631-45. Doi: 10.1046/j.1360-0443.2000.951116314.x (34 Scopus citations)

2. Lintzeris N, Strang J, Metrebian N, Byford S, Hallam C, Lee S, RIOTT Group. Methodology for Randomised Injecting Opioid Treatment Trial (RIOTT): evaluating injectable methadone and heroin treatment in the UK. *Harm Reduction Journal* 2006;3:28-40. Doi: 10.1186/1477-7517-3-28 (24 Scopus citations)
3. Strang J, Metrebian N, Lintzeris N, Potts L, Carnwarth T, Mayet S, Williams H, Zador D, Evers R, Groshkova T, Charles V, Martin A and Forzisi L. Supervised injectable heroin or injectable methadone versus optimised oral methadone as treatment for chronic heroin addicts in England after persistent failure in orthodox treatment (RIOTT): a randomised trial. *Lancet* 2010;375:1885-95. Doi: 10.1016/S0140-6736(10)60349-2 (38 Scopus citations)
4. Paterson S, Lintzeris N, Mitchell TB, Cordero R, Nestor L, Strang J. Validation of techniques to detect illicit heroin use in patients prescribed pharmaceutical heroin for the management of opioid dependence. *Addiction* 2005;100:1832-39. Doi: 10.1111/j.1360-0443.2005.01225.x (18 Scopus citations)
5. Byford S, Barrett B, Metrebian N, Groshkova T, Carey M, Charles V, Lintzeris N & Strang J. Cost-effectiveness of injectable opioid treatment v. oral methadone for chronic heroin addiction. *Br J Psychiatry* 2013;Sep 12 [Epub ahead of print]. Doi: 10.1192/bjp.bp.112.111583

Grants:

- 2004-08.J Strang. Action on Addiction. The effectiveness of using injectable methadone and heroin to target problem opiate addicts for whom oral methadone treatment is not working. £513,650

4. Details of the impact

KCL research demonstrated that treatment with supervised injectable heroin leads to significantly lower use of street heroin than treatment with supervised injectable methadone or optimised oral methadone. Following pre-publication examination of the findings from the RIOTT randomised trial, UK Government policy identified supervised heroin maintenance treatment as an evidence-based treatment for previously unresponsive chronic heroin addicts.

Contribution to UK policy review: KCL researchers provided confidential preliminary findings from the RIOTT study to inform the Government's 2008 Drug Strategy. The strategy prioritised "rolling out the prescription of injectable heroin and methadone to clients who do not respond to other forms of treatment, subject to the findings, due in 2009, of pilots exploring the use of this type of treatment" (1a). KCL researchers also presented confidential findings to, and were active participants in, the 2009 National Treatment Agency (NTA) Expert Group tasked with examining the future role of Injectable Opioid Treatment (IOT) in England. KCL findings on the clinical and cost-effectiveness of the RIOTT study, as well as studies from other European countries, constituted the central evidence of the report, which recommended a "phase two of IOT, expanding the number of clinics" which could "usefully learn from the RIOTT clinics and explore different models of IOT clinics to maximise cost efficiencies" (1b).

Following the aims of the 2010 Drugs Strategy, which committed to continuing to "examine the potential role of diamorphine prescribing for the small number who may benefit" (1c), the Department of Health (DH) set out the required actions of the NTA for 2011-12. The Action Plan continued an on-going commitment to working with KCL researchers and their clinical partners to develop a clinical consensus to focus practitioners and clients on long-term recovery. It also contained specific action to "**work with (the) DH to explore whether the model demonstrated in the RIOTT study can be made to work for the small number of people who will benefit from it**" and a recommendation to tender new injectable treatment contracts (1d).

In 2012 the DH issued an Invitation to Tender for Service Providers to deliver IOT with an estimated service operating costs of £6 million over three years. The **DH explicitly acknowledged the contribution of the KCL RIOTT study** and stated that "IOT is now evidenced as a clinically effective second line treatment for a small group of people who have repeatedly failed to respond either to standard methadone treatment or to residential rehabilitation" (1e). Additionally, in light of KCL research, the House of Commons Home Affairs Committee on drugs policy published in 2012 recommended "that the Government publish, by end of July 2013, clear guidance on when and

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how diamorphine should be used in substitution therapy” (1f) which is now being applied in the newly commissioned clinics.

The impact of KCL research on the development and provision of supervised injectable opioid treatment (IOT) for hard-to-treat heroin addicts is also stated in the attached letter from the National Treatment Agency (now Public Health England), dated June 2012:

“The work undertaken by Professor Strang and his colleagues has had a significant impact on the adoption of this particular treatment intervention in England, ensuring that the supervised self-administration of injectable opiates is now evidenced as a clinically effective second line treatment in The Department of Health’s Drug Misuse and Dependence: UK Guidelines on Clinical Management, 2007, while the 2010 Drug Strategy committed to “continue to examine the potential role of diamorphine prescribing for the small number who may benefit”

Providing a template for service delivery at home and abroad: Early research from KCL (Strang et al. 2000) was carried out in a pilot supervised clinic at the South London and Maudsley (SLaM) NHS Foundation Trust. **The SLaM service became the template for the subsequent supervised injectable maintenance clinics in the RIOTT study** and was the site of the first of the three new supervised clinics in which the definitive RIOTT study was conducted. SLaM continues to be a key provider of the new Phase 2 supervised injecting clinics, and within its service, has demonstrated that 75% of patients with severe heroin addiction significantly reduce their use of street heroin (2a).

KCL research has also influenced services outside the UK. For example, **in 2009 Denmark established the same system of provision of low-volume, high-intensity supervised injectable heroin maintenance clinics**, modelled explicitly on the SLaM service provision and drawing directly on clinical as well as KCL research findings (2b).

Contribution to international initiatives: KCL researchers were commissioned by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) to prepare a European perspective on heroin prescribing, gathering clinical, operational and research evidence from across Europe and Canada (3a). The EMCDDA is a decentralised agency of the EU and exists to provide the EU and its member states with a factual overview of European drug problems and a solid evidence base to support the drugs debate. The report reviews evidence from six injectable heroin trials including the RIOTT study, citing Strang 2010 (3a). In recognition of its lasting value, contribution to government understanding, the EMCDDA report was selected by the Government Documents Round Table (GODORT) at the American Library Association as a notable document of 2012 (3b).

Contributions to professional and public understanding: KCL researchers have been actively involved in disseminating their findings to raise awareness amongst health professionals and service users. For instance, through a symposium on the findings from the RIOTT study convened by the charity Action on Addiction (‘Untreatable or just hard-to-treat?’) in September 2009 (4a); an audio interview for the Lancet to accompany the publication of the paper (4b) and video interviews on SLaM’s YouTube page (4c, which as of July 2013 had been viewed nearly 2000 times) and, in 2010, for the Film Exchange on Alcohol and Drugs (FEAD), a public engagement initiative of the Lifeline Project, a charity delivering a range of drug addiction services in the UK, aimed at services users, the workforce and the wider community (4d). **KCL research generated a high level of media interest in the UK and internationally**, with KCL researchers communicating the RIOTT finding both in this country, e.g. BBC News (4e,f), BBC Radio 4 Today Programme (4g) and internationally, e.g. CNN News (4h), TIME magazine (4i).

Development of new laboratory method to track use of ‘street heroin’: The development by KCL researchers in collaboration with colleagues at Imperial College London of the laboratory urinalysis papaverine assay (Paterson 2005) **made possible an objective laboratory assay of compliance and treatment benefit**. Urine samples from the RIOTT trial were analysed using this method at the pathology service (now ‘Toxicology Unit’) at King’s College Hospital (5a). This new method of differentiating between street heroin and pharmaceutical heroin is applied in everyday

practice in the NHS clinics (3a), for instance samples from Tees, Esk and Wear Valleys NHS Foundation Trust are sent to the Toxicology Unit (5b).

5. Sources to corroborate the impact

1) UK policy

- a. HM Government Drug Strategy 2008 - Drugs: protecting families and communities <http://webarchive.nationalarchives.gov.uk/20100419081707/http://drugs.homeoffice.gov.uk/publication-search/drug-strategy/drug-strategy-20082835.pdf?view=Binary>
- b. National Treatment Agency, Injectable Opioid Treatment (IOT) expert group - Emerging consensus and advice to government (10 Jul 2009) <http://www.nta.nhs.uk/uploads/annexa-iotexpertgroupconsensus1007092.pdf>
- c. HM Government Drug Strategy 2010 - Reducing demand, restricting supply, building recovery https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/98026/drug-strategy-2010.pdf
- d. Department of Health – National Treatment Agency Action Plan 2011-12: the transition to public health England (June 2011) <http://www.nta.nhs.uk/uploads/ntaactionplan1112.pdf>
- e. Department of Health - Invitation to Tender: the piloting of supervised injectable Opioid Treatment (01 Mar 2012) <https://www.gov.uk/government/news/invitation-to-tender-the-piloting-of-supervised-injectable-opioid-treatment>
- f. House of Commons – Home Affairs Committee - Drugs: Breaking the Cycle (Dec 2012) <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmhaff/184/184.pdf> (p8; p113)
- g. Letter from Chief Executive, National Treatment Agency (now Public Health England) available on request

2) Service delivery

- a. SLaM Supervised Injecting Clinic (2012): <https://www.national.slam.nhs.uk/wp-content/uploads/2012/04/Supervised-Injecting-Clinic.pdf>
- b. Contact details for National Board of Health, Copenhagen, Denmark available on request

3) Contribution to international initiatives

- a. Strang J, Groshkova T & Metrebian T - (April 2012) New heroin-assisted treatment: recent evidence and current practices of supervised injectable heroin treatment in Europe and beyond (EMCDDA Insight, Lisbon) <http://www.emcdda.europa.eu/publications/insights/heroin-assisted-treatment> (Urine analysis, pg. 141)
- b. GODORT Notable Government Documents of 2012 (published June 2013) <http://lj.libraryjournal.com/2013/06/publishing/notable-government-documents-of-2012/>

4) Professional and public understanding

- a. Action on Addiction Newsletter (2009) – Dissemination of RIOTT findings <http://www.actiononaddiction.org.uk/News---Publications/Publications/Winter-Newsletter-2009.aspx>
- b. Lancet podcast (begins at 1:24): http://download.thelancet.com/flatcontentassets/audio/lancet/2010/9729_29may.mp3
- c. SLaM YouTube interview (13 Apr 2010) <http://www.youtube.com/watch?v=1t78B-tNpoM>
- d. FEAD (Film Exchange on Alcohol and Drugs) - John Strang on the concept of supervised injecting heroin clinics and the birth of the RIOTT trial (19 Sept 2010) <http://www.fead.org.uk/video341/John-Strang-on-the-concept-of-supervised-injecting-heroin-clinics-and-the-birth-of-the-RIOTT-trial.html>
- e. BBC News - Heroin supply clinic 'cuts crime' (15 Sept 2009) <http://news.bbc.co.uk/1/hi/health/8256153.stm>
- f. BBC News - Heroin therapy call for 'chronic addicts' (28 May 2010) <http://www.bbc.co.uk/news/10175671>
- g. BBC Radio 4 Today Programme - 'Spectacular' drug clinic results (15 Sept 2009) http://news.bbc.co.uk/today/hi/today/newsid_8256000/8256173.stm
- h. CNN News - Study touts treating heroin addicts with heroin <http://edition.cnn.com/2009/HEALTH/10/20/treating.with.heroin/#cnnSTCVideo>
- i. TIME magazine - Why Doctors Are Giving Heroin to Heroin Addicts <http://content.time.com/time/health/article/0,8599,1926160,00.html>

5) New laboratory test

- a. Toxicology Unit at King's College Hospital <http://kingspath.co.uk/tests/toxicology/>
- b. Contact details for Clinical Director, TEWV NHS FT available on request