Care Pathways: Guidance on Appraising Sustainability

Patient Travel Module

October 2015

NHS England

Public Health England

Sustainable Development Unit
Working across the NHS, Public Health and Social Care system

AstraZeneca Boehringer Ingelheim Baxter BD

gsk GlaxoSmithKline Johnson & Johnson Medtronic novo nordisk ERM

Coalition for Sustainable Pharmaceuticals and Medical Devices (CSPM)
www.sduhealth.org.uk/cspm

Care Pathways: Guidance on Appraising Sustainability

Patient Travel Module

October 2015

TABLE OF CONTENTS

1	PATIENT TRAVEL	2
1.1	DESCRIPTION	2
1.2	BOUNDARY SETTING	3
1.3	UNIT OF ANALYSIS	8
1.4	ACTIVITY DATA	8
1.5	EMISSION FACTORS	13
1.6	MODULE CALCULATION STEPS	14
1.7	EXAMPLE CALCULATIONS	15

Prepared by Tom Penny, Michael Collins, Andy Whiting and Simon Aumônier

For and on behalf of Environmental Resources Management
Approved by: Simon Aumônier

Signed:

Position: Partner

Date: 12 October 2015

This report has been prepared by Environmental Resources Management the trading name of Environmental Resources Management Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

1 PATIENT TRAVEL

This module provides guidance on how to calculate the performance of patient travel against the sustainability metrics. It can be used:

- to direct the appraisal of specific patient travel for a care pathway, through the collection of primary activity data; or
- as a source of secondary data for patient travel to inform a screening assessment of a care pathway; or
- as a source of secondary data for an appraisal of a care pathway where patient travel is known not to be material to the overall care pathway.

1.1 DESCRIPTION

Patient travel is the transportation of a patient to and from their point of care. It may include:

- travel from the patient's location to a point of care (eg GP practice, hospital, pharmacy);
- travel between points of care; or
- travel from a point of care to the patient's intended destination.

The location of the patient before travelling is their origin, and the location of the patient after travelling is their destination. Note that, in some cases, a patient may not travel directly from home, but instead from another location or have combined the journey with another trip.

Two additional travel scenarios shall be included in relevant modules:

- travel by necessary accompanying persons (eg carers and lift providers); and
- travel by visitors to see the patient (eg friends or family traveling to see an inpatient in hospital).

The guidance described below for patient travel shall be applied to these travel scenarios.

Telehealth services may avoid the need for a patient to travel, but also have other associated burdens and benefits. Use of these services shall be included as a separate module in the care pathway (currently described in the self-management module) and so are not discussed further in the patient travel module.

Two types of patient travel are considered and include:

- self-travel: travel initiated and under the control of the patient; and

- provided travel: travel provided by a health organisation to deliver the patient to a service.

Self-Travel

Self-travel refers to travel that the patient arranges themselves and that is under their own control. The starting point is their location on beginning the journey. This may be their home (although this is not always the case). Patient self-travel shall be included in all care pathways where the primary purpose of the travel is to deliver the patient to the point of care. Where the primary purpose of travel journey is not to deliver the patient, this transport step may reasonably be excluded. Alternatively, only the additional part of the journey to deliver the patient need be included.

A patient may undertake self-travel via a variety of modes including, but not necessarily limited to one of, or a combination of:

- walking;
- cycling;
- passenger car (self-driven or lift);
- public transport (eg bus, tram, train, plane, ferry); or
- taxi.

Provided Travel

Provided travel refers to an organisation arranging transportation to deliver a patient to a point of care or to their intended destination from a point of care. The nature of provided travel means that a provided travel journey shall always be attributed to a care pathway.

Two distinct types of provided travel are included in this module: emergency; and non-emergency. These are separated as sub-modules due to the significant differences in vehicles and resource consumption between the two types.

Methods of emergency provided travel include, but are not necessarily limited to:

- emergency ambulance; or
- air ambulance.

Methods of non-emergency provided travel include, but are not limited to:

- non-emergency ambulance;
- minibus;
- taxi; or
- staff car.

1.2 BOUNDARY SETTING

Boundary setting is an important step to ensure consistency in what should and should not be included in the appraisal of a module.

When appraising patient travel within a care pathway, the first step is to map out all of the activities that a patient undertakes when using the module. Following this, the services required to provide these activities shall be determined and finally the resources (eg consumables, energy, etc) identified that are required to provide these services.

To ensure consistency in appraisals, recommended activities, services and resources for patient travel within a care pathway are presented below.

1.2.1 Activities Undertaken to Provide Patient Travel

A patient may go through the following steps to travel to, from or between points of care.
(Note: yellow text refers to activities & orange text refers to separate modules to be included in a care pathway)

- Point of care (other module): the patient may have used a health service prior to patient travel (eg GP consultation, outpatient) that shall be included as a separate module.
- Booking: for provided travel, a time and mode of transport may be pre-arranged via phone, online or mail. The initial destination may be the patient's home, a point of care or another location.
- Travel: the patient travels via self-travel, provided travel or a combination of these to a point of care or their intended destination after visiting a point of care.
- Point of care (other module): the journey may be taken so that a patient can use a health service (eg GP consultation, outpatient). This shall be included as a separate module.

There may be variations to these activities and regional differences shall be accounted for when mapping out a patient travel module.

1.2.2 Services & Facilities Required to Provide Patient Travel

To provide these activities, the following services and facilities are required.

- Booking systems whether in person at reception, via phone, online or other means to coordinate provided travel.
- Vehicles used to transport the patient, whether provided, public or owned by the patient and including resources used during travel (eg medical equipment).
- Maintenance of the vehicles to continue their operation, whether provided, public or owned by the patient.
- Administrative services to operate vehicle fleets and coordinate patient travel.

Capital goods (eg car parks, maintenance buildings) can be excluded from the module unless they are known to be material [(1)] to overall performance against the sustainability metrics appraised.

(1) Refer to section 2.6.3 Materiality and Data Screening in the Care Pathways: Guidance on Appraising Sustainability: Main Document

Similarly, administrative services may be excluded from the scope of the study if these are shown not to be material to the appraisal through data screening.

1.2.3 Resources Required to Provide Patient Travel

Based on the list of activities, services and facilities identified above, the following categories of activity data shall be included:
(Note: green text refers to data that shall be included in an appraisal of the module)

- Fuel and energy, eg petrol, diesel, electricity in vehicle operation.
- Consumables, eg single use medical devices used in provided travel or engine oils used in vehicle maintenance.
- Medical gases, eg nitrous oxide.
- Equipment, eg reusable medical equipment, beds/stretchers used in provided travel.
- Facilities, eg energy, water and waste associated with maintenance and maintenance buildings.
- Travel, eg staff travel to provide travel.

Maintenance of vehicles and building maintenance may be excluded, based upon the materiality rules for patient travel module. These are based on the majority use of the vehicle. For example, if the primary purpose of the vehicle is to provide travel of patients to, from or between points of care, then these shall be included. In the majority of cases, this will result in excluding public transport maintenance and staff.

A summary of resources and activities that shall be included in this module is provided below. These may be excluded if they can be shown not to be material to the results. Exclusions should be undertaken by applying the materiality rules in the main document, ie no more than 10% of the total impact may be excluded. A list of additional care pathway modules that may be required to connect to this module to develop the overall care pathway map is also given. These additional modules are included as examples in order to highlight where this module might fit in the overall care pathway.

Include these activity data:

- Consumables used in provided travel
- Equipment used in provided travel
- Fuels and electricity used during vehicle operation
- Fuel and electricity use
- Water use
- Staff travel
- Waste generated
- Family/friend travel
- Administration activities
- Cleaning and maintenance of vehicles

Exclude these activity data:

- Capital goods
- Employee facilities
- Staff training

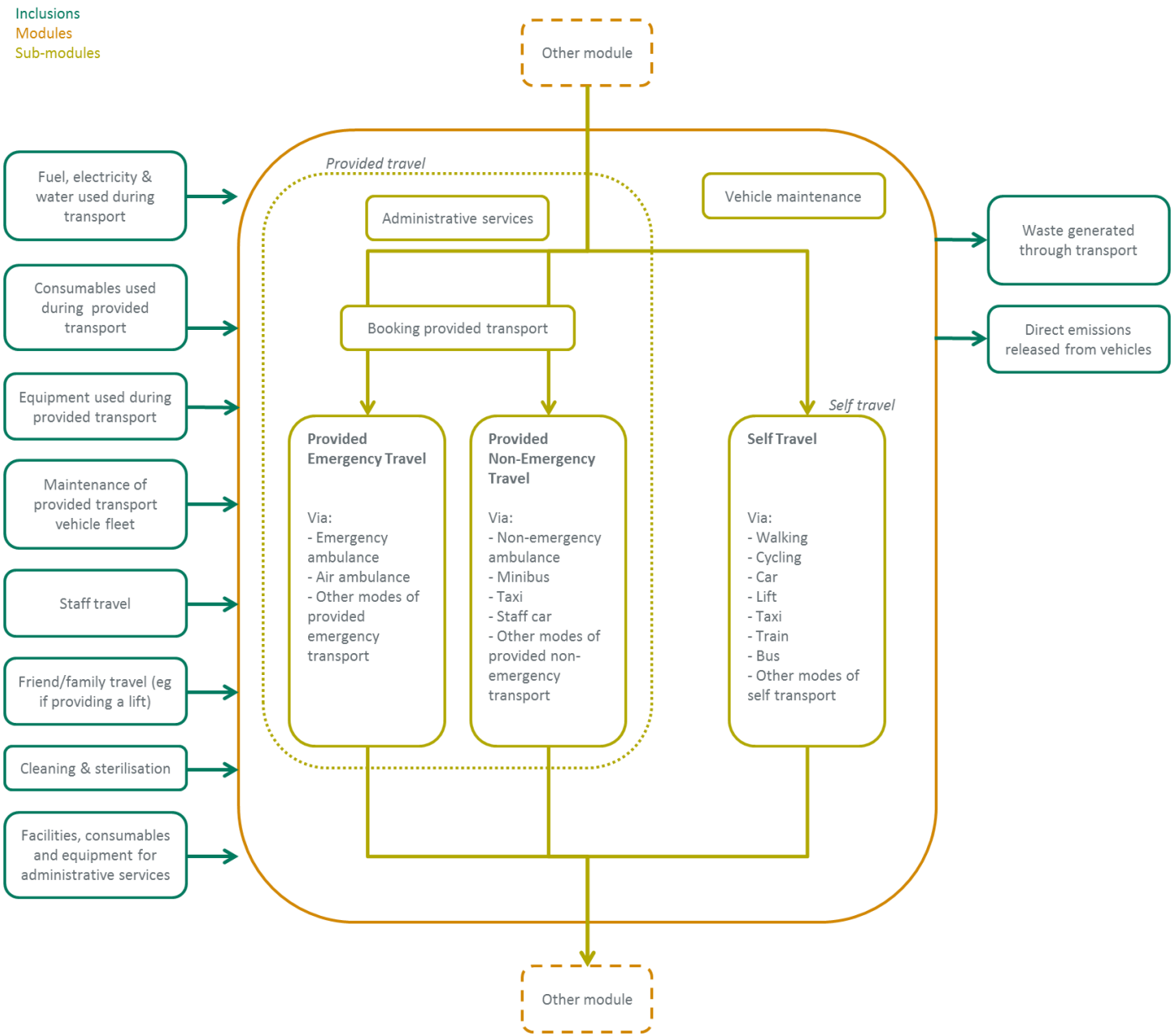
Additional modules that may be required, but are excluded from this module):

- GP consultation
- Emergency Department visit
- Diagnostics
- Pharmacy visit
- Other services provided at point of care

Detailed information on types of consumables and equipment relevant to this module can be found under the Activity Data section.

The activities, services and resources identified above for the patient travel module are summarised in the process map below. When using this guidance, a similar process map shall be created for the patient travel specific to the care pathway being appraised.

Figure 1.1 Patient Travel Example Process Map



1.3 UNIT OF ANALYSIS

A unit of analysis is identified as a common 'reference flow' or 'basis for comparison' to allow for the module to be included in a care pathway appraisal or to be used to compare different scenarios of the same module (eg patient travel in different regions or the significance of changes between patient travel modes).

A patient travelling from, to or between points of care from or to their intended destination by a mode (or modes) of travel in a geographical area

- eg a patient travelling from home to a GP consultation via bus public transport in a specific city and country.

The reference flow for the patient travel module shall be expressed as a specific number of patients travelling to, from and within their point of care. As explained above, this allows for the patient's journey through the care pathway to be analysed.

The origin of travel before care and the destination after receiving care may differ if the patient has combined journeys. For example, the patient may visit a GP practice to collect a prescription as part of a journey to the shops that they would have taken regardless of the visit.

1.4 ACTIVITY DATA

Activity data are the quantified measures of activity relevant to the module being appraised.

Patient Travel module activity data include the following.

- Reference data such as patient surveys for modes of travel, distances, number of vehicles in a fleet.
- Vehicle use data such as fuels, electricity and maintenance required to provide travel.
- Consumables, medical gases and equipment used by provided travel in both emergency and non-emergency situations.
- Facilities data, eg energy, water and waste, of the provided travel split by services and patient type where possible.
- Travel of staff required to provide the patient travel service.

Primary activity data shall be collected to appraise the module if they are found to be material to the care pathway.

To determine if primary activity data are required, the data in *Section 1.7* can be used to inform a screening assessment of a care pathway. If the activity is found not to be material in the screening study, primary data, although preferable, are not required and the case study data can be used to represent patient travel within the care pathway.

1.4.1 Primary Data

Where required, primary activity data specific to the patient travel being appraised shall be included. These data are likely to be sourced from a representative sample of patients involved in the appraisal.

If patient travel for a specific condition is being appraised, data shall be collected to represent a patient travelling from, to or between points of care with that condition, including the following.

- Vehicle fuel and electricity use: the type and quantity of fuels and electricity used to provide the patient travel, including direct vehicle emissions if possible.
- Consumables for provided travel: the type and quantity of all consumables required for provided patient travel in emergency and non-emergency situations. These data should be for the specific condition being appraised.
- Equipment for provided travel: the type, quantity, lifetime and number of uses of equipment required for provided patient travel in emergency and non-emergency situations. These data should be for the specific condition being appraised.
- Booking systems for provided travel: the type and quantity of facilities data (eg electricity, water, waste), consumables (eg paper) and equipment (eg phones, computers) to provide the phone, online or mail booking system for provided travel.
- Administrative services consumables and equipment for provided travel: the type, quantity, lifetime and number of uses of equipment and type and quantity of consumables relevant to the administrative services required to operate the vehicle fleet and coordinate patient travel.
- Administrative services facilities for provided travel: quantity of electricity, fuels, water and types of waste generated from provided travel administrative services.
- Staff travel: staff surveys to calculate the modes and distances travelled by staff attributable to providing patient travel.
- Consumables and equipment for vehicle maintenance: type and quantity of consumables (eg engine oils, tyres) required for vehicle maintenance.
- Facilities for vehicle maintenance: the type and quantity of facilities data (eg electricity, water, waste) required to provide vehicle maintenance.

These data are the minimum required to conduct an appraisal of a patient travel module. Additional activities, services and resources may be identified when mapping the patient travel module and these shall be included, noting that they are in addition to the minimum requirements of this guidance.

Some activities may be excluded (eg administrative services, maintenance), only if meeting the materiality rules [(1)]. It may not be possible to collect activity data for the specific operation and in some instances allocation is required (see *Section 1.6*).

(1) Refer to section 2.6.3 Materiality and Data Screening in the Care Pathways: Guidance on Appraising Sustainability: Main Document

If the 'bottom up' data described above are not available, then financial data and cost allocation may be used as a proxy to quantify consumables, equipment and fuels/electricity and travel data for patient travel.

The impact of patient travel largely depends on the mode of transport used and the distance travelled. The travel habits of the average patient can be determined through the use of surveys. Average travel habits may vary according to location. For example, the use of public transport may be more common in urban areas, where it is more accessible.

1.4.2 Secondary Data

For activities identified in the process map that are outside the direct control of the organisation, suitable secondary data sources can be used. Secondary data are particularly useful where activities or modules are not deemed material to the study through a screening exercise or materiality assessment. Primary data collection is still preferred and should be used if it is reasonable to collect this information.

General secondary data sources can be found in the case study section, *Section 1.4.2* and on the GHG protocol website [(1)].

Condition specific patient travel data
http://www.hscic.gov.uk/hes

In the UK, it may be possible to collect secondary data on patient travel from the Hospital Episode Statistics database. This includes information on the number of patients treated for specific conditions and their residential postcodes.

Patient Travel Distances

The distance a patient may travel can vary significantly, dependent on the type of condition, availability of required healthcare facilities, geography (eg whether city based or rural), country size and density and a range of other factors.

Many studies have been undertaken to estimate patient travel distances for specific scenarios. Examples of average patient travel distances are provided below, which may be a useful reference when appraising the patient travel module.

(1) GHG Protocol Third Party Databases, http://www.ghgprotocol.org/Third-Party-Databases

UK distances from home to emergency care
http://www.nuffieldtrust.org.uk/sites/files/nuffield/publication/140218_qualitywatch_focus_on_distance_emergency_care_0.pdf

In the UK, the Health Foundation and the Nuffield Trust published a report that calculated the average distance from home to emergency care. The report details variation between UK regions and for different admission types.

Key findings include the following.

- The mean distance between home and emergency department was 7.2km, with 84% living within 12km.
- The mean distance between home and hospital for an emergency admission was 8.7km, with 70% living within 10km.
- The variation between regions was significant, with a shortest average home to hospital distance of 2.5km in the London Borough of Camden and longest distance of 34.2km in the Eden District of Cumbria, which highlights the potential differences between city and rural patient travel.

An example of patient travel for a different region is below, highlighting the differences between countries and purpose of travel.

Travel for a surgical procedure in rural Mozambique
http://www.ncbi.nlm.nih.gov/pubmed/25135818

In January 2015, Faierman et al published a paper titled "Surgical patients travel longer distances than non-surgical patients to receive care at a rural hospital in Mozambique".

Key findings include the following.

- A surgical patient in Mozambique travels an average of 42km to receive surgical care.
- A non-surgical patient in Mozambique travels a much lower average distance of 17km to receive care in all other wards of a hospital.

The difference between patient travel to different services is highlighted by the average distance travelled for emergency care above and GP consultations below.

Travel to a GP consultation in the UK
http://goo.gl/dMmFsJ

In 2006, Deloitte published a paper titled "Adjusting the General Medical Services Allocation Formula for the unavoidable effects of geographically-dispersed populations on practice sizes and locations".

The average reported distances travelled to a general practice within the UK are:

- 3.3km average travel distance in the UK.
- 2.4km average travel distance in urban UK areas.
- 5.5km average travel distance in rural UK areas.

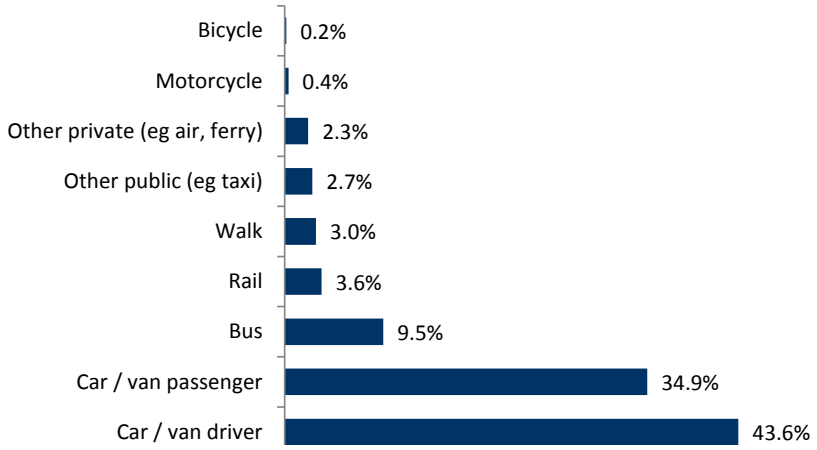
Patient Travel Modes

If a single patient is being considered in the appraisal, then the mode of travel will be specific to the care pathway. However, if a population is under consideration (eg all patients of specific age within a region with a specific condition), then a range of travel models shall be included.

The mix of travel modes shall reflect each patient travel journey for the functional unit of the care pathway being appraised. An example of the different modes used during patient travel is provided below and may be used as an estimate in the absence of primary data.

Self-travel modes for UK personal business
https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons

The UK department for Transport publishes statistics on the different modes of transport used for certain activities by residence in the UK. The category titled Personal Business includes medical consultations or treatment, as well as visiting other services such as banks, solicitors, hairdressers and others. The travel mode statistics for this category are below.



The fuel consumption and resulting emissions released from travel by different modes vary significantly. These are regularly improving due to tighter emissions regulations.

Fuel consumption of an Ambulance
http://www.londonambulance.nhs.uk/about_us/idoc.ashx?docid=160a39d1-ea21-4c6f-b0d6-b317f7ae54d7&version=-1

In 2010, the London Ambulance Service NHS Trust replaced its fleet with more fuel efficient models. Although further improvements have been made, this fuel economy is a useful reference to estimate the emissions from an ambulance journey.

Key findings include the following.

- Average fuel consumption of the ambulance fleet in 2010 was 18 miles per gallon (15.7 l/100km).

1.5 EMISSION FACTORS

Once primary activity data or secondary activity data have been collected, they shall be combined with the appropriate emission factors to calculate the performance of the module against the sustainability metrics.

A default list of emission factors is provided in *Annex C* of the Main Document and should be used where specific emission factors are not available. An example of a specific emission factor is the quantity of GHG emissions associated with a bus, allocated to the unit of a 'passenger kilometre'.

If 'bottom up' activity data could not be collected (eg quantities of types of consumables), then financial data may be used and combined with environmental extended input output (EEIO) analysis databases to calculate values for the sustainability metrics. Use of EEIO is considered to convey greater uncertainty and so using emission factors and primary activity data is preferable.

Travel modes and distances can be converted to GHG emissions using the Department for Environment, Food & Rural Affairs (DEFRA) / Department of Energy & Climate Change (DECC) conversion factors [(1)] or other regionally-specific factors. Data for environmental sustainability metrics beyond GHG emissions shall require the use of life cycle inventory data.

[(1)] Defra / DECC GHG Conversion Factors, 2014, http://www.ukconversionfactorscarbonsmart.co.uk/documents/2014%20Emission%20Factor%20Methodology%20Paper_FINAL-4Jul14.pdf

1.6 MODULE CALCULATION STEPS

Steps to appraise the module include the following.

1. Map the activities and services associated with the module.
2. Complete a materiality assessment using the module case study in order to understand the significance of activity data and the module to the pathway (if relevant).
3. If significant, identify sources from which to collect the required activity data. If not significant, use appropriate secondary or case study data and amend to the specific scenario.
4. Collect the required activity data relevant to the module scenario.
5. Identify how the activity data can be allocated to the unit of analysis (see Allocation section below).
6. Identify secondary data sources either in *Annex C* of the Main Document or specific to the activity data collected.
7. Perform allocation where necessary and combine the activity data and emission factors.
8. Interpret the findings and follow the guidelines in *Section 3* of the Main Document for reporting.

1.6.1 Allocation

Once typical patient travel habits to a particular point of care are known, the impacts of transport can be allocated between services, based on the number of patients they treat at that location. Alternatively, typical patient travel habits for a specific service could be collected via surveys. This may be necessary if travel to the point of care varies depending on the service required by the patient. For example, an inpatient going to hospital may be more likely to use public transport or to be given a lift to the hospital so as to avoid having to park their car for the duration of their stay.

Additional processes included within the system are the cleaning and maintenance of ambulances and their stations. The resources and energy used during the cleaning and maintenance of the vehicles would need to be split between the number of patients transported by the vehicles concerned.

In the first instance, one should seek to avoid allocation. However, this is often impracticable. Activity data collected for the module may need to be allocated to the particular module and to the unit of analysis. This is described below in order of priority.

- Fuel and electricity use by vehicles.
    - i. Collect activity data specific to the unit of analysis for patient travel in the first instance.
    - ii. Use travel surveys to attribute the average patient travel mode for the unit of analysis.
    - iii. Use regional activity data to estimate patient travel modes, fuels and distances.

- Consumables and equipment used in provided travel.
    i. Collect activity data specific to the unit of analysis in the first instance.
    ii. Identify consumables and equipment used for each mode of the provided emergency or non-emergency patient travel specific to the condition and divide by the number of patients undergoing transport in the defined region with the specific condition.
    iii. If the above is not possible, collect activity data on consumables and equipment used by all modes of emergency, non-emergency or combined transport and divide by the total throughput of all patients travelling for the defined time period.

- Consumables, equipment and facilities data for administrative services, booking systems and vehicle maintenance.
    i. Where possible, attribute administrative services, booking systems or vehicle maintenance data directly to the patient travel.
    ii. Use a technical expert (or use cost allocation processes) to estimate the proportion to be allocated to patient travel. Divide the resulting data by the total throughput of patients travelling.
    iii. Identify total activity data for each of these services and allocate to total throughput of patients travelling.

1.7 EXAMPLE CALCULATIONS

An example of calculating GHG emission, fresh water use and waste generated for the module is shown below. This is completed for the following patient travel scenarios:

- self-travel;
- non-emergency provided travel; and
- emergency travel (ambulance including first responder).

The materiality of data should be considered when collecting and appraising data for the module. Materiality refers to the estimated significance of data to the module being appraised. It is recommended that no more than 10% of data contributing any impact appraised be excluded (eg 10% contribution to GHG emissions of the module). Further guidance on estimating significance can be found in the main document and annexes [(1)]. Users may apply a different cut-off percentage (other than 10%) if justified, and this shall be reported along with the results of the appraisal.

For a GHG appraisal, additional effort should be taken when appraising the following categories, as these are anticipated to be the most significant contributors:

- fuel consumed during vehicle travel for all methods;
- energy used for provided vehicle maintenance; and

(1) Refer to section 2.6.3 Materiality and Data Screening in the Care Pathways: Guidance on Appraising Sustainability: Main Document

- medical gases used during provided travel.

Other hotspots may be identified when conducting an appraisal and all resources and emissions within the boundaries of the module should be considered for significance before excluding any data point.

The impact of travel on air quality may be address in future updates to the guidance.

Module Patient Travel - Self

Unit of analysis An average patient journey from, to or between points of care from or to their intended destination by their own means in the UK.

Included activities ✓ Fuel and energy, eg petrol, diesel, electricity in vehicle operation.

Excluded activities × Manufacture of vehicles

Assumptions The data are based on average National Travel Survey information and an average travel distance of 17km to elective care in England and 3.3km to GP consultation in the UK.

Data sources

- 'Distance Travelled in the NHS in England for Inpatient Treatment' by Carol Propper, Michael Damiani, George Leckie and Jennifer Dixon, CMPO Working Paper No. 06/162
- 'Adjusting the General Medical Services Allocation Formula for the unavoidable effects of geographically-dispersed populations on practice sizes and locations' by Deloitte in 2006
- Average distance travelled by purpose and main mode: England, 2013, National Travel Survey, Department for Transport statistics

Self-travel results to elective care (per single trip)

per single trip	GHG Emissions (kg CO_2e)	Fresh water use - direct (m^3)	Fresh water use - indirect (m^3)	Fresh water use - total (m^3)	Hazardous waste (kg)	Non-hazardous waste (kg)	Total waste (kg)
Consumables	x	x	x	x	x	x	x
Equipment	x	x	x	x	x	x	x
Medical gases	x	x	x	x	x	x	x
Travel	2.9	x	0.53	0.53	x	x	x
Energy	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x
Waste	x	x	x	x	x	x	x
Total	2.9	0	0.53	0.53	x	x	x

Self-travel results to GP consultations (per single trip)

per single trip	GHG Emissions (kg CO_2e)	Fresh water use - direct (m^3)	Fresh water use - indirect (m^3)	Fresh water use - total (m^3)	Hazardous waste (kg)	Non-hazardous waste (kg)	Total waste (kg)
Consumables	x	x	x	x	x	x	x
Equipment	x	x	x	x	x	x	x
Medical gases	x	x	x	x	x	x	x
Travel	0.56	x	0.10	0.10	x	x	x
Energy	x	x	x	X	x	x	x
Water	x	x	x	X	x	x	x
Waste	x	x	x	X	x	x	x
Total	0.56	x	0.10	0.10	x	x	x

Module Patient Travel – Non-Emergency

Unit of analysis An average patient journey from, to or between points of care from or to their intended destination by non-emergency provided travel.

Included activities

- ✓ Consumables used during travel
- ✓ Equipment used during travel
- ✓ Fuel and electricity use
- ✓ Water use
- ✓ Staff travel
- ✓ Waste generated
- ✓ Administration activities
- ✓ Cleaning of vehicles

Excluded activities

- × Manufacture of vehicles

Assumptions Consumables were determined based on estimated replenishment. Overheads were allocated based on staff numbers. Staff travel was estimated using National Travel Survey data for commuting.

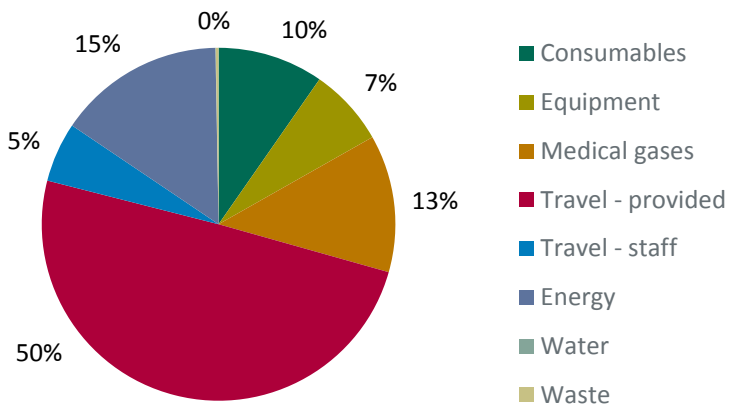
Data sources

- South East Coast Ambulance Service NHS Foundation Trust, 2013/14
- Average distance travelled by purpose and main mode: England, 2013, National Travel Survey, Department for Transport statistics
- Estates Return Information Collection (ERIC) database maintained by the Health and Social Care Information Centre http://www.hscic.gov.uk/

Non-emergency provided travel results (per single trip)

per single trip	GHG Emissions (kg CO_2e)	Fresh water use - direct (m^3)	Fresh water use - indirect (m^3)	Fresh water use - total (m^3)	Hazardous waste (kg)	Non-hazardous waste (kg)	Total waste (kg)
Consumables	0.78	x	11	11	x	x	x
Equipment	0.56	x	11	11	x	x	x
Medical gases	0.99	x	0.11	0.11	x	x	x
Travel - provided	3.9	x	0.72	0.72	x	x	x
Travel - staff	0.43	x	1	1	x	x	x
Energy	1.2	x	1.9	1.9	x	x	x
Water	0.0025	0.0072	0.024	0.031	x	x	x
Waste	0.02	x	0.007	0.007	0.025	0.1	0.13
Total	7.9	0.0072	25.8	25.8	0.025	0.1	0.13

Contribution analysis GHG emissions



Module Patient Travel - Emergency

Unit of analysis A patient journey to an emergency department by ambulance.

Included activities

- ✓ Consumables used in travel
- ✓ Equipment used in travel
- ✓ Fuel and electricity use
- ✓ First responder
- ✓ Water use
- ✓ Staff travel
- ✓ Waste generated
- ✓ Administration activities
- ✓ Cleaning of vehicles

Excluded activities

- × Manufacture of vehicles

Assumptions The total number of patients provided emergency transport was estimated based on the number of emergency patient journeys provided by the South East Coast Ambulance Service NHS Foundation Trust, assuming that each journey involved a single patient (HSCIC, 2014a). Consumables were determined based on estimated replenishment. Overheads were allocated based on staff numbers. Staff travel was estimated using National Travel survey data for commuting.

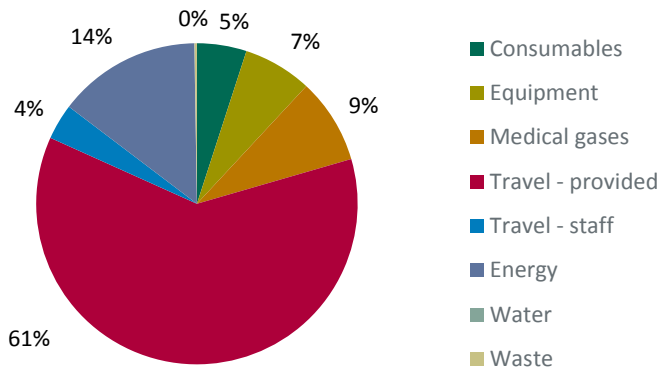
Data sources

- South East Coast Ambulance Service NHS Foundation Trust, 2013/14
- Average distance travelled by purpose and main mode: England, 2013, National Travel Survey, Department for Transport statistics
- Estates Return Information Collection (ERIC) database maintained by the Health and Social Care Information Centre http://www.hscic.gov.uk/

Emergency provided travel results (per single trip)

per single trip	GHG Emissions (kg CO2e)	Fresh water use - direct (m3)	Fresh water use - indirect (m3)	Fresh water use - total (m3)	Hazardous waste (kg)	Non-hazardous waste (kg)	Total waste (kg)
Consumables	1.8	x	25	25	x	x	x
Equipment	2.5	x	50	50	x	x	x
Medical gases	3.1	x	0.33	0.33	x	x	x
Travel - provided	22.1	x	4.5	4.5	x	x	x
Travel - staff	1.3	x	3.2	3.2	x	x	x
Energy	5.2	x	8.1	8.1	x	x	x
Water	0.01	0.03	0.1	0.13	x	x	x
Waste	0.083	x	0.007	0.007	0.11	0.43	0.53
Total	36.1	0.03	91.2	91.3	0.11	0.43	0.53

Contribution analysis GHG emissions



For further information or to provide feedback please visit:
www.sduhealth.org.uk/cspm

Published: October 2015