National data and surveys for policy brief development

Jan van der Meulen

London School of Hygiene and Tropical Medicine

World Health Organization

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Knowledge translation map (Graham 2006)

Contribution
National data and surveys
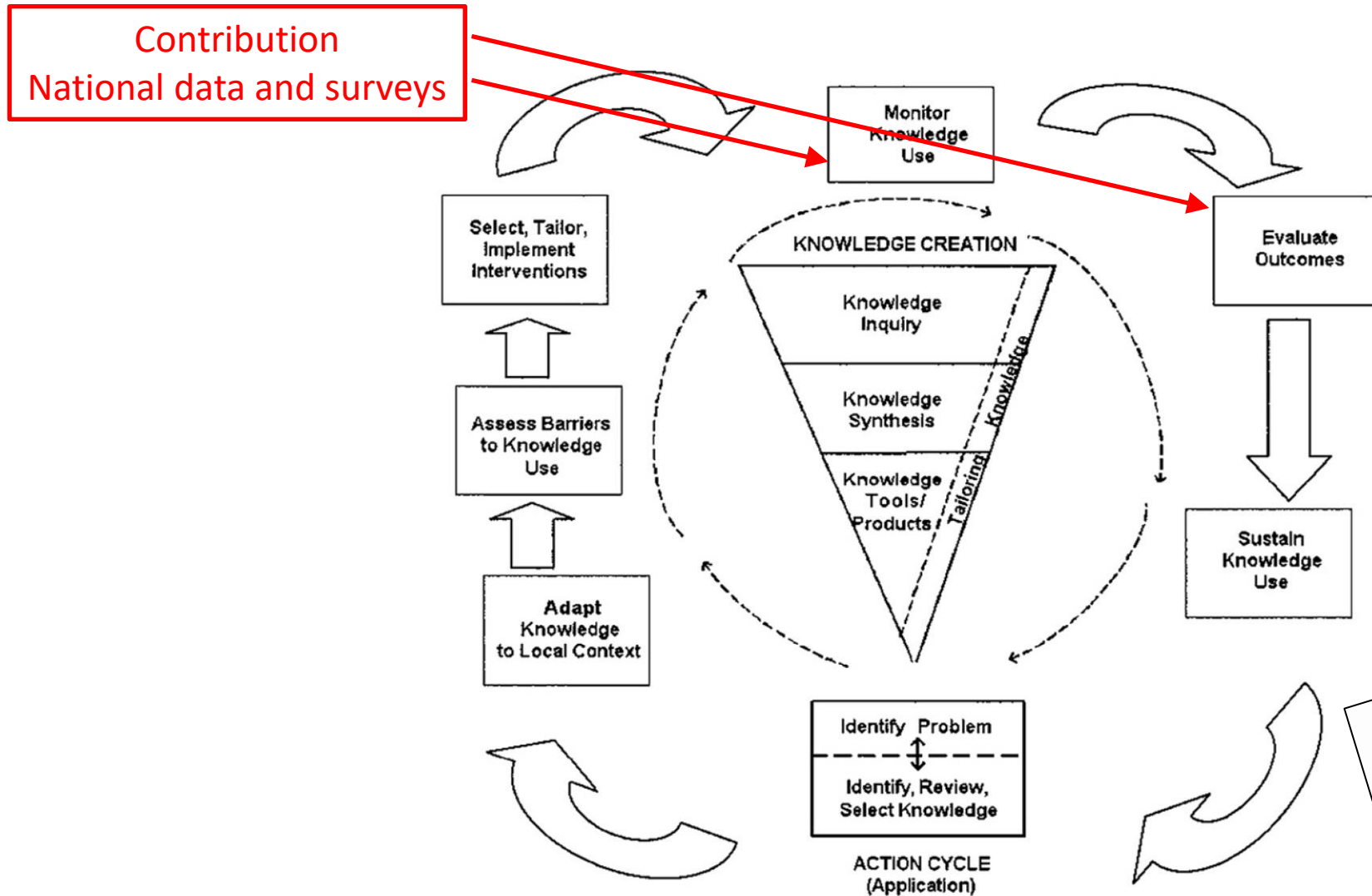
Fig. 1. The knowledge-to-action framework.

Role of national data and surveys (Straus 2010)

Table 1: Measures and impact of use of knowledge

Construct	Description	Examples of measures	Strategies for collection of data
Use of knowledge			
Conceptual	Changes in levels of knowledge or understanding or in attitudes	Knowledge-related attitudes; intentions to change	Questionnaires, interviews
Instrumental	Changes in behaviour or practice	Adherence to recommendations (e.g., change in prescribing, adoption of a new nursing practice or abandonment of an existing practice)	Administrative or clinical database
Persuasive	Use of knowledge for political change and to influence policy	Use of knowledge in policy-related documents and discussions	Analysis of documents
Outcomes			
Patient	Impact on patients of using or applying the knowledge	Health status (morbidity or mortality), health-related quality of life, satisfaction with care	
Provider	Impact on providers of using or applying the knowledge	Satisfaction with practice, time taken to do new practice	
System or society	Impact on health system of using or applying the knowledge	Cost, length of stay, waiting times	

"processes"

"outcomes"
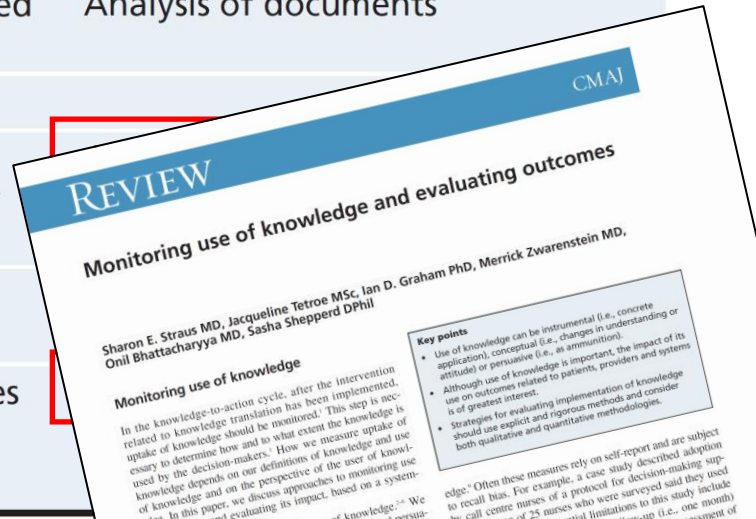
National data and surveys (as available in the UK)

Diversity of data sources:

- <u>Coverage</u>: all patients <u>or</u> specific patient groups

- <u>Purpose</u>: administrative or clinical data

- <u>Collection method</u>: routinely collected <u>or</u> dedicated "surveys"

- <u>Source</u>: clinician-reported, patient-reported, <u>or</u> laboratory data

- <u>Scope</u>: only health <u>or</u> also non-health

- <u>Complexity</u>: "single-episode" <u>or</u> "longitudinal"

- <u>Linkage</u>: single data source <u>or</u> several datasets linked at patient level

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Epidemiological approach (1)

	no recommendations	recommendations available
processes	what are we doing?	are we doing what we should be doing?
determinants		
outcomes	...are doing?	are we doing it well?

OBSERVATIONAL DATA:
- Beware of confounding factors
- Think about "causal" pathways

Study of determinants of variation in processes and outcomes

Epidemiological approach (2)

Turn a "policy issue" into an "answerable question" -> define:

- Population
- Comparator groups (<- "<u>determinants</u>")
- Confounders and mediators
- "<u>Processes</u>" and/or "<u>outcomes</u>"

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Epidemiological approach (3)

Policy issue in England: Socioeconomic and ethnic inequalities in pregnancy outcomes

Answerable question: "In women giving birth in NHS ho_____ls, are the risks of stillbirth and preterm birth associated with the women'_____e and ethnic background?"

- Population:
  - women giving birth
- Comparator groups
  - groups accordin_____d
- Confounders and me
  - maternal age, par_____sting medical conditions
- Outcomes:
  - stillbirth, preterm l____and fetal growth restriction.

Study design:
- All women giving birth
- Routinely collected administrative data
- Derived from clinician-reported data
- Single episode
- Single data source
- Cross-sectional study

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Information governance and data access

Getting approvals in place and obtaining access to data can be a lengthy process

Example* of timeline of obtaining routinely collected maternity data from English NHS:
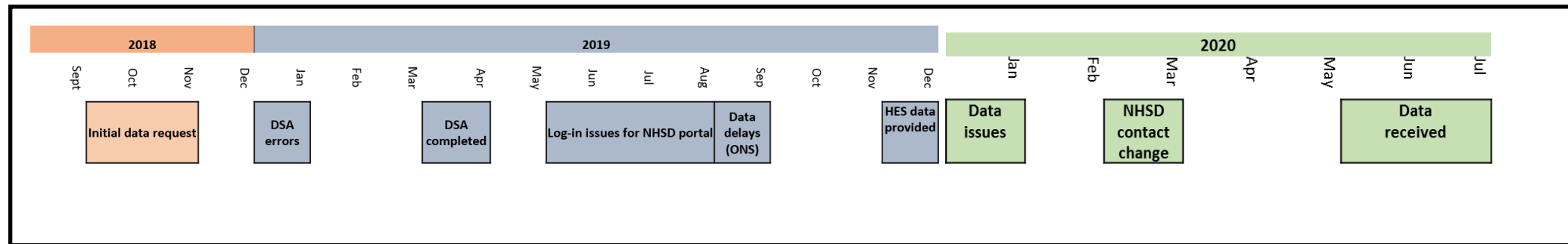
* From National Maternity and Perinatal Audit

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"Data science"

Develop a <u>coding scheme</u> based on data items in available data source to define key study components):

- <u>Population</u>

- <u>Comparator groups / confounders and mediators</u>

- <u>Outcomes</u>

Evaluate the "robustness" of the coding scheme":

- <u>Validity</u> ("Are differences likely to reflect worse care / worse out

- <u>Statistical</u> power ("What is the change of detecting a 'true differe

- <u>Technical</u> specification ("How well can data define key study com

- <u>Fairness</u> (What are other differences between comparator groups

RS Geary,a,b HE Knight,a,b FE Carroll,b I Gurol-Urganci,a,b E Morris,b,c DA Cromwell,a,d
JH van der Meulena,b

a Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, UK b Royal College of Obstetricians and Gynaecologists, Lindsay Stewart Centre for Audit and Clinical Effectiveness Unit, London, UK c Norfolk and Norwich University Hospital, Norwich, UK d Royal College of Surgeons of England, Clinical Effectiveness Unit, London, UK
Correspondence: RS Geary, Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, 15-17 Tavistock Place, London, WC1H 9SH, UK. Email rebecca.geary@lshtm.ac.uk

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Hospital administrative data are attractive for comparing performance of maternity units because of their often large sample sizes, lack of selection bias and the relatively low costs of accessing these data compared with conducting primary data collection. However, using administrative data to develop indicators can also present challenges including varying data quality, the limited detail on clinical risk factors and a lack of structural and user experience measures. This review illustrates how to develop performance indicators for maternity units using hospital administrative data, including methods to address the challenges that administrative data pose.

Keywords Administrative data, hospital episode statistics, maternity statistics, performance indicators.

Tweetable abstract How to develop maternity indicators from administrative data.

Background

There is growing interest in performance monitoring and quality improvement in healthcare in the UK and else-where.1-3 Although the quality of healthcare can be improved without measuring performance, for example, through educational programmes or clinical guidelines,4,5 assessment of processes and outcomes of care is

levels of public interest in the safety and quality of mater-nity care, many countries lack robust, easily interpretable information on even basic maternal and perinatal out-comes.10

In the UK, a number of initiatives have recently been introduced, aiming to improve this situation by drawing on routinely collected clinical and hospital administrative data to measure performance and variation in care between maternity units.11-13 For example, the new National Ma-ternity and Perinatal Audit in England, Scotland and Wales will link existing data sources, rather than introducing new data collections solely for the purpose

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Statistical methods

Three key issues:

- Missing data -> statistical imputation techniques (often used, not always fully justified)

- Risk (or case-mix) adjustment -> e.g., regression analysis (always risk of "residual confounding")

- Capturing the uncertainty in the results -> danger of overinterpreting differences
  - Play of chance -> often taken too lightly
  - Impact of data quality

↓

Beware of poor "signal-to-noise ratio"

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National Maternity and Perinatal Audit

- "Audit" of the NHS maternity services across England, Scotland and Wales
- Aim: to evaluate care processes and outcomes in order to identify good practice and areas for improvement in the care of women and babies

More information:
https://maternityaudit.org.uk

Article

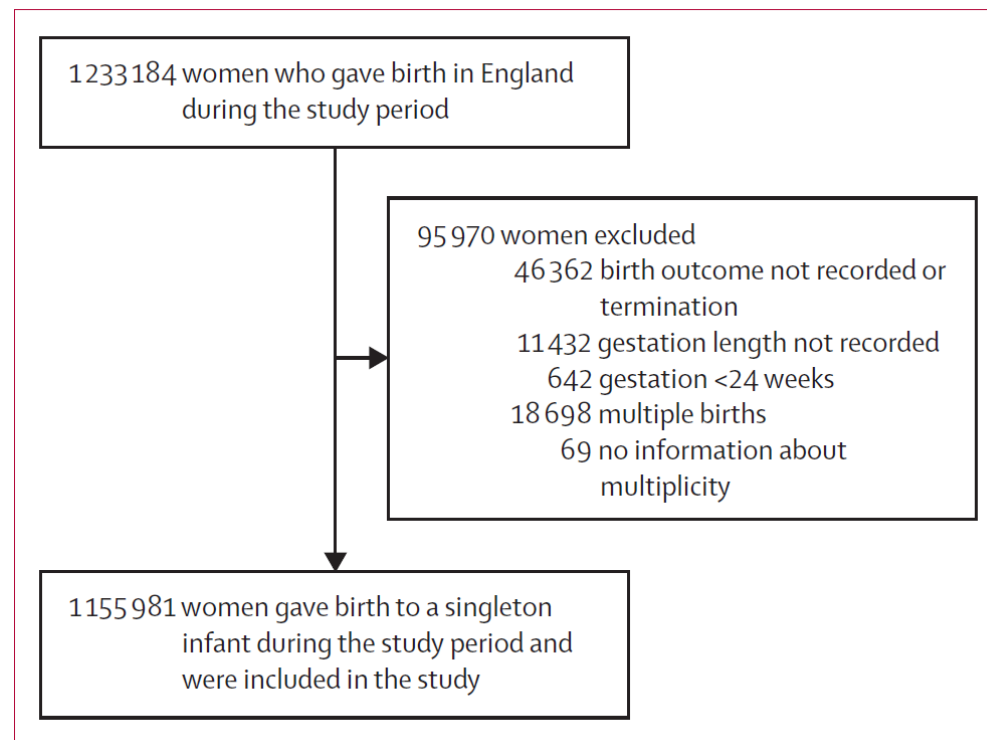**Births and infant mortality by ethnicity in England and Wales: 2007 to 2019**

Live births, stillbirths, infant deaths by ethnicity of the baby occurring annually in England and Wales.

Ongoing concern in the UK:
Women from more deprived socioeconomic backgrounds and minority ethnic groups have poorer pregnancy outcomes
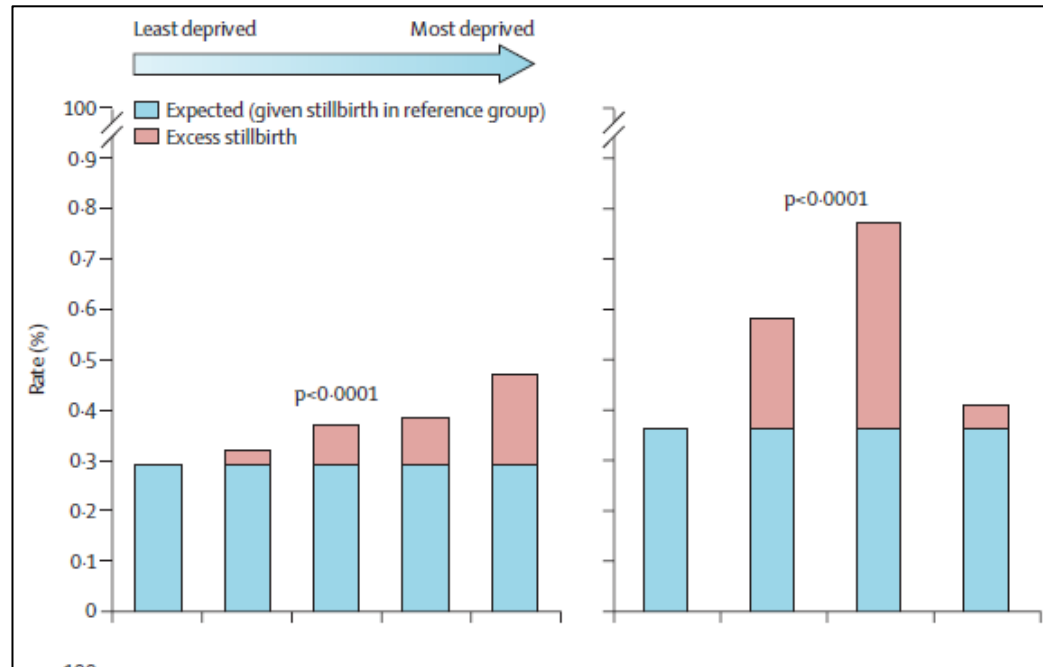
Statistician's comment

"While stillbirth and infant mortality rates across all ethnic groups have generally been declining since 2007, babies from black ethnic groups have the highest rates.

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"Sprint audit": ethnic and socio-economic inequalities in maternity and perinatal care for women and their babies
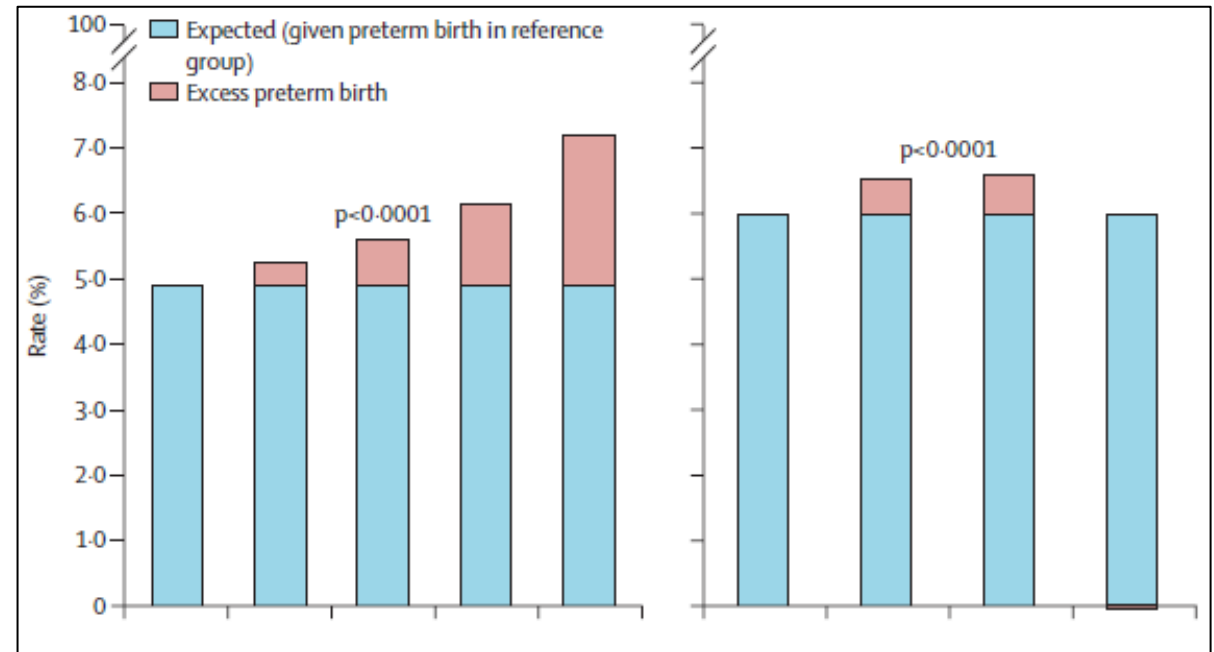
between 2015 and 2017

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Stillbirths

Preterm births

NMPA
National Maternity & Perinatal Audit

Socioeconomic quintile — Ethnic group
White South - Asian Black – Mixed other

Socioeconomic quintile — Ethnic group
White South - Asian Black – Mixed other

"Population attributable fractions"

Proportion of stillbirths attributable to:
Socioeconomic deprivation: 24%
Ethnicity 19%

Proportion of preterm births attributable to:
Socioeconomic deprivation: 12%
Ethnicity 1%

Outputs (not turned into "policy briefs")

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National data and surveys
Workshop questions:

- Identify possible topics for policy briefs for which analysis of national data and survey can provide relevant evidence

- Frame answerable questions

- Evaluate available data sources

- Consider information governance and data access options

- Identify data science and statistical issues

- Design policy briefs: audiences, messages, and media

- Challenges…..

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