

# Demonstrating the Costs of Violence to the Healthcare System

## Development of a costing tool

Prepared by Lisa Jones, Reader in Public Health,  
Public Health Institute, Liverpool John Moores University

July 2021 (version 3)

# Acknowledgements

This report and costing tool were developed on behalf of the Lancashire Violence Reduction Network and we are grateful to Lindsay Youansamouth, Susannah Clarke, Justin Srivastava, and Margaret Williams for their assistance with its production.

In particular, we would like to thank Teigan Whiffing (Analyst, Lancashire Violence Reduction Network) and Melanie Greenslade (Principal Research and Intelligence Officer, MADE) for sharing and arranging access to the data used in this report.

Icons used in the visual summary on page 3 were made by Freepik from Flaticon ([www.flaticon.com](http://www.flaticon.com)).

# Contents

Acknowledgements	1
Introduction	4
Methods	5
The economic case for violence prevention	6
Costs of the consequences of violence	10
Costs of violence to the healthcare system in Lancashire	13
References	14

# THE COSTS OF VIOLENCE TO THE HEALTHCARE SYSTEM IN LANCASHIRE

VIOLENCE COST THE HEALTHCARE SYSTEM IN LANCASHIRE  
**£23.1 MILLION** IN THE YEAR ENDING MARCH 2020

Of the total short-term costs, **78%** were associated with addressing the consequences of interpersonal violence.

## COSTS OF INTERPERSONAL VIOLENCE

Ambulance call outs, attendances at Minor Injury Centres, Walk in Centres, Urgent Care Centre and the Emergency Department, emergency hospital admissions, treatment

**£17.9** million



Ambulance call outs

**£0.59** million



Minor Injury Centre / Walk in Centre / Urgent Care Centre attendances

**£0.07** million



Emergency department attendances

**£0.64** million



Emergency hospital admissions

**£2.7** million



Treatment for physical injuries

**£0.58** million



Counselling for depression and anxiety

**£11.9** million



Follow-up in primary care

**£1.4** million

## SELF-DIRECTED VIOLENCE

Emergency department attendances, emergency hospital admissions, treatment

**£5.1** million

# Introduction

Violence places a heavy burden on health and social prospects across the life course. The economic impacts on victims of violence include the emotional and physical impacts, and the costs associated with damage to property, lost work time and medical costs. Fear of violence may also affect quality of life and may impact on the economic and social choices that people make. Violence also affects families, communities and wider society and it is our public services, including healthcare, the criminal justice system, social services and other sectors such as education, that bear the costs of the wider impacts of violence.

Identifying the costs of violence to the healthcare system can be a useful starting point for demonstrating the 'size of the problem' and in informing decision-making and investment in interventions to prevent and reduce violence. Estimates of the costs of violence to the healthcare system vary. The costs of violence to the NHS in England and Wales have previously been estimated at £2.9 billion (based on 2008/09 cost data; Bellis et al., 2012). More recently, the costs of domestic abuse to the health service in England and Wales have been estimated at £2.3 billion alone (Oliver et al., 2019). It is important to recognise that a large proportion of the cost burden of violence falls outside of the healthcare system. For example, in the form of lost time at work arising from sickness absence or early retirement through poor health. In 2008/2009, an analysis by the London School of Economics estimated the total economic and social costs of violence in England and Wales to be in the region of £30 billion (Bellis et al., 2012).

The overall aim of this work was to develop a costing tool that could be used by Violence Reduction Units to identify the costs of violence to the healthcare system in their region. We have used data provided by the Lancashire Violence Reduction Network (VRN) to demonstrate the utility of the costing tool.

# Methods

We have previously developed a framework and analytical approach for examining the costs of violence to the healthcare system, using cost-of-illness (COI) methods (Jones et al., 2020). The COI approach is not a form of economic evaluation, so it is not possible to determine the cost savings that would accrue from the prevention or reduction of violence. However, the approach does provide a means of presenting and understanding the economic burden of violence.

COI studies may be conducted from different perspectives. Our analyses were conducted from a healthcare system perspective so only cost-generating components within the healthcare system were identified and included in the costing tool. Our analyses are retrospective and so are based on data that has already been recorded using a top-down approach i.e. based on aggregate figures from hospital admissions and data from other statistical databases/registers. The final step in determining the costs of violence to the healthcare system involves identifying the cost-generating components and attributing a monetary value to them. Further details about the valuation of unit costs is provided in the report. Unit costs were based on a range of sources, including NHS Reference costs for 2017/18 (inflated to 2018/19 costs), Curtis & Burns (2019) and other national estimates.

# The economic case for violence prevention

## Why invest in violence prevention?

In many countries greater investment is made in treating the ‘downstream’ impacts of violence rather than on violence prevention. However, a public health approach to violence recognises that violence is a preventable problem requiring a societal response (WHO 2002). There is a clear public health argument for investing in violence prevention and policy makers can also use economic evidence to guide and prioritise investment in violence prevention. Although a form of economic evidence, the costs of violence to the healthcare system alone (as outlined in this report) can’t be used as a means of priority setting. To guide and set priorities for the allocation of resources, we also need evidence about the relative cost-effectiveness of different violence prevention strategies and interventions captured through economic evaluation.

## Economic evidence for violence prevention interventions

Public health economics is *“about how society uses scarce resources to prevent ill health, reduce inequalities in health, and more widely promote human thriving through the life course”* (Edwards et al., 2016). In this way, public health economics provides an overall framework for how scarce resources can be allocated to address public health problems such as violence in the most optimal way.

There is a growing body of evidence supporting both the effectiveness and cost-effectiveness of violence prevention interventions and a summary of this evidence is provided in the VRU Strategic Needs Assessment 2021. Here we highlight key areas for investment in violence prevention.

### Sharing data and information

The finding that around half of all violent incidents that lead to emergency hospital treatment are not reported to the police prompted the development of the Cardiff

Model for Violence Prevention, which advocates for the sharing of information between emergency departments and the police. Violence-related injury data from emergency departments is combined with police intelligence to map where violence occurs frequently and to guide integrated violence prevention responses. A 2014 study that assessed the costs and benefits of the Cardiff Model (Florence et al., 2014), found that the model substantially reduced costs associated with violence. The overall cost/benefit ratio was 1:82, indicating that £82 in benefits were realised for every pound spent on delivering the programme.

### Supporting parents and families

Community interventions that provide early intervention to support parents and families can have long lasting benefits. However, as noted in an Early Intervention Foundation report (EIF 2015), it may be challenging to fully measure the impact of early intervention programmes (such as intensive home visiting) as it may only be apparent over the longer term and experienced across a broad range of outcomes. These challenges were seen with the Building Blocks trial, which was commissioned to evaluate the effectiveness and cost-effectiveness of the Family Nurse Partnership (FNP) in England. Although the international evidence base for FNP is well established, based on a two-year follow-up period, the results of the Building Blocks trial found that the FNP programme had little additional short-term benefits over existing services on a range of health-related outcomes among families in England (Robling et al., 2016). It was concluded that FNP was not a cost-effective use of resources within the context of the NHS (Bell et al., 2019). Within the UK context, it is acknowledged that wider societal issues, such as poor housing or a poor-quality environment, may have inhibited the effectiveness of the programme (Sanders et al., 2019).

### Identifying the signs of violence in primary care

The Identification and Referral to Improve Safety (IRIS) programme is a domestic violence training and support programme for general practice teams. A trial showed that IRIS training and support had a substantial effect on recorded referrals and recorded identification of women experiencing domestic violence (Feder et al., 2011) and further economic analyses of the IRIS programme show that it is both cost-effective from a health service perspective and cost-saving when a broader societal

view of its impact is considered (Norman et al., 2010; Devine et al., 2012; Barbosa et al., 2018). Societal cost savings of £37 have been demonstrated per female patient in the primary care practice per year (£178 saved to a cost of £136 for delivery).

### Tackling adverse childhood experiences

Exposure to violence in childhood and other adverse childhood experiences (ACEs) are known to increase the likelihood that an individual is involved in violence later in life. A report from the UCL Institute for Health Equity (Allen & Donkin, 2015) identified that there are promising policy options to prevent ACEs from occurring, which involve tackling risk factors for ACEs and acting early. ACEs are also associated with range of health-harming behaviours and so tackling ACEs could also contribute to reducing the high economic burden on the NHS associated with these behaviours (Bellis et al., 2015).

## Making the case for investment in violence prevention

In a previous report for the Wales Violence Prevention Unit we outlined a series of strategies that could be used to make the case for further (or to bolster current) investment in violence prevention. These strategies are replicated in the Box below.

### **MAKING THE CASE FOR INVESTMENT IN VIOLENCE PREVENTION**

*Challenge any misconceptions and beliefs that policy makers and healthcare system providers may have about the value of investing in violence prevention.*

Communicate in clear everyday language that there is evidence that violence prevention interventions can be effective and cost-effective, and that they can help to free up resources for other parts of the healthcare system.

*Counteract arguments that public health interventions cost more in the long-term by identifying interventions with short-term benefits, as well as the mid- to long-term and intergenerational benefits.*

Conventional discounting methods in economic analyses mean that any benefits that extend further into the future are valued less than short-term benefits. The value of the intergenerational benefits of violence prevention should be highlighted to encourage recognition of the potential benefits of preventing violence now for the future generations.

*Identify potential shared objectives and goals and highlight 'win-win' situations where health and other sectors benefit from investment in violence prevention.*

Support intersectoral activity by considering mechanisms and regulatory structures to allow different organisations to share resources and responsibilities around violence prevention goals.

*Give a 'human face' to the potential beneficiaries of violence prevention actions.*

There is evidence to suggest that individuals are more inclined to help an identified victim to a greater extent than an unidentified population statistic.

*Reproduced from Jones et al (2020). Drawing on Richardson (2012) and McDaid (2018).*

# Costs of the consequences of violence

The costs of the consequences of interpersonal violence are estimated by examining physical injuries from assault, the emotional impacts of violence and the use of primary care services following a violent incident. Costs for Lancashire VRN are calculated for the year ending March 2020 and represent costs accumulated over a single year.

The following data were sourced to populate the costing model (Table 1):

1. Incidents of police-recorded violent crime with and without injury were extracted from the police force area tables published alongside the ONS bulletin on Crime in England & Wales.
2. Emergency department assault attendance data and ambulance call outs
3. Emergency admissions for violence were extracted from Hospital Episode Statistics provided by the Public Health England Fingertips website.

Table 1. Summary of interpersonal violence in Lancashire, 2019/20

Measure	Count
Police recorded violent crime with injury	16,334
Police recorded violent crime without injury	23,611
Ambulance call outs for assault	2,789
Minor Injury Unit / Walk in Centre / Urgent Care Centre attendances for assault	1,794
Emergency department attendances for assault	3,535
Emergency hospital admissions for assault or maltreatment*	778
Emergency hospital admissions for intentional self-harm	3,060

\*Estimated from 3-year aggregated data.

## Interpersonal violence

Estimates of the average costs of medical procedures to treat the physical harms of violence with injury were taken from a report on the economic and social costs of crime (Heeks et al., 2018). Costs were based on assumptions about the types of treatment needed and the prevalence of injury among victims of violent crime based on victim interviews from the Crime Survey for England and Wales (CSEW; Table 2).

The average cost of these medical requirements was estimated at £1,290 per patient who required medical treatment. Costs for a non-elective inpatient stay (£3,519) were extracted from the 2019/20 NHS Reference Costs. In the costing tool, the medical procedures costs are offset against those calculated for ambulance call outs, emergency department attendance and emergency admissions.

Table 2. Prevalence of harms and medical requirements following injury

Type of injury	Prevalence of harm among victims	Medical requirement following injury	Unit cost <sup>1</sup>
Minor bruising`	59%	0%	£0
Severe bruising	28%	29%	£1,298
Scratches	21%	0%	£0
Cuts	27%	36%	£956
Stabbed	4%	68%	£1,301
Broken bones	6%	85%	£3,185 <sup>2</sup>
Nosebleed	7%	0%	£0
Broken nose	2%	100%	£1,232
Lost teeth	2%	84%	£308
Chipped teeth	2%	100%	£161
Dislocation	2%	39%	£956
Concussion	2%	86%	£753
Internal injury	1%	0%	£0
Facial injury	1%	36%	£956
Eye injury	0	0%	£0
Other	8%	45%	£956

<sup>1</sup>Extracted from Heeks et al., 2018 and inflated to 2019/20 prices.

<sup>2</sup>Includes costs for physiotherapy (average. 10 hours).

Adapted from Heeks et al., 2018 (Tables 16, 17 & AP1).

## Emotional impacts of interpersonal violence

Drawing on the findings from victim interviews for the CSEW, Heeks et al (2018) estimated the emotional impact on the victims of violent crime with and without injury. We applied these estimates to our dataset (Table 3). The resulting hours of counselling were multiplied by the cost per hour of face-to-face contact (£44; Curtis & Burns, 2019).

Table 3. Emotional impacts of violent crime: hours of counselling

	Depression	Anxiety/Panic attacks	Fear
Violence with or without injury	86,780	166,753	18,084

Costs associated with the use of primary care services following an assault injury have not routinely been included in studies of the costs of violence. However, in an early costing study of the impact of domestic abuse, Walby (2004) included costs for GP consultation based on the assumption that victims would make an average of three additional visits to their GP following physical harm. The costing tool therefore includes the costs associated with three additional GP consultations per victim of violence with injury (£84; based on unit costs of £28 per surgery consultation; Curtis & Burns, 2019).

## Self-directed violence

We drew on the findings from an English study (Cooper et al., 2013), which found that 54% of intentional self-harm episodes presenting to emergency departments resulted in a hospital admission. Data on the number of emergency admissions for intention self-harm was uplifted to approximate the number of self-harm episodes presenting to emergency departments. A study reporting on the retrospective analysis of hospital resource use and care (Tsiachristas et al., 2017) was then used to determine the costs of self-directed violence. This study estimated that overall, the mean hospital cost per episode of self-harm was £809 in 2013/14. The cost per episode calculated by Tsiachristas et al. included emergency department attendances, treatments received in the emergency departments and hospital wards, and hospital ward and critical care unit stays. Costs were inflated to 2019/20 prices and multiplied by the estimated number of self-harm episodes (n=3,060).

# Costs of violence to the healthcare system in Lancashire

The annual burden of violence to the healthcare system in Lancashire in 2018/19 was estimated at **£23 million** for the short-term health-related costs. It is likely that this figure underestimates the full costs associated with acute violence-related injuries (Table 3).

Table 3. Annual costs of violence to the healthcare system in Lancashire, 2018/19: short-term costs

Violence type	2019/20 cost, £
<b>Interpersonal violence</b>	<b>£17,943,561</b>
<b>Physical harms</b>	<b>£4,628,322</b>
Ambulance	£594,057
Minor Injury Centre / Walk in Centre / Urgent Care	£68,172
Emergency department	£643,370
Inpatient	£2,737,782
Medical treatment	£516,769
<b>Emotional harms</b>	<b>£11,943,183</b>
<b>Primary care services</b>	<b>£1,372,056</b>
<b>Self-directed violence</b>	<b>£5,120,846</b>

# References

- Bellis, M.A., Hughes, K., Perkins, C. & Bennett, A. (2012) Protecting people, promoting health. A public health approach to violence prevention for England. Centre for Public Health, Liverpool.
- Cooper, J., Steeg, S., Bennewith, O., et al. (2013) Are hospital services for self-harm getting better? An observational study examining management, service provision and temporal trends in England. *BMJ Open*, 31, e003444.
- Curtis, L. & Burns, A. (2019) Unit Costs of Health and Social Care 2019, Personal Social Services Research Unit, University of Kent, Canterbury.
- Heeks, M., Reed, S., Tafisiri, M. & Prince, S. (2018) The economic and social costs of crime. Second edition, Home Office, London. Available from: [www.gov.uk/government/publications/the-economic-and-social-costs-of-crime](http://www.gov.uk/government/publications/the-economic-and-social-costs-of-crime).
- Jones, L., Bigland, C., Quigg, Z. (2020) Costs of violence to the healthcare system in Wales. Public Health Institute, Liverpool John Moores University, Liverpool.
- NHS Improvement. (2018) Reference costs 2017/18: highlights, analysis and introduction to the data, NHS Improvement, London.
- McDaid, D. (2018) Using economic evidence to help make the case for investing in health promotion and disease prevention. World Health Organization Regional Office for Europe, Denmark.
- Richardson, A.K. (2012) Investing in public health: barriers and possible solutions. *Journal of Public Health*, 34, 322-327.
- Tsiachristas, A., McDaid, D., Casey, D., et al. (2017) General hospital costs in England of medical and psychiatric care for patients who self-harm: a retrospective analysis. *Lancet Psychiatry*, 4, 759-767.
- Walby, S. (2004) The cost of domestic violence, Women and Equality Unit, Department of Trade and Industry, London. Available from: <https://openaccess.city.ac.uk/id/eprint/21681/>