Substitution Therapy with Flexible-Dose Depot Buprenorphine Injection to Treat Opioid Use Disorder in the United Kingdom: A Pharmacoeconomic Assessment

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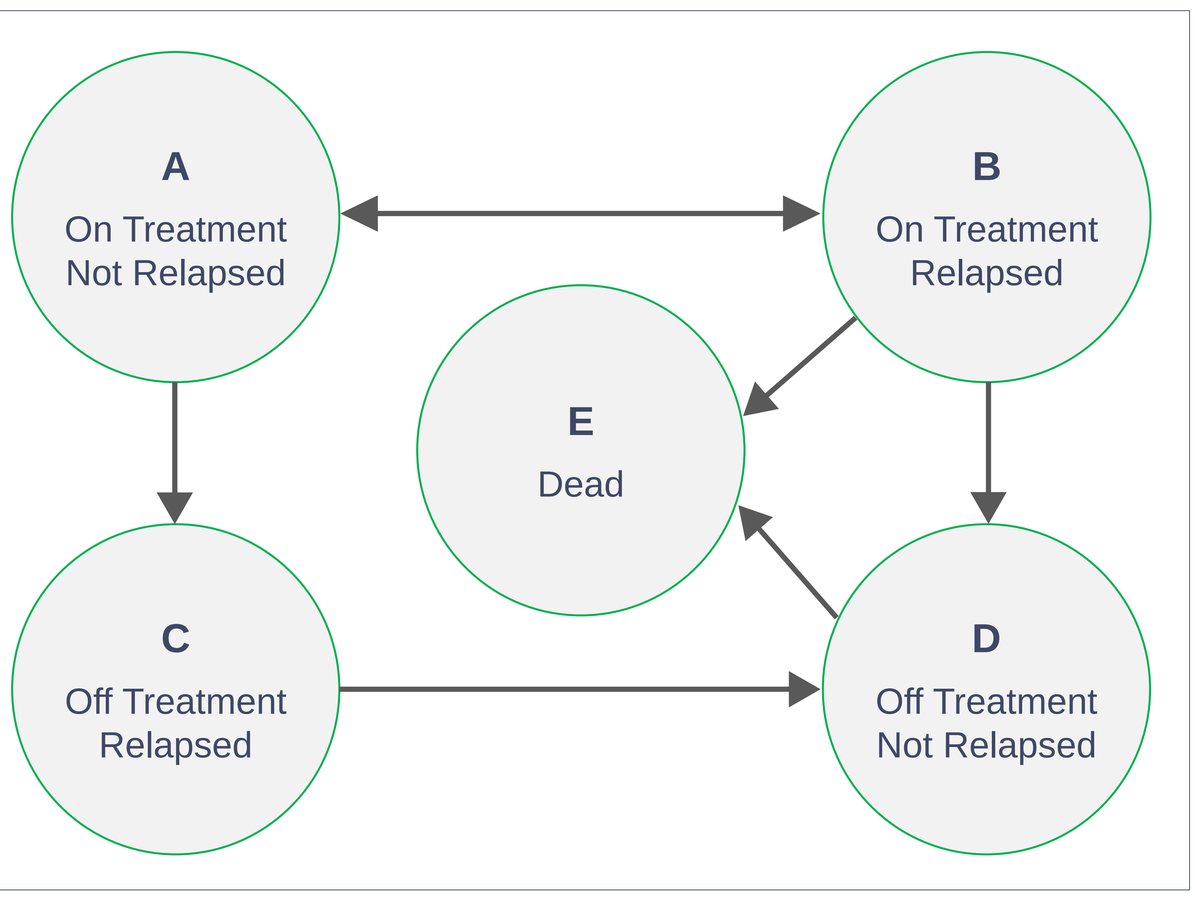
Background

- Sublingual buprenorphine with naloxone (SL-BNX) for the treatment of opioid use disorder (OUD) is associated with suboptimal adherence and diversion,[1] which limits outcomes of medication-assisted treatment (MAT) and increased medical and societal costs.[2]
- A recent, 24-week, Phase-3 clinical trial enrolling primarily heroin-dependent subjects demonstrated superiority of an investigational depot product (CAM) versus sublingual buprenorphine + naloxone (SL-BNX) in cumulative illicit opioid use.[3]
- This analysis assessed the potential economic impact of CAM compared to SL-BNX in the UK.

Methods

- A Markov microsimulation simulated patient progression through MAT health states over 52 weeks (**Figure 1**).
- On-treatment transition probabilities (**Figure 1, A-B**) were derived from patient-level analysis of the Phase 3 clinical trial, and others from observational studies.
- Cohorts accumulated the following OUD-related costs (excluding MAT acquisition costs):
  - **Direct Medical Costs**: primary care, emergency department, inpatient, mental health, drug-related deaths, and neonatal services
  - **Societal Costs**: crime (arrest, court, prison, victim losses) and other (lost wages and productivity, and childcare)
- For other transitions and OUD-related events not measured in the trial, probabilities and costs were modeled based on inputs from the peer-reviewed literature.

Figure 1. Model Structure



Results

- Under the most conservative scenario, CAM accrued lower annual total per-patient costs (-£15,383; **Table 1**).
- Savings were primarily attributable to lower societal costs (-£14,604); of which 94% were attributable to lower crime-anticipation / avoidance and victimization.
- Direct medical cost savings (-£779) were largely attributable to reduced utilization of supervised self-administration (-£362) and prescription / controlled drug fees (-£312).
- Savings attributable to avoided HIV/HCV infections (-£43) were modest assuming traditional interferon-based HCV treatment, but were more-pronounced assuming treatment with protease inhibitors (-£885).

Table 1. Annual Costs Per Patient

	CAM	SL-BNX	Diff.
Total	**£37,815**	**£53,198**	**-£15,383**
Direct Medical	**£1,792**	**£2,571**	**-£779**
Drug Administration	£104	£778	-£673
Prescription Fees	£24	£170	-£146
Controlled Drug Fees	£27	£193	-£166
Supervision	£53	£415	-£362
Counselling	£327	£327	£0
Urine Testing	£21	£21	£0
Gen. Practitioner Visits	£114	£130	-£16
Emergency Dept. Visits	£86	£97	-£11
Inpatient Hospital Stays	£398	£413	-£15
Mental Health Visits	£398	£417	-£21
HCV	£168	£189	-£22
HIV	£35	£39	-£4
HCV + HIV Co-Infection	£141	£159	-£17
Societal	**£36,023**	**£50,628**	**-£14,604**
Drug Crime Arrests	£2,331	£2,471	-£139
Acquisitive Crime	£2,355	£2,594	-£240
Court Appearances	£1,464	£1,587	-£124
Victim Costs	£26,851	£40,629	-£13,778
Lost Wages	£3,022	£3,346	-£324

Conclusions

- CAM for MAT in heroin-dependent adults is estimated to lower direct-medical and societal costs in the UK.
- Findings should be interpreted carefully as some are not based on direct observation, nor is MAT pricing included.
- Furthermore, treatment effects in the Phase 3 trial may have been diminished due to the double-dummy, double-blind design requiring daily treatment of both groups.
- Nevertheless, CAM was found to improve clinical outcomes and reduce the total economic burden of OUD.

This research was jointly supported by Braeburn Pharmaceuticals (of which VS is a former employee) and Camurus AB (of which RJ and FT are employees). JC is a paid consultant to Braeburn and Camurus. (1) Drug Alcohol Depend. 2014;142:98-104. (2) Pain Med. 2011;12(4):657-667. (3) Braeburn Pharmaceuticals. Nov 14, 2017.

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