

## Abstract

**Aims:** To describe and evaluate a cost-effective, integrated model of service provision for people with Alcohol Related Brain Damage (ARBD).

**Methods:** Patients identified by 3 large acute hospitals in Edinburgh as having ARBD and suitable for recovery and rehabilitation were offered a 12-week programme at a residential unit. The unit is run by Penumbra (a 3<sup>rd</sup> sector agency) with in-reach staff provided by NHS Lothian and City of Edinburgh Social Services.

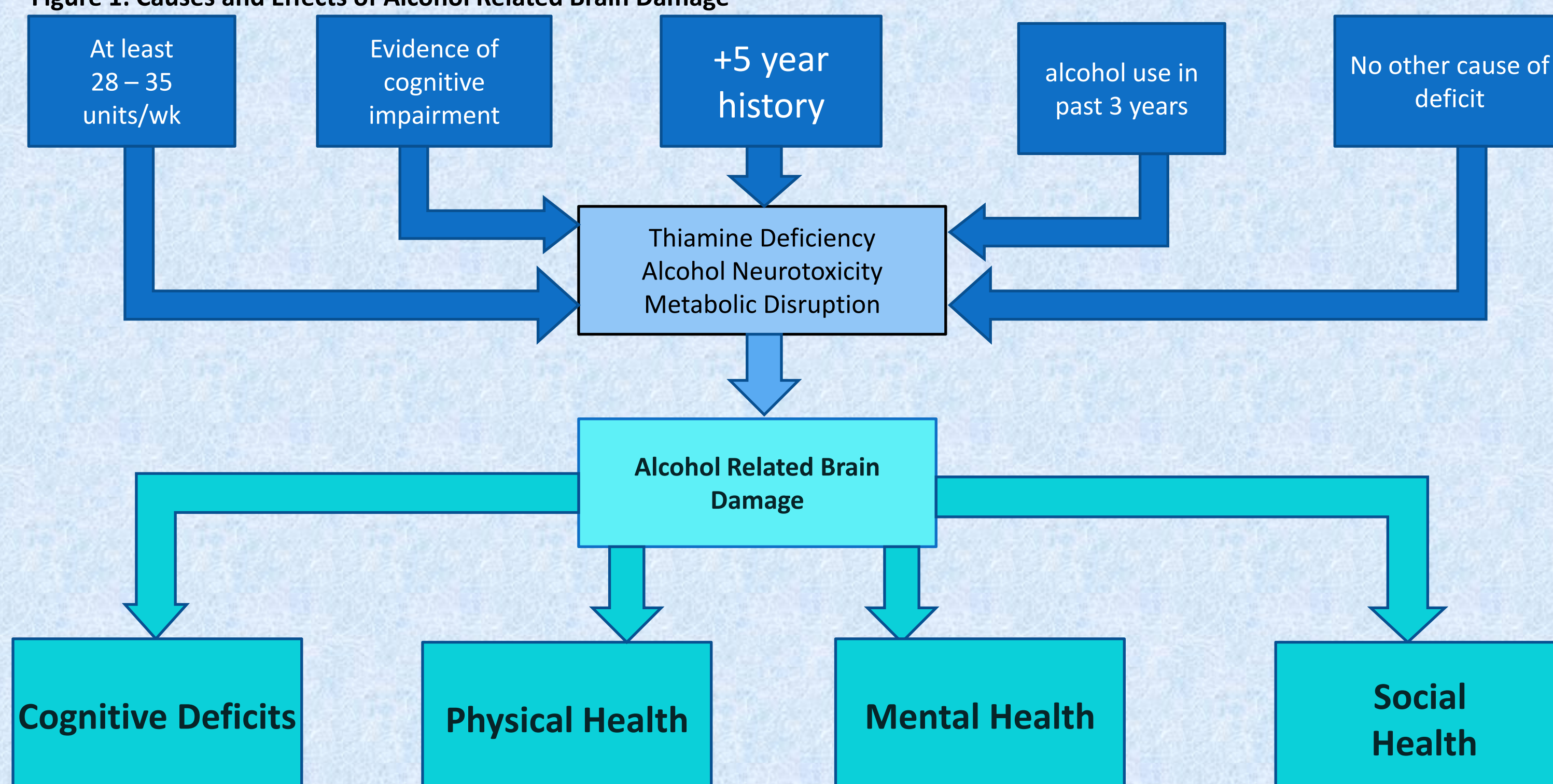
**Results:** Analysis reveals an improvement in cognition over the 12 week programme, reduced attendance at A&E and use of in-patient beds, and a significant financial saving to the NHS.

**Conclusion:** This integrated model of service provision provides clear benefits to patients and to the NHS, and should be considered by commissioners when addressing the needs of people with ARBD.

## Introduction

Alcohol Related Brain Damage (ARBD) is an umbrella term used to describe a wide range of neuropsychological and functional deficits associated with prolonged excessive alcohol use (RCP, 2014). It is caused by the direct neurotoxicity of alcohol, metabolic disruption, and the effect of diminished Thiamine and has a number of consequences for the individual and for society (see Fig.1).

Figure 1: Causes and Effects of Alcohol Related Brain Damage



Despite a significant amount of guidance indicating the need for specialised services to meet the specific and complex needs of this population, there continues to be a risk of people who are falling through the cracks as services seek to work with individual elements of treatment rather than taking a holistic view of the person (Mental Welfare Commission for Scotland, 2010). Penumbra Milestone was set up as a unique collaboration between Penumbra, City of Edinburgh Council and NHS Lothian to address the gap in services, reduce delayed discharge from acute hospitals and give this population a better chance at recovery.

## Methods and Materials

Participants are past and present residents at Penumbra Milestone, a 10-bed residential unit in Edinburgh. All residents have a primary diagnosis of ARBD and have agreed to participate in the 12-week programme (see Fig 2.) delivered by the multi-disciplinary team (see Table 1) which is designed to address the complex presentation of each individual. Outcomes are measured using cognitive assessment (ACE III), individual recovery (I-ROC), use of acute hospital services (A&E attendance and in-patient admissions) and estimated cost savings to the NHS.

Table 1: Multi-Disciplinary Team at Penumbra Milestone

Penumbra	NHS Lothian	City of Edinburgh	Additional Services
Management	Clinical Lead	Social Worker	GP support
Admin Support	Psychiatry		Pharmacy support
Registered Nurses	Psychology		
Recovery Practitioners	Occupational Therapy		
Recovery Workers	Physiotherapy		
Community Support			
Peer Workers			

Figure 2: Summary of main elements of recovery and rehabilitation programme



## Results

Significant improvements are seen in cognition (Fig.3), individual recovery (Fig.4), A&E attendance (Fig.5) and in-patient admissions (Fig.6). There is also an estimated saving to the NHS of over £1million per year.

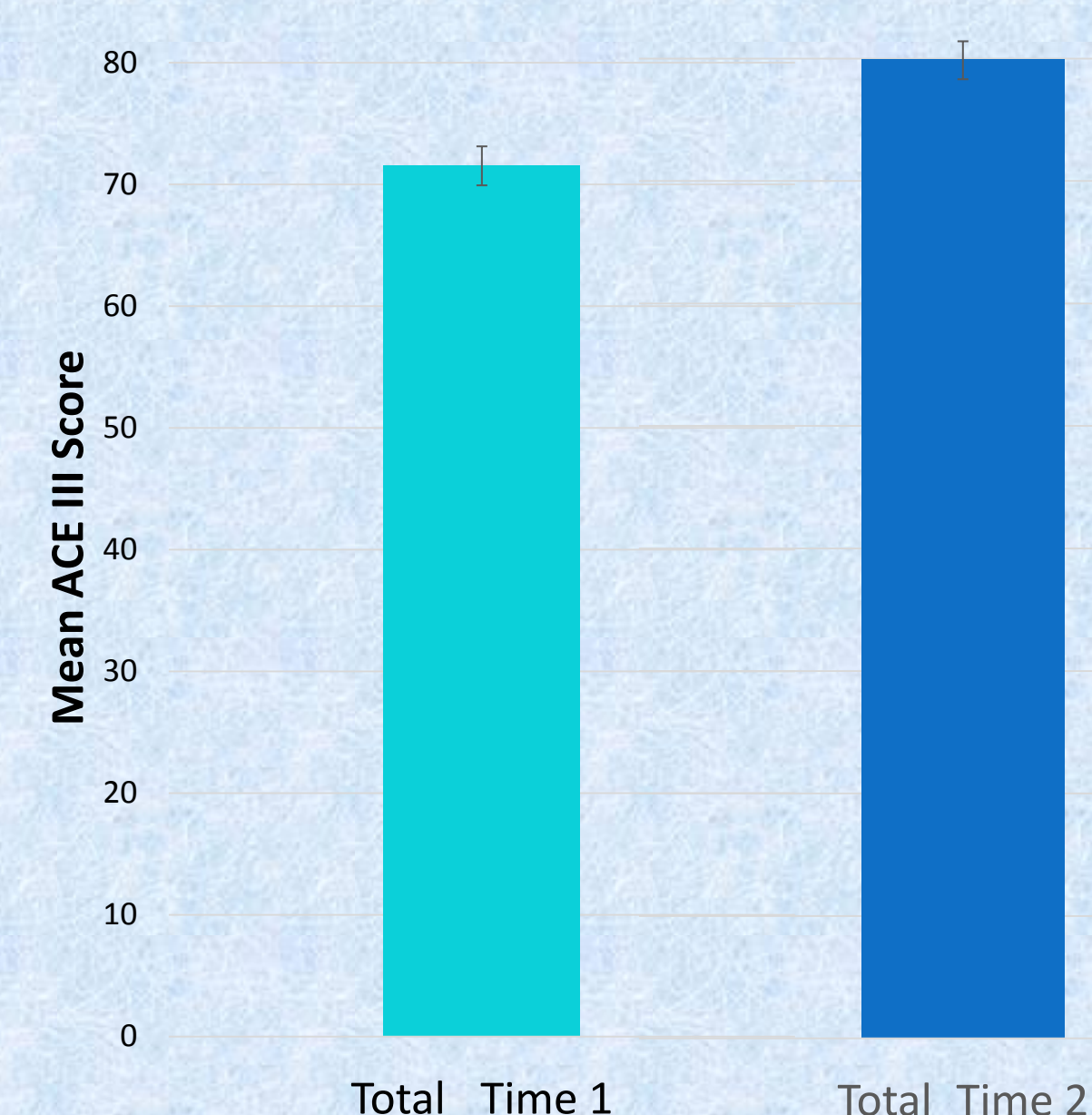


Figure 3: ACE III scores at beginning (Time 1) and end (Time 2) of treatment. Significant increase in score: Mean change = 8.40 (11.7% increase from baseline)  $t=7.496$ ,  $p<0.001$

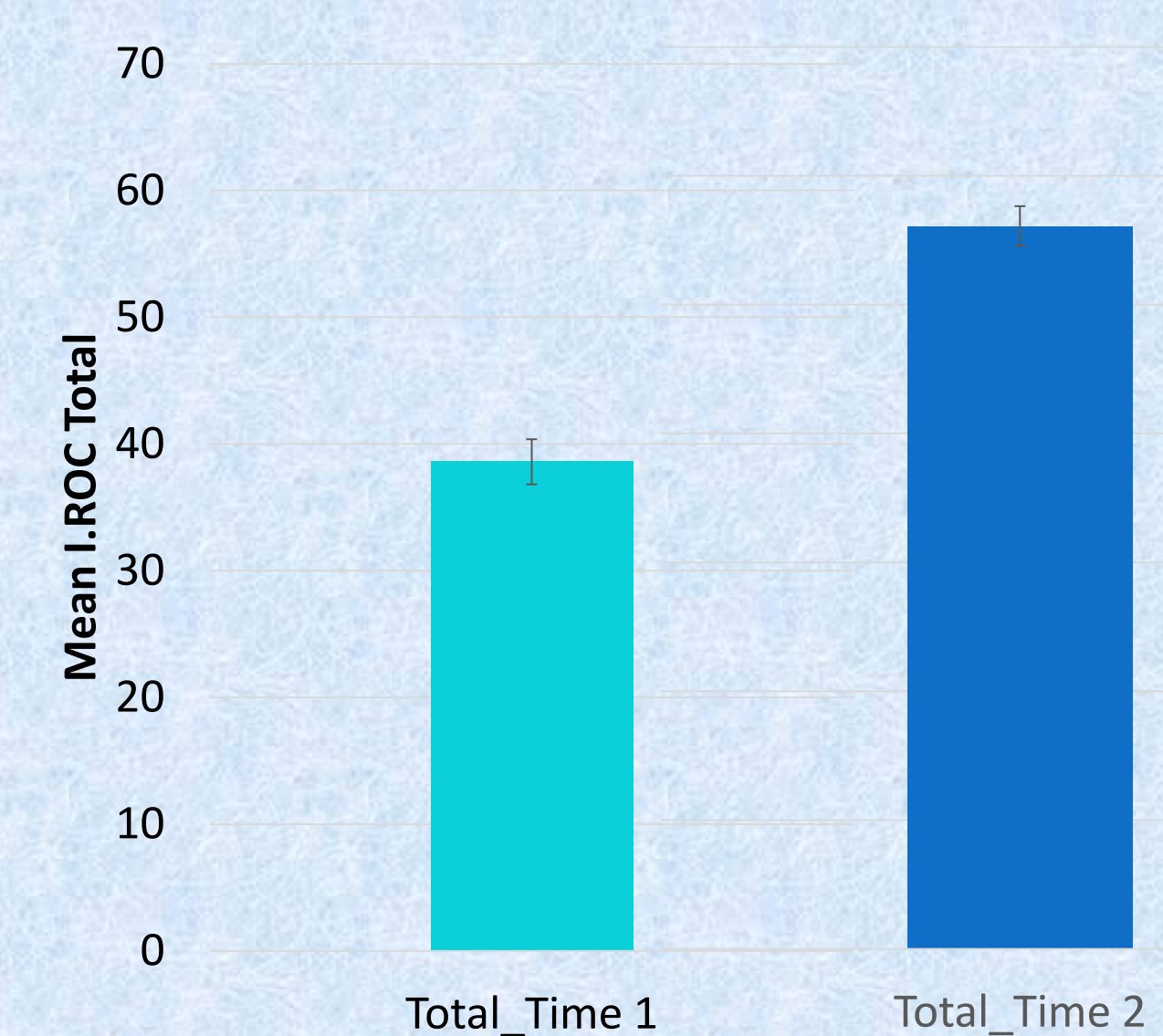


Figure 4: I-ROC scores at beginning (Time 1) and end (Time 2) of treatment. Significant increase in score: Mean change = 17.513 (45.4% increase from baseline)  $t=8.486$ ,  $p<0.001$ .

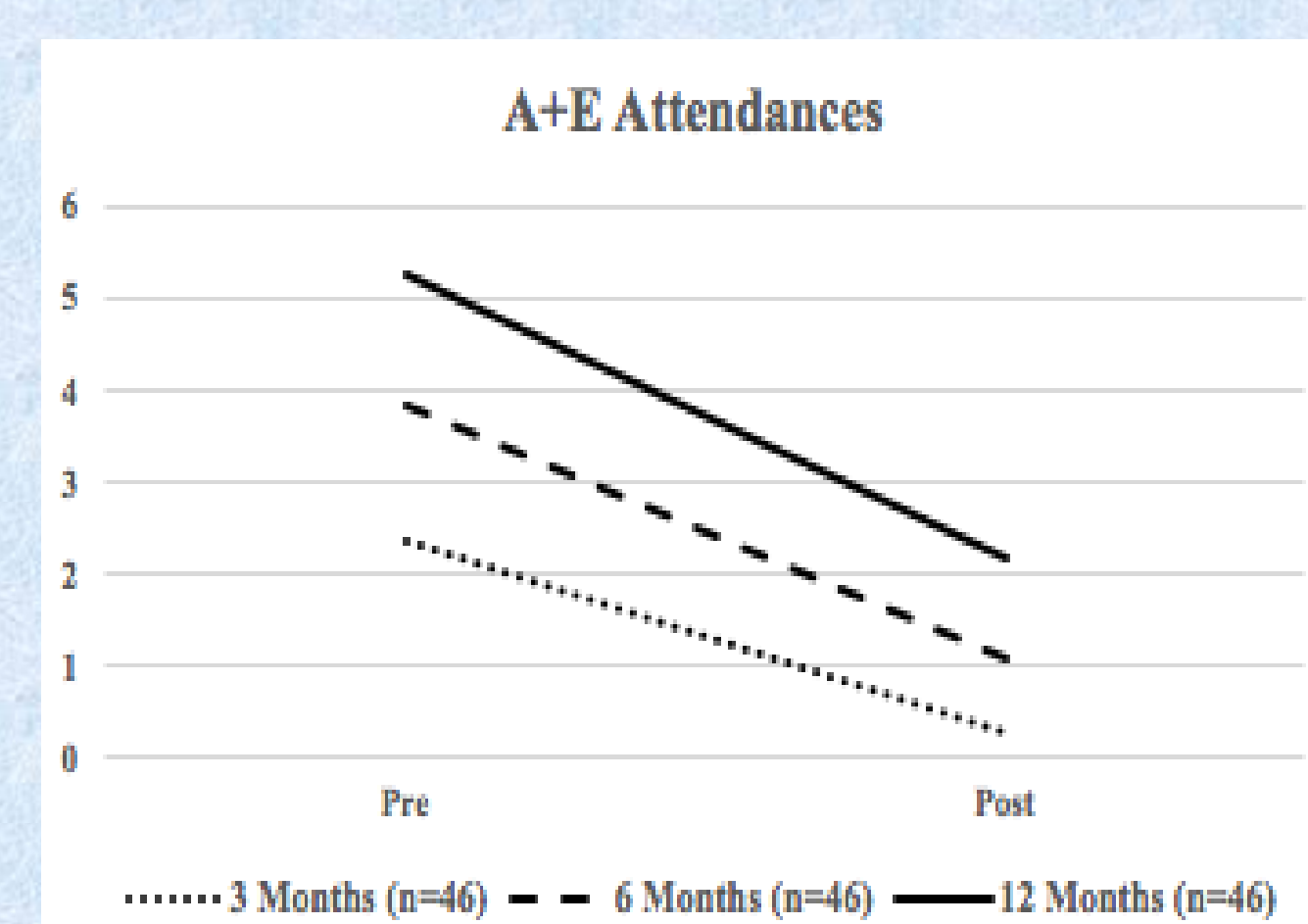


Figure 5: Line Graphs showing (A+E attendance decreasing when comparing pre and post frequencies at 3, 6 and 12 months. (all p values significant at  $p<.01$ )

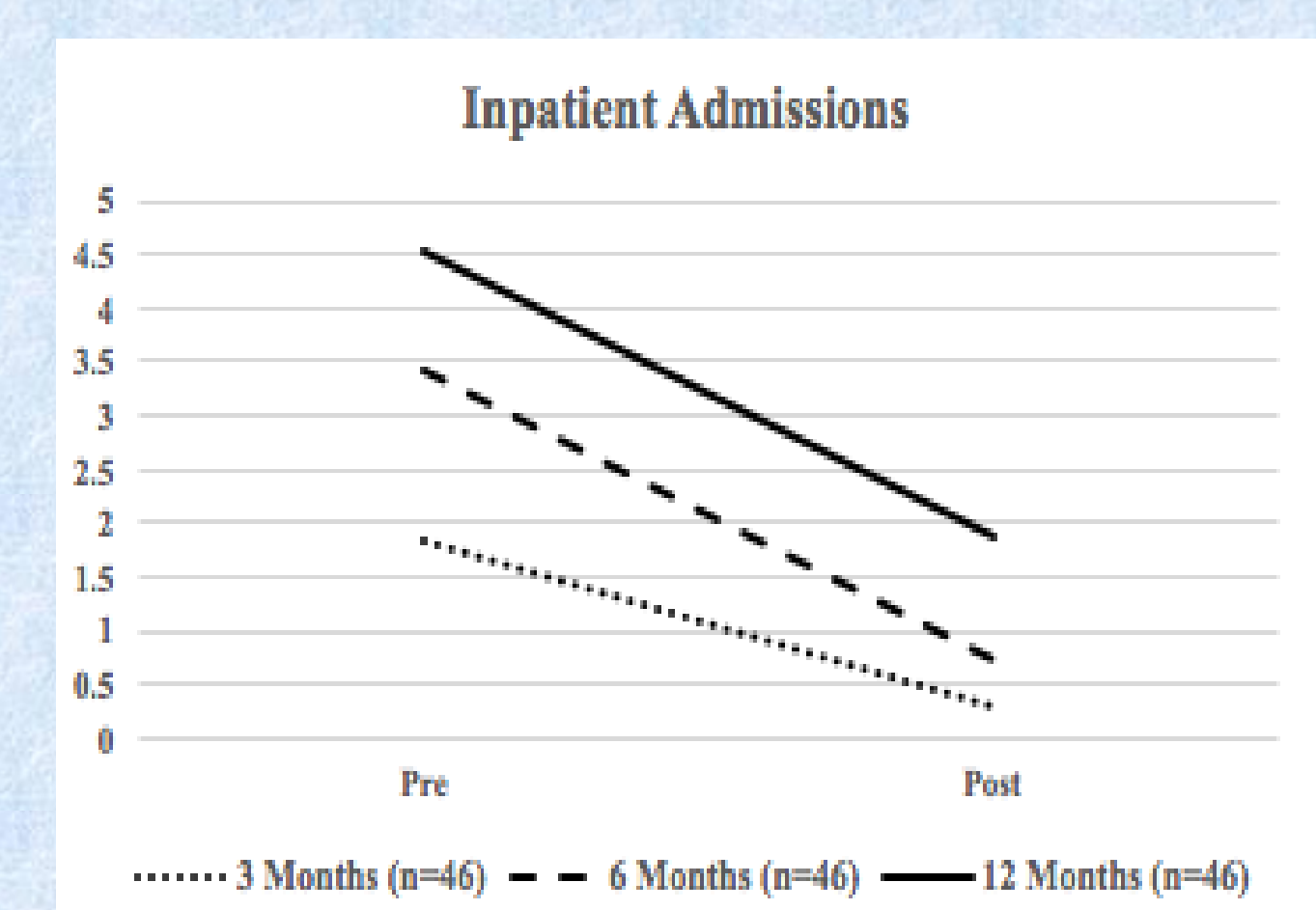


Figure 5: Line Graphs showing in-patient admissions decreasing when comparing pre and post frequencies at 3, 6 and 12 months. (all p values significant at  $p<.01$ )

## Conclusions

This integrated model of service provision provides clear benefits to patients and to the NHS, and should be considered by commissioners when addressing the needs of people with ARBD.

## Contact

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## References

- Wilson, K (2014) Alcohol and Brain Damage in adults with reference to high risk groups Royal College of Psychiatrists Report NO CR185
- Mental Welfare Commission for Scotland (2010) Missed opportunities: Findings from our visits to people with Acquired Brain Injury and Alcohol Related Brain Damage, Mental Welfare Commission for Scotland, Edinburgh