

## INTRODUCTION

Background: Place of death is considered an important proxy quality marker of patient choice and quality of care. In England the proportion of deaths which are in hospital has reduced with corresponding increases in deaths at home or in care homes.

Aim: To highlight variation in place of death by leading causes of death, so that implications for end of life care can be considered in more detail.

## METHODS

Underlying cause of death was categorised using Office for National Statistics (ONS) leading causes of death<sup>1,2</sup> (50 categories, 408,997 deaths, 83% of deaths registered in 2015).

From this list of 50 categories, the following cause of death categories were excluded: suicide (4,830), neonatal (1,811), transport accidents (land; 1,428), homicide (673), conditions in the perinatal period (183), pregnancy related conditions (28), other causes (not leading causes; 86,312). This left 44 selected categories.

The total number of deaths were ranked in descending order for each of the remaining 44 leading cause categories (400,044 deaths). The number and proportion of people dying in each place of death (hospital, home, care home, hospice, elsewhere), were calculated for each category (Figure 1a & 1b).

The variation in proportions of death for each place of death across the 44 selected leading cause of death categories is shown in Figure 2. The median for the 44 can be compared with the England value for all causes.

## RESULTS

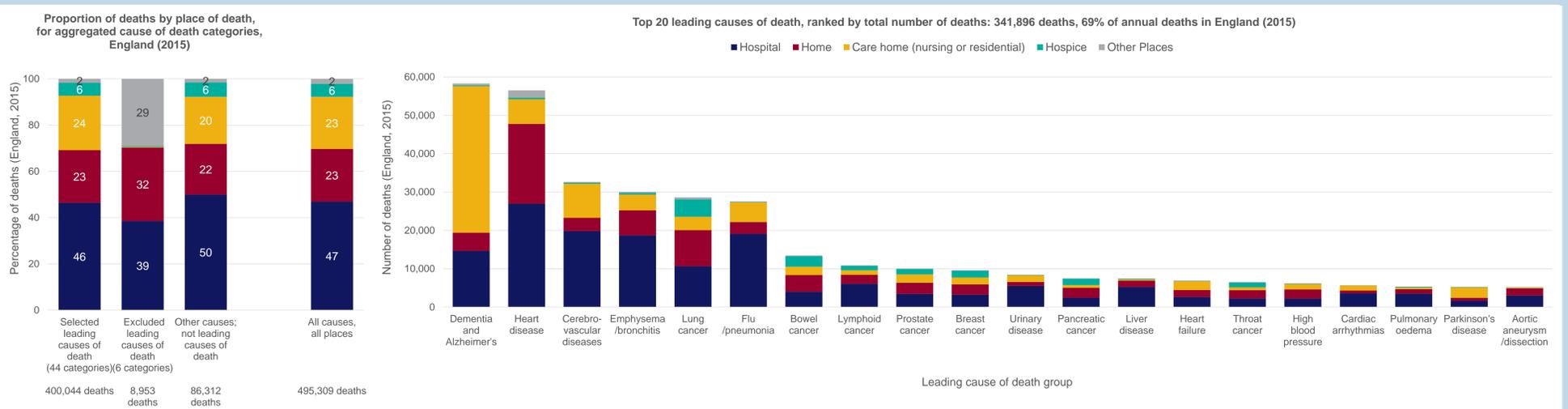


Figure 1a. Proportion of deaths by place of death; for aggregate cause of death groups, England (2015)

Figure 1b. Top 20 leading causes of death (ranked by total number of deaths) by place of death, all persons, all ages, England (2015)

Deaths from all causes, in England in 2015, occurred in hospital (47%), care homes (23%), home (23%), with less than a tenth in hospices (6%) and other places (2%) (Figure 1a).

Place of death proportions varied widely by leading cause of death category. Most (18) of the top 20 leading cause groups (and 3 of the excluded leading cause groups) had more than half of deaths in hospital (Figure 1b).

For deaths from the selected 44 leading causes of death (Figure 2):

- The range in proportion of deaths was between zero and 91% across all places of death.
- The range was greatest for deaths in hospital (71%) and least for hospices (28%)
- Median results by leading cause and place of death vary from all causes, except for other places

Note: proportions (%) are rounded to integers and may not appear to add up to exactly 100%

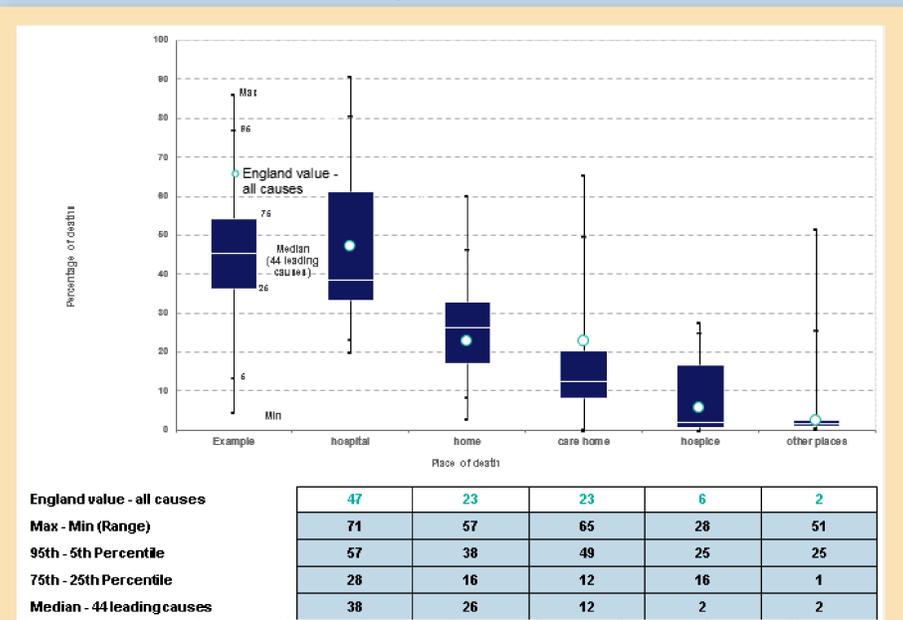


Figure 2. Variation in proportion of deaths by place of death for 44 leading cause groups, compared to the England value for all causes, England, 2015

**Hospice**  
England 6%  
Range (44 causes) 3% to 28%

**Care home**  
England 23%  
Range (44 causes) 0% to 65%

Causes, with the **highest** proportions of deaths in a care home included:  
dementia and Alzheimer's (65%),  
Parkinson's disease (52%),  
acute respiratory diseases (excluding flu/pneumonia; 45%)  
heart failure (34%)  
cerebrovascular diseases (27%)  
cardiac arrhythmias (23%)  
brain cancer (23%)  
high blood pressure (22%)  
prostate cancer (21%)

**Home**  
England 23%  
Range (44 causes) 3% to 60%

Causes, with the **highest** proportions of deaths at home included:  
accidental poisoning (60%)  
mental and behavioural (psychoactive substance; 49%)  
epilepsy (41%)  
high blood pressure (38%),  
heart disease (37%)  
aortic aneurysm/dissection (35%)  
accidental threats to breathing (35%)  
cardiomyopathy (35%)  
pancreatic cancer (35%)

**Hospital**  
England 47%  
Range (44 causes) 20% to 91%

Hospital was the most common place of death for most (34 out of 44) selected leading causes of death categories (all ages).

Causes with the **highest** proportions of hospital deaths included:  
septicaemia (91%),  
accidental falls (81%),  
meningitis (80%),  
musculoskeletal diseases (74%),  
liver disease (70%),  
flu/pneumonia (69%),  
pulmonary oedema (65%) and  
urinary disease (65%)

Lymphoid cancer (56%) had the highest proportion of hospital deaths among cancers

Causes with the **lowest** proportions of hospital deaths included:  
brain cancer (22%),  
dementia and Alzheimer's (25%),  
Parkinson's disease (31%),  
high blood pressure (36%) and  
systemic atrophies (central nervous system, 37%)

## DISCUSSION

Delivery of high quality end of life care is important, regardless of the setting or cause of death<sup>4</sup>. It involves sensitive communication and takes into account the needs and wishes of those who are dying and of the people who are close to them<sup>4,5,6</sup>. We currently lack national data in England to relate cause and place of death to patient wishes. Investigation of the reasons for wide variation in the proportion of deaths by places of death for selected leading causes may help us to work with others, including patients and carers, to identify and promote areas of good clinical and administrative practice in end of life care, and reduce unwarranted variation.

## CONCLUSIONS

Despite reductions in the England value there is still wide variation in the proportion of people who die in a hospital, by cause of death.

We need better evidence to inform care and planning, but relating clinical information to other key aspects of care is still very challenging because of underdevelopment of national datasets.

Variation in recognition of the likelihood of death, sensitive communication, including the needs and wishes of the person who is dying and involvement of those who are close to them is poorly understood through current administrative data in England.

## ACKNOWLEDGEMENTS

Office for National Statistics: Public Health England Annual Births and Mortality Extracts

## CONFLICTS OF INTEREST

None

## REFERENCES

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