

Evaluation of a new service model

Forres Neighbourhood Care Team,
Health & Social Care Moray

The Evidence and Evaluation for
Improvement team (EEvIT)

April 2019

© Healthcare Improvement Scotland 2019

Published April 2019

This document is licensed under the Creative Commons Attribution-Noncommercial-NoDerivatives 4.0 International Licence. This allows for the copy and redistribution of this document as long as Healthcare Improvement Scotland is fully acknowledged and given credit. The material must not be remixed, transformed or built upon in any way. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/>

www.healthcareimprovementscotland.org

Contents

Introduction.....	2
Context	2
The new nursing model: Forres Neighbourhood Care Team.....	2
The Evidence and Evaluation for Improvement Team support with the evaluation.....	4
Findings.....	4
In summary.....	7
How were the evaluation findings used?.....	8
Appendix 1: Hospital admission cost analysis report submitted to HSC Moray	9

Introduction

Healthcare Improvement Scotland's Improvement Hub (ihub) supports health and social care organisations to redesign and continuously improve services.

Health and Social Care (HSC) Moray and Hanover Housing approached the ihub Evidence and Evaluation for Improvement Team (EEvIT) to ask for support with the evaluation of a new nursing model being piloted in Forres. The purpose of this short report is to describe the new model, the support offered by EEvIT and key findings.

HSC Moray used the findings from the EEvIT evaluation to inform their decision-making on the sustainability of this new nursing model.

Context

HSC Moray commissioned Hanover Housing to provide affordable accommodation at their Varis Court location that met the demand for sheltered and extra-care housing for older people with complex care needs in the Forres area.

The ageing population, and lack of flow of patients from the local community hospital which later closed, encouraged HSC Moray to test an alternative model of community care in Forres.

The new nursing model: Forres Neighbourhood Care Team

HSC Moray decided to lease five two-bedroom apartments from Varis Court on a trial basis for the delivery of inpatient care based on a reablement approach. This approach was used to support recovery and to reduce the risk of institutionalisation of people cared for in the apartments. The added benefit of using the apartments in Varis Court was that the complex itself offers a positive environment for recovery and includes a cinema room, sensory room, outdoor courtyards and breakout space. The apartments can also accommodate family and pets if required. The location of the complex near the town centre also promotes social inclusion.

The Forres Neighbourhood Care Team (FNCT) is a 24-hour, 7 days a week nursing team based on Buurzorg principles and was recruited to support care in the apartments (referred to as the augmented care unit or ACU). See Figure 1 for an overview.

The team also assisted other Varis Court residents. They provided community nursing and medical care for people with acute and chronic conditions (including end of life) living in the Forres area and were able to admit patients to the ACU for support and respite care as required.

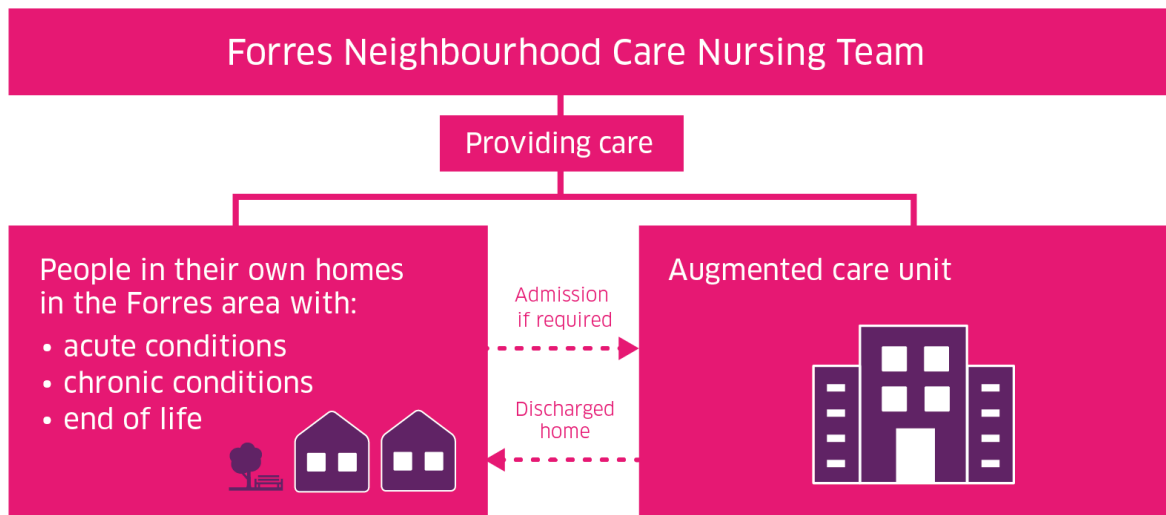


Figure 1: The Forres Neighbourhood Care Team nursing model

The model was thought to be advantageous for patients, carers and staff (see Figure 2). Furthermore, advantages also apply to healthcare providers through the prevention of hospital admission and promotion of early discharge.

Better service user and carer experience	Better experience for staff	Benefits to health and care system
<ul style="list-style-type: none"> • Acute care provided at home or in a homely environment • Focus on rehabilitation and reablement • Continuity of care and direct access to service • Availability of enhanced care in a homely environment with loved ones if required 	<ul style="list-style-type: none"> • Self managed teams • No hierarchy • Continuity of care 	<ul style="list-style-type: none"> • Prevention of hospitalisation • Early discharge

Figure 2: The benefits of the Forres Neighbourhood Care Team nursing model

The Evidence and Evaluation for Improvement Team support with the evaluation

HSC Moray was already collecting data on patient and staff experience as part of the evaluation of the FNCT. However, the partnership required support with developing the evaluation questions relating to health service resource utilisation.

Over a series of meetings, EEvIT worked with the team in Moray to develop the following four evaluation questions that can be answered within the required time frame using routinely collected data.

Since the introduction of the Forres Neighbourhood Care Team...

1. Were there any changes in hospital emergency admissions of patients over the age of 65 in the Forres area?
2. Were there any changes in hospital emergency 28-day readmissions of patients over the age of 65 in the Forres?
3. Were there any changes in length of stay of emergency admissions of patients over the age of 65 in the Forres area?
4. Does the new service model result in reduced hospital admission costs for people cared for by the team?

Data analysis was provided by EEvIT.

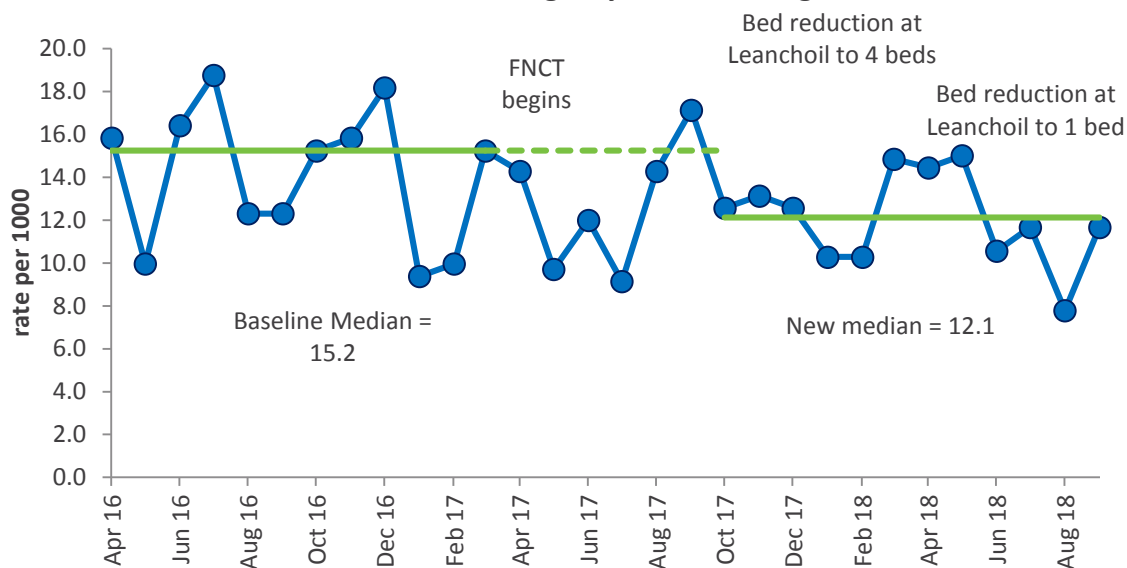
Findings

1. Changes in emergency admissions, 28-day readmissions and length of stay

The Forres area is served primarily by two GP practices. In order to answer questions 1–3, data on rates of emergency admissions, emergency readmissions and average length of stay of emergency admissions for patients from those two practices were plotted on run charts.

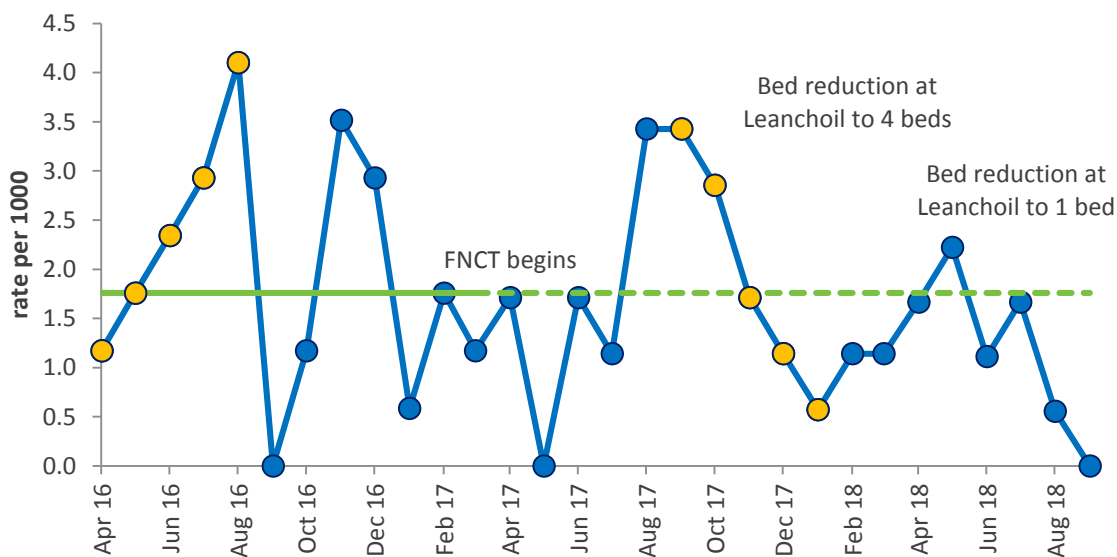
After the introduction of the new model, the data illustrated that for practice 1 there was a sustained downwards shift in the rate of emergency hospital admissions for patients over 65 years old. The baseline median reduced from 15.2 emergency admissions per 1,000 population to 12.1, a fall of 20% (see Chart 1). However, this change was not observed for patients over 65 years old in practice 2.

Chart 1: Practice 1 - emergency admissions age 65+

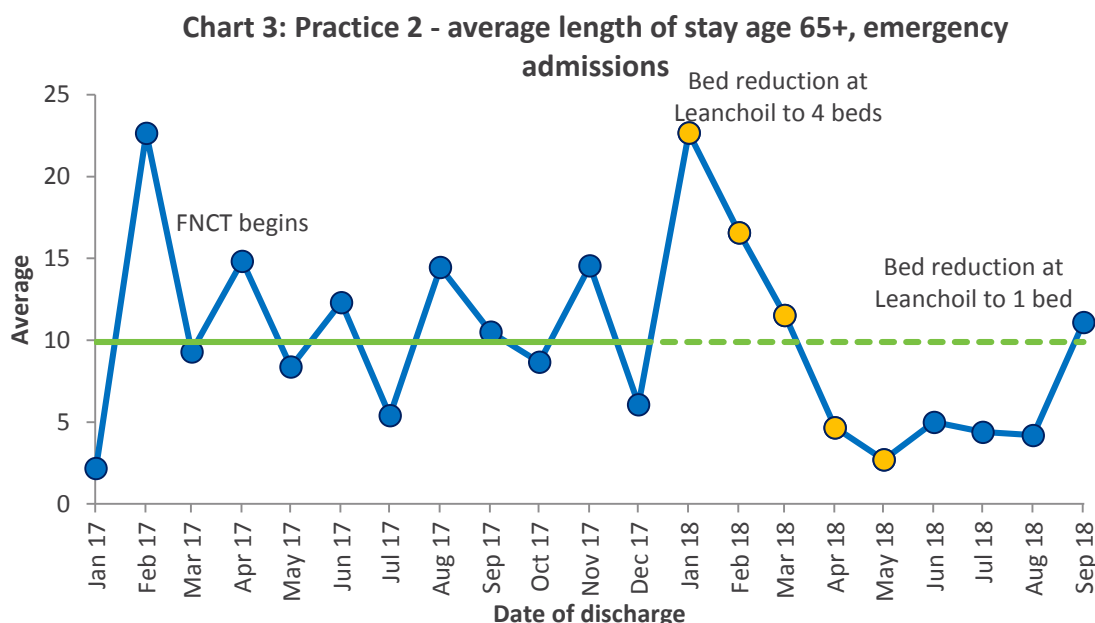


Following the introduction of the new model in practice 1, there was also an increasing trend within the baseline period and a downward trend in the practice’s 28-day emergency readmission rate. However, overall there was no reduction in the median following the introduction of the new model suggesting that the change was not significant (see Chart 2). It is worth noting that the model has continued to evolve since its introduction in April 2017 and therefore a longer follow-up period would have been beneficial.

Chart 2: Practice 1 - 28-day Emergency readmissions age 65+



The length of stay data for emergency admission did not show any changes for practice 1; for practice 2, the data showed a downward trend in length of stay (see Chart 3)¹.



In summary, the data above suggest that, although we cannot conclude a causal relationship between the introduction of the new model of care and any changes in emergency admissions, 28-day readmission and average length of stay for emergency admissions for people aged over 65 in Forres, the data seem to indicate that the new model of care may begin to have an impact on emergency hospital admission rates.

Further data collection over a longer period of time is required in order to determine whether these signs translate into sustainable improvement. In addition, the data presented in charts 1–3 allow the Forres team to reflect how wider changes within the health and care system may have influenced these outcomes.

2. Hospital admission costs

In order to ascertain whether the new service model resulted in reduced hospital admission costs of people cared for by the FNCT, hospital admission data were analysed for 28 patients cared for by the team. These patients were selected as they were admitted to hospital between March 2016 and July 2018 (in other words either before they were cared for by the team and or/and after). Patients who did not have a hospital admission during this period were excluded from the analysis.

¹ Ideally we would have liked to have a longer follow-up period and to report length of stay data for the whole 65+ population. Unfortunately, this information was not available within the timescale.

The key results are presented in Table 1 below (Appendix 1 describes the detailed methodology undertaken to determine costs as well as limitations).

Table 1: Number of admissions, average length of stay, and cost of admissions

Analysis	Before FNCT (March 2016 to March 2017)	After FNCT (April 2017 to July 2018)	Difference
Number of admissions	42	9	33
Average length of stay (days)	19	7	12
Cost of admissions*	£69,028	£5,347	£63,681

* The above is a conservative estimate and does not include associated costs with overheads (such as building costs).

Due to the data collection issues², it is not possible to definitively conclude the FNCT has reduced admissions (and cost) from 42 admissions (£69,028) to 9 admissions (£5,327) nor conclude length of stay has become shorter³. However it does appear that for the 28 patients included in the opportunistic sample, the cost of admissions was reduced. Therefore, there is scope for resource/cost avoidance particularly if this effect is maintained – if the FNCT is able to continue and prevent hospital admissions of these patients over time.

From the limited data available, there is also a suggestion that the length of stay has decreased for these patients when considering length of stay after the introduction of the FNCT.

In summary

Findings from EEvIT evaluation suggest that there are signs that the FNCT may begin to impact of hospital emergency admissions in the Forres area. For those people cared for by the FNCT there is some evidence of reduced costs associated with hospital admissions (reduction in number of admission and length of stay).

² The hospital length of stay data for emergency admissions only represents a subset of patients: those whose admissions were potentially preventable by the FNCT, and only includes admissions to Dr Gray’s Hospital and Aberdeen Royal Infirmary. The data was only available for a short time period, allowing less opportunity to assess changes.

³ These data and analyses are subject to a number of important limitations, including (but not limited to): unequal data collection length pre and post entry into the FNCT; data were collected from a sample of patients seen by the FNCT rather than all FNCT patients; the sample and data analysis was opportunistic and not part of a pre-defined analysis plan; and crucially, establishing causality with a before and after study design is difficult.

How were the evaluation findings used?

EEvIT submitted an evaluation report to Moray Integration Joint Board (IJB). Moray IJB considered the findings and agreed to continue funding the new model for an additional year.

HSC Moray is considering a second phase evaluation of an extended multidisciplinary team (MDT) model. There were challenges around bringing together social care cost and health economic analysis, and it is hoped that a second stage evaluation will include an analysis of social care costs. EEvIT is continuing to support HSC Moray with the development of an approach for the second phase evaluation.

Appendix 1: Hospital admission cost analysis report submitted to HSC Moray

Introduction

The FNCT provides inpatient and community nursing and medical care for acute and chronic conditions, including end of life care and respite, in the Forres area. In terms of staffing, the FNCT is primarily made up of nursing staff who provide a 24-hour, 7 days a week service.

The FNCT aims to impact on patient care and experience through a number of channels including reducing hospital admissions, associated length of stay and therefore cost of admissions.

The purpose of this document is to explore any trends or patterns in the available data related to number of admissions, cost, and length of stay, before and after the introduction of the FNCT in the Forres area.

Patient population and data set

Patient records were available for a sample of 28 patients who were cared for by the FNCT between January 2018 and April 2018. The patient records included community health index (CHI) numbers which made it possible to obtain admission data (such as number of admissions and length of stay) for each patient, for the following time period: March 2016 to July 2018. The FNCT patient records also provided the date the patient was referred to FNCT, as well as the date the patient was discharged from the FNCT. The patient-specific referral date was used to separate the March 2016 to July 2018 admission data into “before” and “after” entry into the FNCT.

It should be noted additional patient records were available for patients who entered into the FNCT between January 2018 and April 2018; however these patients were not included in the hospital admission analysis as they did not have a hospital admission in the March 2016 to July 2018 time period. In addition, the FNCT programme started receiving and discharging patients from around April 2017 and is currently still active. Therefore, the patients included in the data set are very much a selected sample; for example they represent a selection of patients seen by the FNCT between January 2018 and April 2018 who had a hospital admission between March 2016 to July 2018 and therefore patterns in this group may not be representative of the broader group treated by FNCT.

Methods

To determine the number of admissions in the sample of patients noted above, simple counts were undertaken of all admissions in the data set classified as “before FNCT”, and “after FNCT”. Similarly, average length of stay was calculated by determining the mean length of hospital admissions for those classified as “before FNCT” and “after FNCT”.

The cost of admissions was assessed by multiplying the length of a particular admission by the appropriate cost-per-bed day. Using the same classification system as above, it was then possible to sum the cost of admission for all admissions categorised as “before FNCT”, and “after FNCT”.

In terms of the bed day costs, costs were taken from the ISD Scotland⁴ cost book reflecting 2016/17 prices and were specific to each hospital included in the data set (Dr Gray’s Hospital, Fleming Cottage Hospital, Stephen Cottage Hospital, and Leancoil Hospital). A general medicine inpatient cost was applied to the Dr Gray’s admissions, however general medicine costs for the other hospitals were not available and therefore an all specialty cost relevant for each hospital was used instead. Emergency admissions to Dr Gray’s were costed on a cost-per-case basis as opposed to a cost-per-bed day due to the short length of stay associated with an emergency admission.

All costs were based on direct costs which included items such as medical and dental, nursing, pharmacy, Allied Health Professional (AHP), other direct care, and laboratory costs. Therefore, costs associated with overheads (such as building costs) were omitted in order to generate more conservative cost estimates which may be seen as more representative of the economic value of changes in resource use where it is unlikely that, for example, an entire ward or facility could be closed as a result of an intervention.

Some admissions included in the data set recorded a length of stay of 0; however the analysis assumed a length of stay of one day in these instances under the assumption that some healthcare resource would be associated with the admission. In addition there were only four cases of this issue arising in the data set with three of these admissions being classified as emergency admissions.

⁴ ISD Scotland National Statistics (2017) “Costs_RO40_2017” <http://www.isdscotland.org/Health-Topics/Finance/Costs/Detailed-Tables/Speciality-Costs/Acute-Medical.asp>

Results

The key results are presented in Table 1 below.

Table 1: Number, length of stay and cost of admissions

Analysis	Before FNCT	After FNCT	Difference
Number of admissions	42	9	33
Average length of stay (days)	19	7	12
Cost of admissions	£69,028	£5,347	£63,681

Limitations

- The admission, length of stay and therefore cost data were based on a sample of patients who were discharged by the FNCT over a limited time period (January 2018 and April 2018). Therefore, the analysis did not include all patients who would have entered the FNCT since the programme started around April 2017.
- The data sample and subsequent analysis is opportunistic as it was based on data available, and not a pre-defined analysis plan.
- Any interpretation of the data is limited by the small sample size of 28 patients.
- The data set included limited data for the after FNCT period. At most there was 7 months of data from January 2018 to July 2018.
- Some patients who were referred to FNCT in April 2018 will only have a few months of admission data until July 2018.
- Therefore, the data set is significantly “skewed” against the before FNCT time period, due to the long data collection period (from March 2016 until January-April 2018 depending on when the patient was admitted to the FNCT), and relatively short after FNCT time period.
- The before and after FNCT time periods are not directly comparable due to the different data collection length.
- The analysis assumes patients who were seen by the FNCT between January 2018 and April 2018 were not cared for by the FNCT programme before this time period. Data were not available to confirm whether this assumption was accurate.
- Attributing the effect of any change in admissions, length of stay or cost to the FNCT is difficult due to the before and after study design. Patients may receive additional or new services/treatments outside the FNCT, within the “after FNCT” time period which may affect the results.
- The analysis may be considered a “snapshot” of admissions, length of stay and cost, as opposed to a comprehensive study from which definitive conclusions can be drawn about the resource use changes brought about by the introduction of the service.

- The analysis has only considered the possible resource changes arising from the introduction of this model of care and has not considered the cost to the NHS of providing the FNCT. As such, this is a limited type of economic analysis.
- By focusing only on the patterns of admission as a possible benefit of FNCT, this analysis does not address other important aspects of service introduction such as quality of care or patient preference and satisfaction.

Discussion

Despite the limitations expressed above, the analysis does highlight a material resource burden associated with the sample of patients who were seen by the FNCT (42 admissions at a cost of £69,028 before entry into the FNCT). For the same group of patients, the number and cost of admissions is now down to 9 admissions and £5,347 respectively, for the period up to July 2018. Therefore, it appears there may be scope for significant resource/cost avoidance if the FNCT is able to limit the number of admissions these patients have over the coming months.

Further to this, the costs above are based on a sample of patients and not the “full FNCT” cohort, therefore costs associated with patients before entry into the FNCT could be significantly larger if analysing data for all FNCT patients. This again supports a potential for cost avoidance if the FNCT can reduce admission or length of stay consistently across patients who enter the programme.

In terms of length of stay, the data do support a decrease in the average time spent in hospital for patients who were previously seen by the FNCT. However, it should be noted the length of stay data for the “after FNCT” period is based on only 9 admissions. In addition, it may be difficult to attribute the shortened length of stay directly to the FNCT (that is the service is facilitating earlier hospital discharge) as some of these patients may have been described as discharged from the FNCT by the time of their post FNCT admission.

Anecdotally, the data suggested a spike in admissions in the few months prior to entry in the FNCT, with the number of admissions reducing in the period following referral to the FNCT programme. However, further data collection and analysis is required to establish this trend.

Conclusion

The analysis presented is a “snap shot” looking at the number of admissions, length of stay, and cost of admissions for a sample of patients seen by the FNCT between January 2018 and April 2018. The analysis has a number of important limitations but, prior to entry into the FNCT, the estimated cost of admissions was £69,028 (42 admissions) and in the few months after entry into FNCT the cost was down to £5,347 (9 admissions). It appears there may be scope for significant resource/cost avoidance if the FNCT is able to limit the number of admissions these patients have over the coming months.

Acknowledgements

- Cost analysis report prepared by Owen Moseley, Healthcare Improvement Scotland, November 2018.
- Data and support provided by Pauline Maloy (NHS Grampian), Robin Patterson (Health & Social Care Moray) and Sharon Weiner-Ogilvie (Healthcare Improvement Scotland).

Published April 2019

You can read and download this document from our website.
We are happy to consider requests for other languages or formats.
Please contact our Equality and Diversity Advisor on 0141 225 6999
or email contactpublicinvolvement.his@nhs.net

Improvement Hub

Healthcare Improvement Scotland

Edinburgh Office

Gyle Square
1 South Gyle Crescent
Edinburgh
EH12 9EB

0131 623 4300

Glasgow Office

Delta House
50 West Nile Street
Glasgow
G1 2NP

0141 225 6999

www.ihub.scot