

# Correlation Between Opioid Dispensing and Opioid-Related Deaths Among Clinical Commissioning Groups in England

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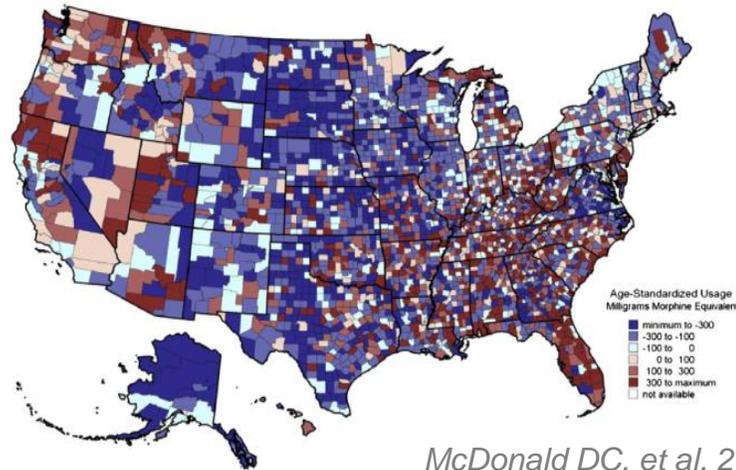
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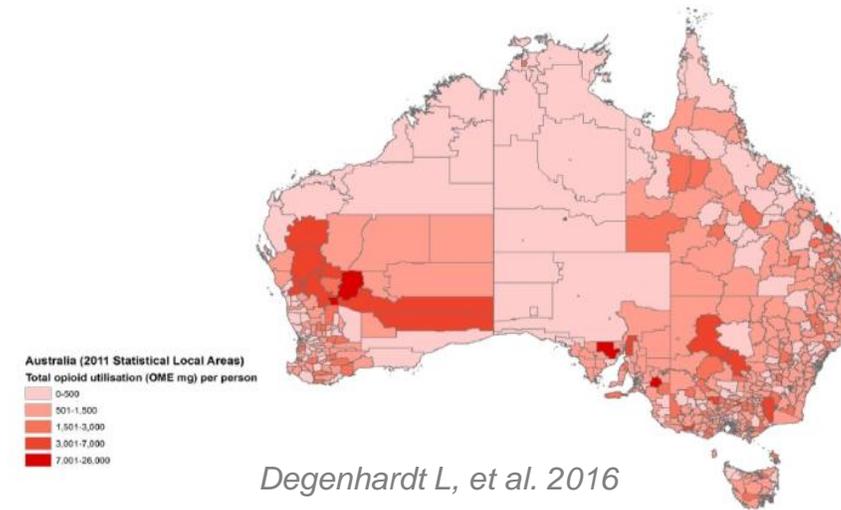
*Oral session 4, Stream 2, Prescribing*

## Regional Variation of Opioid Utilisation

- There has been marked increase in opioid utilisation globally, and regional variation of opioid utilisation has been found in several countries, but not in the United Kingdom (UK).



McDonald DC, et al. 2012



Degenhardt L, et al. 2016

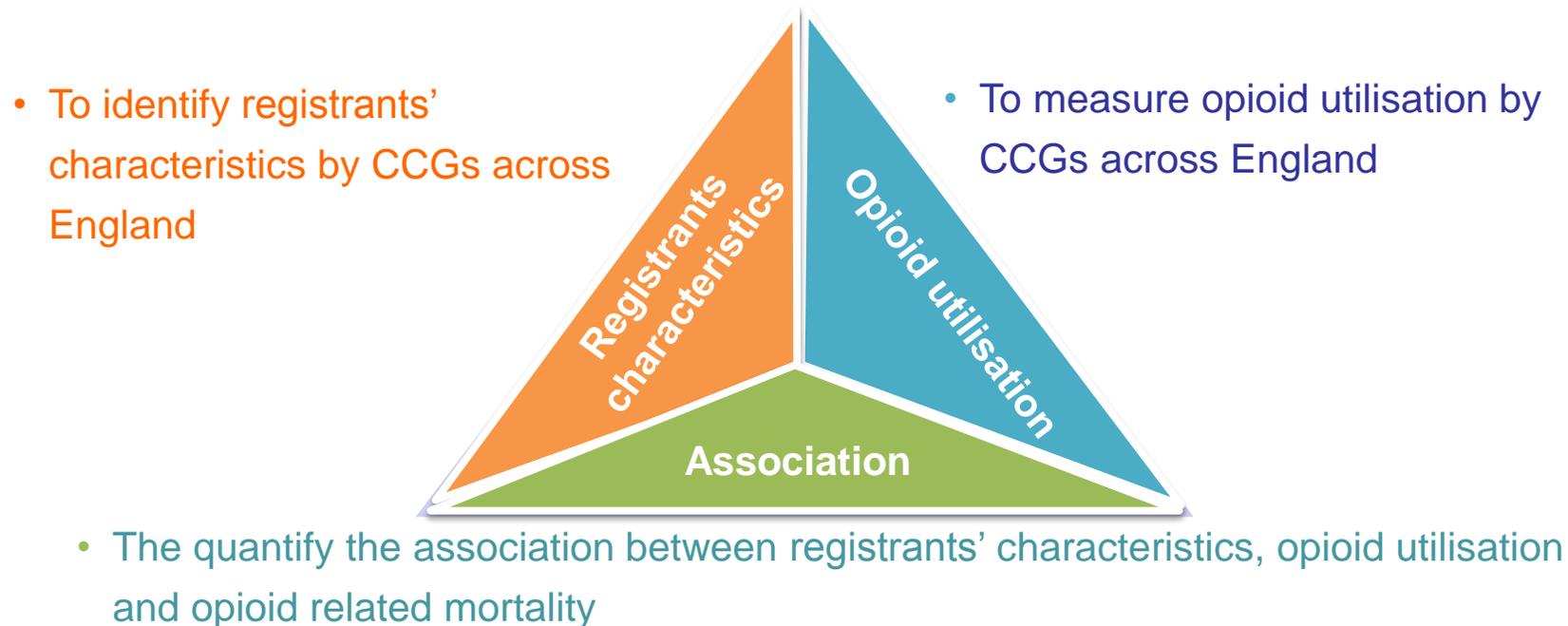
- A strong correlation between opioid utilisation and harm has also been demonstrated. (Fischer B et al. 2013,)

## Association between characteristics, opioid utilisation and related mortality

- In other countries, several factors have been found to be related to regional variation.
  - Population characteristics, including socioeconomic status <sup>(1)</sup>.
  - Disease condition <sup>(2)</sup>
  - Policy <sup>(3)</sup>
- The majority of studies focused on the association between opioid utilisation and abuse rather than mortality.

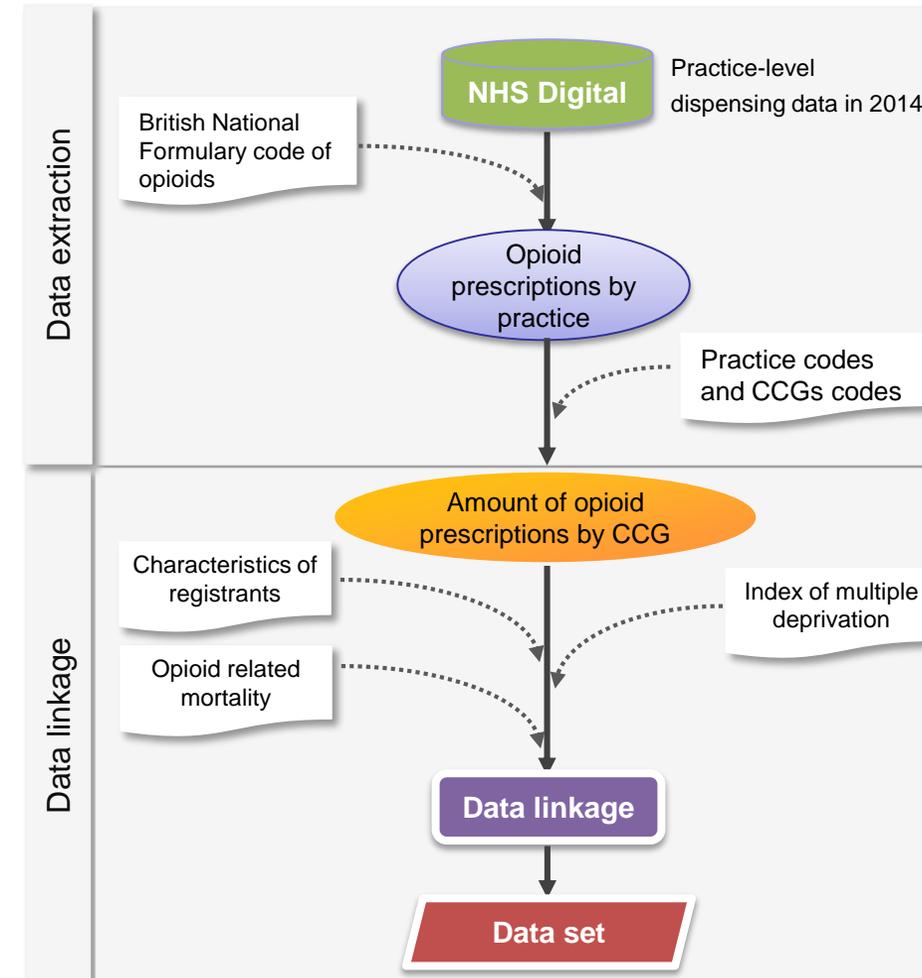
## Aim and Objectives

- This study aimed to explore local opioid utilisation and its association with opioid-related mortality across different Clinical Commissioning Groups (CCGs) in England.



## Methods

- **Study design**
  - Cross-sectional study
- **Data sources**
  - National Health Service (NHS) Digital
  - Department of Communities and Local Government
  - Office of National Statistics
- **Study cohort**
  - Primary care practices which prescribed opioid analgesics during study period
  - Practices were grouped into Clinical Commissioning Groups (CCGs)



## Methods

- Opioid utilisation
  - Total defined daily dose (DDD)/1000 registrants/day by CCG
- Opioid-related mortality
  - Number of deaths/million registrants/year by CCG
- Covariate measure
  - Characteristics of registrants
    - The proportion of female, patients age over 65 years, current smokers, obesity, cancer diagnoses, depression and mental illness
  - Socioeconomic status -Index of multiple deprivation (IMD) scores
    - The greater score and lower decile represent the more deprived areas.
- Data analysis
  - Opioid utilisation and opioid related deaths were presented graphically.
  - Multivariate regression was used to assess the association of opioid mortality with opioid utilisation and adjusted covariates.

## Characteristics of registrants

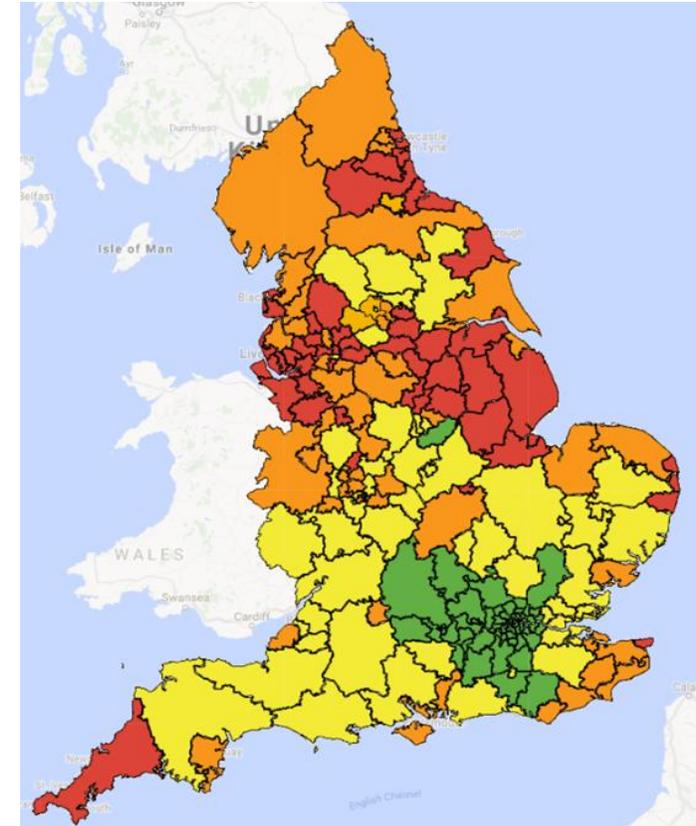
- Overall, 7856 practices were grouped into 209 CCGs.

Characteristics of practice	Percentile		
	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>
Number of patients	170700	228027	310121
Mean IMD score for each CCG	15.9	21.3	27.2
<b>Proportion of registrant demographics and Quality of Outcomes Framework indicators</b>			
Female	50.4	50.8	51.1
Age over 65 years	14.6	18.2	20.6
Overweight patients	7.8	9.1	10.6
Current smokers	16.6	18.3	20.6
Cancer	2.0	2.3	2.6
Mental health diseases	0.74	0.83	0.96
Depression	6.6	7.5	8.3

## Opioid Utilisation across England

- The median of opioid utilisation was 39.5 and ranged from 13.0 to 107.1 DDD/1000 registrants/day.
- CCGs located in **northern** areas had higher opioid utilisation and the majority CCGs located in **London and surrounding areas** prescribed less opioid.

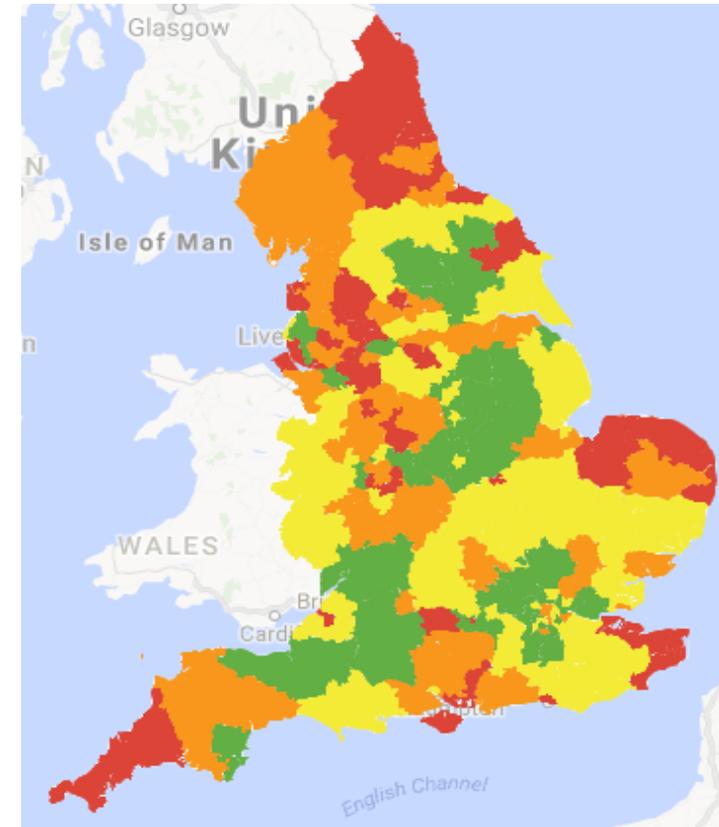
	Quartile	Opioid utilisation (DDD/1000 registrants/day)
	<b>First (Lowest )</b>	13.0- 29.39
	<b>Second</b>	29.39 – 39.49
	<b>Third</b>	39.49 – 51.44
	<b>Fourth (Upper)</b>	51.44-107.1



## Opioid-Related Mortality across England

- The median of opioid-related mortality was 28.9 and ranged from 0 to 156.4 deaths/million/ year.
- CCGs located in **northern area and metropolitan areas** had higher opioid-related mortality

	Quartile	Opioid mortality (deaths/million/year)
	<b>First (Lowest )</b>	0 -15
	<b>Second</b>	15 – 28.9
	<b>Third</b>	28.9 – 43.7
	<b>Fourth (Upper)</b>	43.7-156.4



## Covariates and Opioid Utilisation

- Higher opioid utilisation was associated with more deprived SES, increasing age and co-morbidities .

Covariates	Adjusted coefficient (95%CI)
IMD decile	-2.8 (-3.7, -1.8)*
<b>Proportion of registrant demographics and Quality of Outcomes Framework indicators</b>	
Female	-0.26 (-2.3, 1.8)
Age over 65 years	1.1 (0.14, 2.0)*
Overweight patients	-0.17 (-0.72, 0.38)
Current smokers	1.6 (0.71, 2.5)*
Cancer	8.8 (0.45, 17.2)*
Mental health diseases	-17.8 (-25.8, -9.8)*
Depression	2.9 (1.9, 3.9)*
Note: *:P<0.05	

## Covariates and Opioid Mortality

- For every increase in the number of opioid DDD/1000 registrants / day, the number of mortality significantly increased by **0.61** deaths/ million/ year (95%CI: 0.30, 0.92, P<0.001).

Covariates	Adjusted coefficient (95%CI)
Opioid utilisation	<b>0.61 (0.30, 0.92)*</b>
IMD decile	1.2 (-1.2, 3.5)
<b>Proportion of registrant demographics and Quality of Outcomes Framework indicators</b>	
Female	-3.6 (-8.2, 0.88)
Age over 65 years	1.6 (-0.46, 3.7)
Overweight patients	-0.11 (-1.3, 1.1)
Current smokers	1.4 (-0.69, 3.4)
Cancer	-11.6 (-30.5, 7.3)
Mental health diseases	<b>36.5 (17.8, 55.2)*</b>
Depression	0.63 (-1.8, 3.1)
Note: *:P<0.05	

## Discussion

- **Main findings**
  - Marked variation in opioid utilisation and opioid-related mortality among CCGs in England.
  - Socioeconomic status and registrants' characteristics were associated with opioid utilisation.
  - Opioid-related mortality was correlated with **mental health diseases** and increasing **daily opioid utilisation**.
- **Strength and limitation**
  - The first study shows the association between opioid utilisation and mortality using publicly available data.
  - Cross-sectional study explores factors correlated with opioid utilisation and mortality.

## Conclusion

- An association between opioid utilisation and associated mortality was found across England.
- The results based only on aggregate level practice data rather than individual level data.
- **Future work**
  - Further analysis is needed to validate these results by using **individual patient data**.
  - **Longitudinal studies** are needed to explore the association between patients' characteristics, opioid utilisation and mortality in the UK.

# Thank you for your attention

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