Pumbra Milestone

Penumbra Milestone is an alcohol-free 10 bedded step-down service providing short-term care for vulnerable men and women aged 18+ with a probable diagnosis of alcohol related brain damage (ARBD). Milestone is a partnership of Penumbra, NHS Lothian and City of Edinburgh Council (Health & Social Care). Penumbra staff consist of Nurses and Support Workers in addition to part-time NHS in-reach staff including Psychiatrists, Psychologists, an Occupational Therapist and Physiotherapist, Physician and a full-time Social Worker from City of Edinburgh Council who all work as an integrated team, collaborating to facilitate residents' recovery.

This joined-up approach is a strong example of health and social care resources being used efficiently and improves the care provided to people by drawing on the valuable range of skills in the Third Sector, NHS and Council Services. Our residents are people who no longer require medical intervention but due to their cognitive impairment sustained though alcohol abuse, are not ready to go home. Prior to the opening of this service in August 2014, Lothians residents with ARBD were often stuck in an acute hospital setting unable to go home without support. Milestone provides a rehabilitative service for up to 12 weeks. Extended stays are sometimes necessary depending on the progress of each individual. Capacity is assessed throughout their stay and emphasis is put on individual re-enablement to improved and sustained functioning in the community.

In order to further improve resident's outcomes in the longer-term, the model has adapted to provide post-discharge support to aid in the transition back to the community. As the pilot developed it was evident that resident's vulnerability was heightened in these first few weeks once back in the community. Penumbra and Rowan Alba offer additional support at home after discharge and this new element of the programme allows people time to increase their confidence and embed their new lifestyle.

This innovative, integrated residential service for people with ARBD provides person-centred, cost-effective treatment which delivers significant savings to the NHS and substantial benefits for the residents.

Going above and beyond the expectations

There is a general consensus that most of the time a person with ARBD spends in hospital is of limited benefit to the person and is not conducive to supporting their ability to recover from this type of brain damage. A more detailed analysis in the Royal Infirmary of Edinburgh prior to the unit opening confirmed an average length of stay (LOS) of 83 days. However, the average medical acute phase of inpatient stay for the same group was just 11 days, therefore this resulted in every ARBD person potentially occupying an acute bed for an additional 72 beyond the 'medical acute stage' of the persons journey.

The Penumbra Milestone ARBD service provides a package of person-centered interventions in a residential environment that supports people with ARBD to

improve their cognition whilst working with community based statutory and third sector organisations as well as families or carers to create an appropriate package of care for further recovery in the community.

The principle objective of the ARBD step-down service is to reduce the time that people with ARBD spend in Lothian's acute hospitals. It also aims to improve outcomes for people with ARBD, their families and their communities. The team responsible for the ARBD unit have developed a unique and innovative new service that is releasing significant unscheduled care bed days in acute hospitals and is improving outcomes for patients, families and communities. Residents benefit from a holistic and intensive re-enablement service in order that they are able to return home, better able to manage their health, their addiction and their ARBD.

The service was developed in response to the requirement to find a better way for NHS Lothian and its partners to work together to better meet the needs of people with ARBD admitted to acute hospitals. These people were mainly revolving door patients, high users of A&E and acute bed days. The acute site experiences 2 savings. Firstly, one from a shorter length of stay in an acute bed prior to admission to the service and secondly, after discharge from the service, these people have less visits to A&E and much reduced hospital acute bed admissions with far fewer bed days. At least 50% of the discharged residents no longer use acute services for anything other than routine appointments.

The team provide specialist & intensive 1:1 and group re-enablement support for up to 12 weeks. It is a great example of health and social care integrated working to improve patient outcomes. Residents engage in a range of activities and therapy to improve their physical and mental health as well as promote/re-learn social and life skills. They are also supported to engage in community-based support services in the community that they will be discharged to, in order that they can continue to engage in them after discharge. This includes AA, SMART Groups, recovery cafes and so on. Residents are also supported to access other community services that will continue to support their recovery. This includes local sport and leisure facilities.

Innovation

It is known that people experiencing ARBD have a range of complex physical, mental and social needs. They often don't access any service interventions at all, living in severely poor social circumstances unable to plan and act to improve their health and well-being.

Conversely, other people affected by the condition can often place great strains on health and social care services who are ill-equipped to effectively meet their complex needs.

A tragic example of this is found in the Scottish Mental Welfare Commission's "Mr H" Report regarding a gentleman with ARBD. It was found that there was little knowledge of the condition among staff, communication was poor, there

were missed opportunities to effect positive change and the lack of timely intervention was in part due to staff's prejudicial opinions that the gentleman was making a "lifestyle choice". It was also recommended that staff and services should consider using legal instruments (eg Adult Support and Protection Act and Adults with Incapacity Scotland (2000) Act more quickly to safeguard such individuals.

The Service was designed to be a major part of a new way to address the needs of such individuals. At time of writing it is the first and only step-down residential service in the UK for people effected by ARBD. It has been evidenced to make tremendous positive changes in the lives of people referred to the Service.

As well as improving individual's lives, the Service has been successful in creating an innovative approach to relieve the pressures such individuals were placing on acute medical services due to delayed discharges.

The Service is innovative in its purpose and design. It has been successful in creating a Recovery focussed environment which is evidenced as achieving its goal of providing highly specialist assessment and treatment of ARBD and simultaneously reducing delayed discharges.

In answering how the Service does this in a safe manner, it must be remembered that our residents' complexities are wide-ranging and there are numerous inherent high risks that require specialist management. Such risks include managing co-concurrent physical and mental illness e.g. Diabetes,

Peripheral Neuropathy, Alcohol Liver Disease, Anxiety, Depression, Suicidality, PTSD, COPD, Asthma, Heart Disease etc.

A major factor in how these risks are effectively managed is connected to the range of expertise found within the Service. The staff team consists of highly specialist individuals from health and social care. There is a full medical review prior to discharge from hospital, a wide multi-disciplinary team to address the full range of possible requirements, knowledge and ability to access services to assist. The service has information sharing protocols in place to allow the sharing of information according to GDPR. The culture and values of the service being non-hierarchal allows the partners to keep the resident at the centre and all support each other ensuring best practice. The service is regulated by the Care Inspectorate and all elements of the service (Care and Support; environment; staffing and leadership) have received a score of 5 (Very good) and all staff are registered with appropriate regulatory bodies such as the Nursing and Midwifery Council and Scottish Social Services Council.

Sustained impact

The evidence year on year since 2014 has shown Penumbra Milestone to be highly successful.

While the effects on the individual are significant and chronic, there is also a financial cost on health and social services to provide care for people with ARBD. It is, of course, difficult to put precise figures on the financial cost,

though NHS Lothian Health Intelligence Unit estimated that the cost of accommodating people with ARBD in hospital beds is approximately £2million per annum for a population of c800,000. This cost is in part inflated by the difficulty in locating suitable housing and care packages to allow people to return to their homes and communities, causing blockages in bed flow. In addition, frequent attendance at A&E is common in those with chronic alcohol problems due to poor general health as well as injury due to falls.

Prior to admission to the ARBD unit, each resident spent an average of 54 days as an inpatient in acute wards, despite being medically fit for discharge on average on day 11. Each patient had an average of 4.39 admissions to inpatient wards and 5.13 presentations to A&E per year. In the first year of opening, those transferred to the ARBD unit from acute hospital wards spent an average of 27 days as an inpatient, a decrease of 27 days, which thereby released those beds for other patients. Each resident stays an average of 100 days at the ARBD unit (note that this average is significantly raised due to a very small number of residents for whom the guardianship process meant they could not be moved to more suitable accommodation). Based on the first 46 patients who are now over 12 months post-discharge, the average number of days spent in acute wards decreased from 54 to 16 days, with 63% having no return to an acute ward at all. In addition, 44% did not return to A&E in the 12 months post-discharge from Milestone, and a further 31% had fewer than 3 visits to A&E. Taking into account the reduction in inpatient stay prior to admission to the ARBD unit, the reduction in total inpatient days spent in

acute wards post discharge from the ARBD unit, and the reduction in average visits to A&E departments post discharge, the estimated saving to NHS Lothian is approximately £1M per year, based on an average of 48 people per year using the ARBD unit. This figure considers the cost of funding the ARBD unit.

The initial drivers may have been financial but the impact on personal recovery for this population is quite remarkable. The concept of personal recovery relates to one's ability to live a full and satisfying life as personally defined, whether mental health problems persist or not (Anthony, 1993). I.ROC was designed by Penumbra to measure the recovery journey of people using their services. The 12-item questionnaire is used to stimulate a conversation about how things have been over the last period, and to identify priorities for the future. Each item is scored on a 1-6 frequency scale, with a total score range of 12 – 72. Descriptive statistics for each I.ROC item and total scores are shown in table below.

		First	Final	Difference	% Change
I.ROC Indicator Average Score	**Mental Health**	3.31	4.33	1.02	30.8%
Life Skills	4.02	4.96	0.94	23.3%	
Safety & Comfort	4.17	5.33	1.17	28.0%	
Physical Health	2.94	4.38	1.44	48.9%	
Exercise & Activity	2.63	4.54	1.92	73.0%	
Purpose & Direction	2.73	4	1.27	46.6%	
Personal Network	4.38	5.08	0.71	16.2%	
Social Network	2	4.29	2.29	114.6%	
Valuing Myself	3.08	4.48	1.40	45.3%	
Participation & Control	3.79	4.42	0.63	16.5%	
Self Management	3.13	4.44	1.31	42.0%	
Hope For The Future	3.1	4.31	1.21	38.9%	
Total	39.77	54.56	14.79	27.1%	

As can be seen, all aspects of personal recovery measured by I.ROC improve significantly, with particular improvements on Social Network, Exercise and Activity, Physical Health, Purpose and Direction, Valuing Myself and Self-Management. This corresponds well to the ethos of the unit and the recovery and rehabilitation programme employed there.

The service has enabled research to be carried out in respect of cognitive functioning in people with ARBD. A team lead by the NHS clinical

psychologist have submitted this research for publishing. In order to track cognitive change, all residents at the service are tested using one of the three versions of the ACE III every 4 weeks. Varying the ACE III version minimises practice effects. All staff are trained in the use of the ACE III, and regular audits are conducted to ensure inter-rater reliability and consistency remains high. The mean change in ACE III score total as well as by domain between the first and the final test for the 84 residents who stayed at the unit for over 28 days (average 76 days) are presented below:

ACE III	Attention (/18)	Memory (/26)	Fluency (/14)	Language (/26)	Visuo-spatial (/16)	Total (100)
First	13.9	15.5	7.1	22.8	13	72.6
Final	15.7	17.5	9.3	24	14.1	80.6
% Change	+ 13	+ 13	+31	+5.3	+8.5	+11
t-test	6.11	5.03	8.52	5.53	4.86	8.97
p	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

All domain scores as well as the total score have increased. The biggest change is in the Fluency domain, though a dependent means *t*-test reveals significant changes in all domain scores and in the Total score. While a calculation of Reliable Change suggests that for the Total score a change of 11.25 is significant, these results clearly indicate an improvement in cognitive functioning over a relatively short period of time.

FAB scores also significantly improve for patients ($t(43)= -2.91$ $p<.01$, effect size $d= .499$). FAB scores increased by an average of 10.8% (1.5 points).