

THE BURDEN OF VTE IN SCOTLAND

INTRODUCTION

Thrombosis UK, formerly known as Lifeblood, is the UK's only charity dedicated to promoting awareness, research and care of thrombosis. Thrombosis, or venous thromboembolism (VTE), is a condition in which a blood clot forms in a vein. This often occurs in the deep veins of the legs and pelvis, and is known as deep vein thrombosis (DVT). The clot can break off and travel through the circulatory system, eventually blocking an artery in the lung. This is known as pulmonary embolism (PE). One in twenty people will have VTE in their lifetime, and more than half of VTE episodes are associated with prior hospitalisation. Indeed, VTE is one of the leading causes of avoidable deaths in hospital.

Thrombosis UK works in each of the four UK nations to advance professional and patient understanding of thrombosis, and support systematic improvements in the prevention and management of VTE. In 2010, Thrombosis UK produced *The Venous Thromboembolism Challenge in Scotland*, a report into VTE prevention in Scottish Health Boards. This report found major gaps in the audit of VTE risk assessment, provision of VTE prophylaxis, provision of patient information, and education of health staff in Scottish hospitals.

While systematic initiatives have since been undertaken to improve VTE prevention in Scotland, including the Scottish Patient Safety Programme's Sepsis and VTE Collaborative, anecdotal evidence received by Thrombosis UK suggested that more needed to be done. To gain an understanding of the current burden of VTE in Scotland, Thrombosis UK sent Freedom of Information (FOI) requests to all 14 Health Boards, the Information Services Division (ISD), and the National Records of Scotland to ascertain the incidence and impact of VTE in Scotland, and measures undertaken to prevent hospital associated thrombosis (HAT). The results are as follows.

National Overview

Episodes of VTE

Data received from the ISD indicated that episodes of VTE per year in NHS Scotland have **increased by nearly 4,000** (3,879) between 2009/10 and 2013/14.¹

Financial Year	Episodes
2009/10	10,322
2010/11	11,509
2011/12	11,955
2012/13	12,395
2013/14	14,201

Cost of VTE

The ISD estimated the cost of VTE using the developmental patient level costing methodology (PLICS). This methodology apportions hospital site and specialty specific direct costs to individual patient records on admission, per day, for theatre time and for specific high cost items. The estimated median cost per episode of VTE is as follows²:

Financial Year	Cost episode per
2010/11	£1,242
2011/12	£1,327
2012/13	£1,301
2013/14	£1,104

Based on the data provided on median costs and episodes per year, VTE cost NHS Scotland approximately **£15,677,904** in 2013/14. Furthermore, VTE cost a total of **£61,962,262** to NHS Scotland between 2010 and 2014.

Deaths from VTE

The National Records of Scotland provided estimates for the number of deaths where VTE was the underlying cause and where it was a contributing factor. The true numbers may be much higher, as it is believed that VTE is substantially underdiagnosed.³

Cause of death	2009/10	2010/11	2011/12	2012/13	2013/14
Underlying cause of death	329	363	350	304	327
Contributing cause of death	748	856	876	845	902

VTE was the underlying cause of **1,673 deaths** in Scotland between 2009/10 and 2013/14.

Health Board Level Overview

The FOI survey of Health Boards provided minimal data, as many Health Boards indicated that they did not have the information to provide answers. The key finding was that the majority of Health Boards are either not regularly collecting data on HAT incidence and root causes, and VTE risk assessment or they lack a central register for this data.

Cases of Hospital Associated Thrombosis (HAT) recorded at Health Board Level

Of the Health Boards which were able to provide data on HAT, NHS Tayside had the highest number of episodes, followed by NHS Greater Glasgow and Clyde. Their data for the past five years is provided in the following table^{4,5}:

Health Board	2009-10	2010-11	2011-12	2012-13	2013-14
NHS Greater Glasgow and Clyde	N/A	15	50	58	44
NHS Tayside	725	871	713	649	592

Root Cause Analysis

Root Cause Analysis (RCA) allows hospitals to undertake a structured analysis of the reasons for each case of HAT, giving them the opportunity to feed their learnings back into their quality management frameworks. Learning from past shortcomings and adapting local practice accordingly is a major driver of service improvement. Thrombosis UK's FOI indicated that the majority of Health Boards do not collect data on RCA. However, it should be noted that the NHS Greater Glasgow and Clyde Health Board, which had the second highest rate of HAT, only recorded 1 RCA for 2011-12 and 2012-13 each.⁴ This indicates that a clear opportunity to learn from prior shortcomings was missed.

Risk Assessment

Several Health Boards have begun to carry out VTE risk assessments on pilot wards. The percentage of patients risk assessed for VTE are generally between **60-65%**.^{6,7,8}

VTE Deaths

NHS Greater Glasgow and Clyde and NHS Tayside reported the highest number of cases in which VTE was the primary cause of death, whereas NHS Ayrshire and Arran reported the highest number of cases in which VTE was a secondary cause of death. However, NHS Ayrshire and Arran's estimates are not consistent with the national estimate provided by the National Records of Scotland, and may therefore be unreliable.^{4,5,6}

VTE as primary cause of death

Health Board	2009-10	2010-11	2011-12	2012-13	2013-14
NHS Ayrshire and Arran	22	17	22	22	32
NHS Greater Glasgow and Clyde	85	79	81	64	79
NHS Tayside	26	25	32	22	26

VTE as secondary cause of death

Health Board	2009-10	2010-11	2011-12	2012-13	2013-14
NHS Ayrshire and Arran	3320	3280	3201	3336	3411
NHS Greater Glasgow and Clyde	217	198	217	206	239
NHS Tayside	73	83	76	93	86

Verbal/written warnings and financial sanctions for failure to risk assess or perform RCA

None of the Health Boards indicated that they had received a warning or sanction for failing to risk assess patients for VTE or perform RCA of confirmed cases of HAT. This indicates that measures are not in place to incentive best practice and penalise non-compliance.

Patient information

The majority of Health Boards stated that they ensure that written and verbal information on the risk of VTE is provided to all patients on admission and discharge from hospital. Only two, NHS Fife and NHS Highland, said outright that they do not provide this information.^{9,10}

Conclusions

The results of this research are troubling for several reasons. First, they indicate that the burden of VTE, in terms of episodes, costs and deaths, is getting worse in Scotland despite increased national attention on this area in the past five years. The results also indicate that VTE prevention is not being given a high enough priority at hospital and Health Board level. This finding is further confirmed by the University of Leicester's evaluation of the Scottish Patient Safety Programme's Sepsis and VTE Collaborative, which found a lack of belief that the problem was rooted in failing to assess and take preventative action in non-surgical patients. Furthermore, this research indicates that many Health Boards do not have the necessary information at hand to access the local burden on VTE within their hospitals.

¹ *The number of episodes in NHS Scotland with specified codes for Venous Thromboembolism.* Information Services Division Scotland. Response to April 2015 Freedom of Information Request.

² *Median cost per episode in Scotland for Venous Thromboembolism (VTE) by Financial Year.* Information Services Division Scotland. Response to April 2015 Freedom of Information Request.

³ *Deaths which may have involved thromboembolism.* National Records of Scotland. Response to April 2015 Freedom of Information Request.

⁴ *VTE FoI March 2015.* NHS Greater Glasgow and Clyde. Response to March 2015 Freedom of Information Request.

⁵ *Venous Thromboembolism Prevention.* NHS Tayside. Response to March 2015 Freedom of Information Request.

⁶ *NHS A&A response to FOI VTE prevention.* NHS Ayrshire & Arran. Response to March 2015 Freedom of Information Request.

⁷ *Freedom of Information request 115-15.* NHS Borders. Response to March 2015 Freedom of Information Request.

⁸ *VTE Prevention.* NHS Shetland. Response to March 2015 Freedom of Information Request.

⁹ *Freedom of Information Request 3192 Thromboembolism (VTE).* NHS Fife. Response to March 2015 Freedom of Information Request.

¹⁰ *Freedom of Information Act Request Ref 3526.* NHS Highland. Response to March 2015 Freedom of Information Request.