

1 Purpose of this document

The implementation case developed by the National Wound Care Strategy Programme is based on the model “NWCSP Implementation Case Model” which estimates the impact of implementing the NWCSP recommendations. Recognising that the analysis presented in the implementation case is a national view (‘national model’) and there is likely to be significant variation in the state of leg ulcer care across England, the model is provided to healthcare providers to assess their own implementation case based on the conditions of their local healthcare geography. This text provides guidance on the assumptions which users can customise to generate these local results ‘the local model’.

Although the model was developed with a view to enable certain assumptions to be customised by users, the scope of these customisable assumptions has been kept focussed in the interest of developing a model that enables customisability of key assumptions while also ensuring a consistent and robust methodology. It is therefore recognised that there are likely to be non-customisable aspects of the model which users believe may not be representative of their local conditions.

2 Model structure

2.1 Colour coding of sheets in the Excel workbook

The calculation sheets in the model are colour coded as follows:

- **Control assumptions** – this sheet is coloured in green and contains all the assumptions that users can customise/change.
- **Results** – these sheets are coloured in red and contain results of the analysis, the impact of the NWCSP recommendations.
- **Baseline calculations** – these tabs are coloured in blue and are related to the baseline (i.e. state of the world without intervention, the status quo).
- **To-be calculations** – these tabs are coloured in light orange and are related to the To-be (i.e. state of the world with intervention, implementation of NWCSP recommendations). Many of these sheets are structured in the same way to the baseline calculations but uses To-be assumptions. The names of these sheets end with the suffix ‘INT’.
- **General assumptions** – these tabs are coloured in purple and contain general modelling assumptions.

2.2 Model contents

The following table details the purpose of each spreadsheet in the model.

In **red** are the sheets which users are likely to most applicable for users.

Worksheet name	Description
Control assumptions	Contains all the assumptions which users can customise and change. Users should not amend any of the other worksheets.
Local model results	

Local model results	Calculates the savings/benefits based on leg ulcer costs users input into the model. The national model estimates the total cost of leg ulcer care, however local organisations using the model may have this data available to input. The savings are based on the % savings calculated from the national model
National model results	
National model results summary	This contains the main outputs of the model. This summarises the annual benefits of the impact of the NWCSP and reports the estimated net present value. Towards the bottom of this sheet, percentage savings are given which can be applied to existing budget amounts to provide a quick calculation of £ savings.
National model results detailed	This contains the main outputs of the model. This provided a detailed breakdown of the impact of the NWCSP recommendations, including savings by resource type, cash releasing and non-cash releasing benefits, and QALY benefits.
Summary tables	
To-be summary	Presents a summary of outputs of the leg ulcer volume and cost projections under the To-be scenario (i.e. the implementation of the NWCSP recommendations).
Baseline summary	Presents a summary of outputs of the leg ulcer volume and cost projections under the baseline (i.e. the current status quo, without implementation of the NWCSP recommendations).
Intervention assumptions	
To-be clinical improvement	Estimates the healing and recurrence improvements from the NWCSP recommendations, taking into account patients allocated to evidence-based care and patient eligibility. The resulting healing and recurrence improvements are included to project leg ulcer volumes under the To-be
Implementation costs	Estimates the cost of implementing the NWCSP recommendations.
Cost calcs	
Mixed costs, VLU costs, Arterial costs	Estimates the cost of leg ulcer care under baseline (i.e. without intervention), for each leg ulcer type: venous, mixed, arterial leg ulcers.
Mixed costs INT, VLU costs INT	Estimates the cost of leg ulcer care under the To-be (i.e. implementation of NWCSP recommendations), for each leg ulcer type: venous and mixed leg ulcers. An equivalent sheet for arterial leg ulcers has not been created as there is no improvement in arterial leg ulcers under To-be, so cost is the same as under Baseline.
Resource assumptions	
Arterial care pathways, mixed care pathways, VLU care pathways	Estimates the average amount of clinical time and wound care products required to treat a given leg ulcer each year, under baseline. This uses a bottom-up approach in which the resource requirements are specified for each type of care pathway captured.
Arterial care pathways, mixed care pathways, VLU care pathways	Estimates the average amount of clinical time and wound care products required to treat a given leg ulcer each year, under To-be. This uses a bottom-up approach in which the resource requirements are specified for each type of care pathway captured. The estimates and assumptions are largely the same as that under baseline, however the To-be assumptions on patient allocation across the care pathways is used.
Wound vol calcs	
Wound growth	Projects leg ulcer volume growth using a stock-and-flow model, using baseline assumptions.
Wound growth INT	Projects leg ulcer volume growth using a stock-and-flow model, using To-be assumptions.
Prevalence projection	Applies the leg ulcer volume growth estimates from 'Wound Growth' to estimate the total volume of leg ulcers.
Prevalence projection INT	Applies the leg ulcer volume growth estimates from 'Wound Growth INT' to estimate the total volume of leg ulcers.
Wound maintenance vols	Estimates the volume of leg ulcers that will receive compression therapy after they have healed, using baseline assumptions.

Wound maintenance vols INT	Estimates the volume of leg ulcers that will receive compression therapy after they have healed, using To-be assumptions.
Assumptions	
Resource costs	States assumptions relating to the consumption of resources and associated unit costs. Note that resource consumption relating to clinical time and wound care products are estimated in “resource assumptions” above but all other resources are specified here. Assumptions on the duration of clinical appointments and the allocation of patients to different care pathways and care settings are stated here as well.
Inflation	States cost inflation assumptions.
PCA data	Derives some of the unit cost assumptions from prescription cost data.
Demographic growth	Estimates demographic growth over time, which is underpin the growth in new leg ulcer volumes.
Epidemiology	States core assumptions relating to the prevalence of leg ulcers, baseline healing rates, baseline recurrence rates.

2.3 Cell colour scheme key

The following colour scheme applies to each cell in the model:

Customisable cells – users can change

located only in the ‘Control Assumptions sheet’ and not in any other sheet

	Indicates cells containing values which the user can change/enter data in
	Indicates drop-down lists which the users can select options for which assumptions to select. By default, the ‘Default’ assumptions are selected, which is used to produce the analysis for the national implementation case.

Non-customisable cells

- **Users must not change the contents of these cells**

	Cells containing raw data. These cells should not be changed by the user.
	Cells containing calculations/formula. These cells should not be changed by the user.

3 Customisable assumptions

All customisable assumptions are located in the ‘Control assumptions’ worksheet and not anywhere else.

Users should not make edits to any other sheet. Users should use the following guidance in conjunction with detail on the assumptions provided in the annex of the NWCSP implementation case to ensure valid entry of assumptions.

Introduction to customisable assumptions

The NWCSP Implementation Case report was developed based on a national model which estimated the cost and state of leg ulcer care across England. The national cost of leg ulcer care was estimated through a bottom-up approach but did not consider variation across England.

It is recognised that users of the model may wish to input into the model their own assumptions on the cost and state of leg ulcer care in their geography, to effectively develop a business case tailored to the. It is also recognised that users may not have all the data to customise all assumptions. Therefore, the model has been developed which enables users to customise assumptions which they have the data for. If users lack data on certain aspects, then they are able to use the default assumptions used in the national model.

Users are able to switch between the default model assumptions 'Default' and assumptions they manually input into the model 'Manual' by using the orange drop down lists in the 'Control assumptions' worksheet.

Two options for using this model

Some users may have estimates of the cost of leg ulcer care within their geography, however many may not. To give flexibility, users have two options in whether they input data on their cost of leg ulcer care.

Option	Detail
<p>Option 1: Users <u>do not</u> have detailed data on cost of leg ulcer care</p>	<p>Users cannot customise assumptions for 'cost of leg ulcer. In this case, users can use the default estimates from the national model to estimate their cost of leg ulcer care, scaled by their prevalence/population estimates.</p> <p>Users can also customise all other assumptions accordingly, should they wish.</p> <p>In this instance, the results located in the 'national model results' sheets will be the same as in the 'local model results' sheets. Either can therefore be used for results.</p>
<p>Option 2: users <u>have</u> detailed data on cost of leg ulcer care</p>	<p>Users can customise all other assumptions accordingly (should they wish), including 'cost of leg ulcer care' for which they have the data for.</p> <p>In this instance, <u>users should only use the 'Local model results' worksheet for cost and benefit estimates/results.</u></p> <p>The results sheets for the national model 'national model results' are based on the national estimate of leg ulcer care, not on the estimate inputted by the user. The estimates between the local and national model will therefore be different.</p>

Guidance on how to add in assumptions on cost of leg ulcer care is given in section 3.3 below.

Baseline versus To-be

The model distinguishes between Baseline and To-be assumptions:

- Baseline:** this refers to the current state of the world without any intervention, i.e. the status quo. The baseline should not include any implementation costs or benefits. Baseline assumptions should be based on data of the current state of the world where possible.

alter the adult population assumption to reflect their local health geography (see below) and leave the leg ulcer prevalence estimates unchanged. The model will then apply the default Guest et al. prevalence estimates to this population, as a rough estimate of prevalence in the user's local healthcare geography.

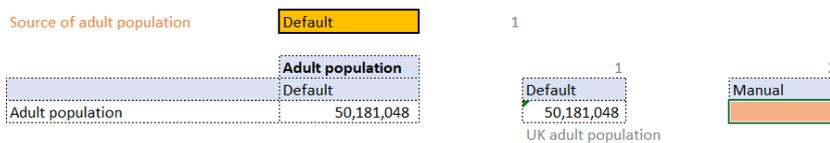
Note that annual prevalence is different to point prevalence. Annual prevalence is the number of patients who have had a leg ulcer in a year and tends to be higher than point prevalence which only looks at patients in a given period of time (e.g. a few weeks).

Adult population

This is the adult population (ages 18+) covered by the health geography being modelled. This is used to estimate the total volume of leg ulcers based on the prevalence rate estimates.

Adult population

By default, the prevalence is applied over the UK adult population (18+) to produce total UK cost of leg ulcer care



By default, the model uses the England adult population, which means that the model calculates leg ulcer volume and cost across England. If users wish to customise the model to reflect their local health geography, users should input adult population estimates related to their geography in 'Manual', and select this assumption using the orange drop-down menu in the orange cell.

3.3 Total cost of leg ulcer care

Assumptions on the total cost of leg ulcer care is given below.

Item	Switch	Chosen value	1		2
			Default	Manual	
GP visits	Default	£255,991,450	£255,991,450		1
Specialist nurse visits	Default	£734,868	£734,868		1
Allied health-care visits	Default	£9,170,615	£9,170,615		1
Hospital outpatient visits	Default	£171,496,009	£171,496,009		1
Hospital admissions	Default	£1,057,485,608	£1,057,485,608		1
Laboratory Tests	Default	£119,564,299	£119,564,299		1
Devices	Default	£69,941,064	£69,941,064		1
Prescriptions	Default	£400,101,862	£400,101,862		1
Woundcare products	Default	£289,099,952	£289,099,952		1
Compression hosiery	Default	£13,261,128	£13,261,128		1
Community nurses	Default	£488,520,941	£488,520,941		1
Practice nurses	Default	£198,040,201	£198,040,201		1
Year of cost	Default	2019	2019		1

As detailed at the beginning of section 3, users have the option to input their own estimates in the cost of leg ulcer care, should they have the data.

Option 1: users do not have data on total cost of leg ulcer care

- Users should not change any of the assumption in this section (i.e. leave all orange switches as 'Default'. The model will use the national estimates on the cost of leg ulcer care to calculate the local cost of leg ulcer care. The model will scale the

national cost by any population/prevalence changes as per the assumptions detailed in section 3.2.

- The results located in 'national model results' worksheets and 'local model results' worksheets should be identical. Both can be used for reporting cost/benefit estimates.

Option 2: users have data on the total cost of leg ulcer care

- Where users have the relevant pieces of data, they can input it into the cells under 'Manual'. The user can then select to use these assumptions by using the orange switch to select 'Manual'.
- As users may have data for some cost items but not all, users are able to choose/select which cost items they have data for (inputted as 'Manual') and which will be calculated by the model ('Default').
- Changing any of the assumptions will result in the estimated cost savings, calculated from the user's inputted cost assumptions, to be different to that calculated by the national model. Therefore, users should only use the worksheet 'local model results' for outputs and results. The local model will produce the results using the user's entered cost data, whereas the national model uses the model's default assumptions.
- **'Year of cost'**- users should input the associated year of which their cost estimates are from. Ideally, this should equal the year of the baseline. Should multiple years be covered (e.g. some assumptions are selected as 'Default' which is 2019 and 'Manual' is 2020), users should either i) manually deflate their cost estimates such that they all reference the same year (so deflate the 'Manual' assumptions to 2019 as per the example), or ii) inflate the Default assumptions to 2020 and input these into the 'Manual' assumptions.

3.4 Care setting mix

Specifies the allocation of patients (as a percentage share) to the different settings in which leg ulcer care is delivered:

- **Home** – patients receive care at home by a community nurse.
- **GP** – patients receive care by a practice nurse in a GP setting.
- **Wound care clinic** – patients receive care in a leg ulcer clinic by a community nurse. It is assumed that this provision can only occur in the To-be (post intervention).
- **Leg club** – patients receive care in a social setting through a psychosocial model of care. It is assumed that this provision can only occur in the To-be (post intervention).

Baseline care setting

This is assumptions on the allocation of patients to the care settings under baseline (without intervention). It is assumed in the baseline patients can only be treated at home or by a practice nurse.

Chosen assumptions

		Default
		1
		Chosen baseline
		Care setting mix
Care setting	Default	
Home	60%	Default
GP	40%	60.00%
Wound care clinic	0%	40.00%
Leg club	0%	-
		-

The user can enter their own care setting allocations in the cells labelled 'Manual' and use the orange drop-down menu to select/use these assumptions. Users may be required to conduct an audit of the provision of leg ulcer care in their local area to enable them to customise this assumption.

The allocation assumptions must add up to 100% for the entry to be valid.

To-be care setting

The To-be assumptions on the allocation of patients to the care settings, following the implementation of the NWCSP recommendations.

To be care setting

Chosen assumptions

		Default
		1
		Chosen To-be Care
		setting mix
Care setting	Default	
Home	40%	Default
GP	10%	40%
Wound care clinic	35%	10%
Leg club	15%	35%
		15%

		2	3
		Manual	Baseline
		-	60.0%
		-	40.0%
		-	0.0%
		-	0.0%

This is likely to be based on a rough assessment of the level of ambition a local health geography may have in changing the delivery of leg ulcer care. For example, some areas may choose to make little difference to the care settings, resulting in 'To-be care setting' assumptions to be similar to the 'Baseline care setting' assumptions

The allocation assumptions must add up to 100% for the entry to be valid.

3.5 Delivery of evidence-based care

As detailed in the NWCSP Implementation Case, a key driver of benefits is the ability to move patients from receiving 'Other care' to receive Evidence-based care. Evidence-based care is underpinned by best practice and delivers better healing and recurrence outcomes than Other care.

It is assumed that leg ulcer patients are allocated (as a percentage share) to either Other care of Evidence-based care. Increasing the share of patients receiving Evidence-based care will increase the average healing and recurrence rate of the total leg ulcer population, leading to benefits.

The allocation assumptions must add up to 100% for the entry to be valid.

Venous leg ulcers, delivery of evidence-based care

For venous leg ulcers, it is assumed there are three types of care patients can receive: Other care; evidence-based care v1 which consists of compression bandaging; and evidence-based care v2 which is compression hosiery. Further detail on this can be found in the annex of the NWCSP implementation case.

Baseline, patient allocation

Baseline
Chosen assumptions

Default		1		2	
Chosen share of patients (baseline)					
Care type	Default	Default	Manual	Manual	Manual
Other care	31%	31%			
Evidence-based care V1	63%	63%			
Evidence-based care V2	7%	7%			
Valid entry check		TRUE			

As default, 31% of venous leg ulcer patients are assumed to receive Other care which yields worse healing and recurrence outcomes than what is possible.

Users can tailor these assumptions to reflect the delivery of leg ulcer care in their local health geography, by inputting their own patient allocations under 'Manual'. These tailored assumptions might be inferred from an audit of the type of care patients receive in their local geography which seeks to obtain estimates on:

- Share of patients receiving Other care – this is the share of VLU patients not receiving any form of compression therapy.
- Share of patients receiving evidence-based care v1 – this is the share of VLU patients receiving compression bandaging therapy.
- Share of patients receiving evidence-based care v2 – this is the share of VLU patients receiving compression therapy with the use of hosiery/stockings.

To-be, patient allocation

The NWCSPI interventions seeks to reduce the share of patients receiving Other care and increase the share of patients receiving either types of Evidence-based care.

To-be
Chosen assumptions

Default		1		2		3		4	
Chosen share of patients (to-be)									
Care type	Default	Default	Manual 1	Manual 2	Manual 2	Manual 2	Baseline	Baseline	Baseline
Other care	10%	10%	32%	31%	31%	31%	31%	31%	31%
Evidence-based care V1	35%	35%	27%	27%	27%	27%	63%	63%	63%
Evidence-based care V2	55%	55%	41%	42%	42%	42%	7%	7%	7%
Valid entry check		TRUE							

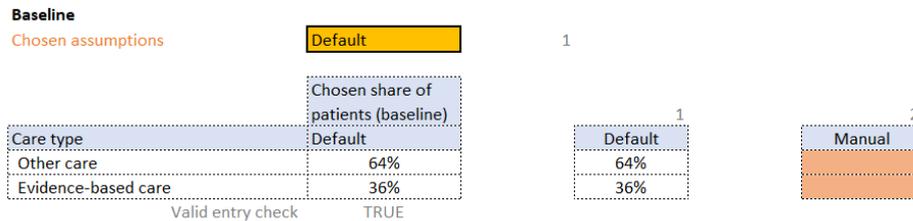
Users have two options to customise the To-be allocation of patients across the care types.

- Manual 2: users can input their own allocations across all three types of care.
- Manual 1: users may be unable to reasonably estimate the share of patients being allocated across evidence-based care v1 and evidence-based care v2. If this is the case, users can just enter the To-be share of patients receiving Other care and the model will calculate the inferred split of evidence-based care between evidence-based care v1 and v2.

Mixed leg ulcers, delivery of evidence-based care

For mixed leg ulcers, it is assumed there are two types of care patients can receive: Other care and evidence-based care which consists of reduced compression bandaging. Further detail on this can be found in the annex of the NWCSP implementation case.

Baseline, patient allocation



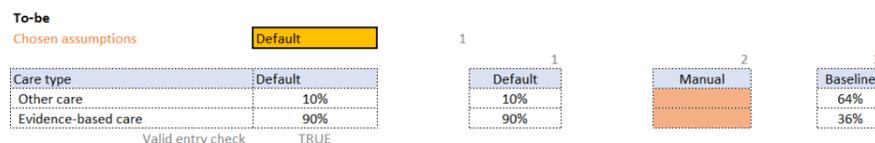
As default, 64% of venous leg ulcer patients are assumed to receive Other care which yields worse healing and recurrence outcomes than what is possible.

Users can tailor these assumptions to reflect the delivery of leg ulcer care in their local health geography, by inputting their own patient allocations under 'Manual'. These tailored assumptions might be inferred from an audit of the type of care patients receive in their local geography which seeks to obtain estimates on:

- Share of patients receiving Other care – this is the share of mixed leg ulcer patients not receiving any form of compression therapy.
- Share of patients receiving evidence-based care – this is the share of mixed leg ulcer patients receiving reduced compression bandaging therapy.

To-be, patient allocation

The NWCSP interventions seeks to reduce the share of patients receiving other care and increase the share of patients receiving Evidence-based care.



Users can customise the To-be allocation of patients by inputting and selecting their own allocations under 'Manual'.

3.6 Implementation costs

Users can select to switch the implementation costs on and off by toggling the orange drop-down switches. As these implementation costs are a pre-requisite for realising the benefits generated in the To-be, these costs should not be considered optional.

Cost	Switch
Training cost	<input checked="" type="checkbox"/>
Programme management costs	<input checked="" type="checkbox"/>
Data capture costs	<input checked="" type="checkbox"/>
Monitoring and evaluation costs	<input checked="" type="checkbox"/>

Training costs

These costs are required to deliver evidence-based care and so should not be switched off unless with good reason.

Programme management costs

Users can alter the number of CCGs their health geography covers. It is assumed that each CCG will require an implementation team for three years.

Data capture costs

These costs are required to deliver evidence-based care and so should not be switched off unless with good reason (e.g. if not applicable at a local level due to the cost being incurred elsewhere).

Monitoring and evaluation costs

These costs are required to deliver evidence-based care and so should not be switched off unless with good reason (e.g. if not applicable at a local level due to the cost being incurred elsewhere).

Number of CCGs

The implementation costs relating to Programme management and Monitoring and evaluation are not affected by volume of leg ulcers but could be affected by how large the area of implementation is. For example, a greater geography covered by the implementation may require a greater implementation team and may have greater demands for monitoring and evaluation.

These costs are therefore based on the number of CCGs. By default, it is assumed that the implementation covers all 135 CCGs.

Number of CCGs

This is the number of CCGs covered by the implementation

Chosen assumptions

	<input checked="" type="checkbox"/> Default	<input type="checkbox"/> 1	<input type="checkbox"/> 2
	<input type="checkbox"/> Default	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> Manual
Number of CCGs	135	135	

Users can customise this assumption in 'Manual' to scale the costs according to the number of CCGs covered in their health geography.

3.7 Post healing leg ulcer maintenance

This relates to the cost of providing compression therapy to a patient once their venous/mixed leg ulcer has healed. **Users should not change these assumptions.** These assumptions have been included in the Control Assumptions sheet so users have the option to align all To-be assumptions to the baseline (making the NPV zero), by selecting 'baseline' in the To-be drop down list.

Baseline
Chosen assumptions

% compression treatment patients receiving post healing compression therapy	Default
Baseline	10.00%

Valid entry check TRUE

1

Default
10.00%

1

Manual

2

To-be
Chosen assumptions

% compression treatment patients receiving post healing compression therapy	Default
To-be	85.00%

Valid entry check TRUE

1

Default
85.00%

1

Manual

2

Baseline
10%

3

3.8 Endovenous ablation surgery

This relates to the provision of endovenous ablation surgery for venous leg ulcers. **Users should not change these assumptions.** These assumptions have been included in the Control Assumptions sheet so users have the option to align all To-be assumptions to the baseline (making the NPV zero), by selecting 'baseline' in the To-be drop down list.

By default, it is assumed that patients do not receive endovenous ablation surgery at baseline.

Baseline
Chosen assumptions

% all VLU patients	Default
Baseline	0.00%

Valid entry check TRUE

1

Default
0.00%

1

Manual

2

To-be
Chosen assumptions

% all VLU patients	Default
To-be	58%

Valid entry check TRUE

1

Default
58%

1

Manual

2

Baseline
0.00%

3