Reconsidering Hand Hygiene Observation Methodology
Prof. Dinah Gould, Cardiff University
Broadcast live from the New Zealand Infection Prevention and Control Nurses College Conference

Reconsidering hand hygiene observation methodology

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Context

- Hand hygiene breaks the chain of infection
- Essential part of any infection prevention program
- Received more attention than any other infection prevention measure
- WHO emphasises importance of audit/monitoring
- Undertaken routinely in many countries: time-consuming
- Adherence to hand hygiene often taken as key patient safety indicator
- BUT maintaining adherence is challenging
Making sense of audit/monitoring: what do the results mean?

We need:

- **RELIABILITY** (consistency): same results generated by all data collectors

- **VALIDITY** (truth): monitoring tool measures what it claims to measure

Poor reliability reduces validity

Monitoring methods

- **SELF-REPORT**: social desirability
- **DIRECT OBSERVATION**: ‘gold standard’, overt/covert
- **VIDEO-RECORDING**: vantage for data capture, patient privacy, resource-intensive
- **PRODUCT CONSUMPTION**: inexpensive, inaccurate, ‘gaming’
- **ELECTRONIC/COMPUTERISED**: variable cost/sophistication
- **COMBINATION OF ABOVE METHODS**
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What do we know about the rigour of hand hygiene audit/monitoring?

- 2007 Cochrane systematic review to evaluate effectiveness of interventions to improve hand hygiene adherence/reduce healthcare-associated infection
- Updated 2009, 2017
- Included studies must demonstrate robust designs
- Data collection methods of secondary importance
- Rigour of monitoring not mentioned/briefly mentioned in publications & not considered in review criteria
- Other reviews overlook how data were collected

Retrospective look at hand hygiene monitoring

PRE-2007: data collected by direct observation, rigour not considered

EXCEPTIONS

Gould 1994: observational study
- Detailed monitoring: 172 nurses, 2h each
- Extensive pilot studies: individual ‘shadowing’
- Attempt to reduce impact of observation: ‘blending in’, some information about data collection withheld

Creedon 2005: intervention study
- Habituation: data collected 2h on x5 at each venue
- Discarded early data from each 2h session
- Health workers not informed when ‘real’ audit began

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Creedon 2005: messages for validity?

- NO comparison of data before/after habituation period
- NO way of assessing effectiveness of habituation
- CLEAR MESSAGE for future methodological research

Gould 1994: the dataset

- Generated very detailed data: frequency, sequence of care, technique for 172 nurses
- Intra-patient care episodes (behind screens)
- Two auditors: high inter-rater reliability
- Impact of clinical workload on performance
- Documented 2hr long sequences of care: impact of emergencies
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Gould 1994: findings

- Very low adherence: 28.7%
- 2 nurses failed to cleanse hands over 2h despite need
- Technique: better than in contemporary studies & stable for same nurse over time
- Nurses often forgot they were being observed
- **ASTONISHING** behaviour documented!

Conclusion: presence of observer did NOT have much impact

Contemporary studies

- Everybody knows they need to cleanse hands
- Presence of observers now identified as major validity threat
- Recognised in WHO 2009 guidelines
- Covert observation not encouraged
- Value of other methods debated: no solution offered
- Greatest challenge: impact of observation on behaviour ‘Hawthorne Effect’
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Hawthorne effect: challenges of interpretation

- Origin: Hawthorne Electrical Plant, US 1930s
- Observation resulted in productivity
- Applied to hand hygiene: frequency, better technique
- BUT modern behavioural science requires us to measure variables that could influence study outcomes e.g. being busy
- NOT DONE in original Hawthorne experiments: now criticised & not well replicated
- Contemporary interpretation: observation can disrupt behaviour in complex, unpredictable ways, often idiosyncratic
- Terms Hawthorne/observer effect used interchangeably: ongoing confusion over terminology → not used accurately

Reflections on 1994 data: marked observer effect

DELAYING TACTICS
- Complex, intricate procedures under-represented in the dataset
- ‘Difficult’ situations under-represented

AVOIDANCE
- ‘Hiding’ in administration, errands

MANAGERIAL CONTROL
- Sent to ‘best’ wards: Hospital B
- Sent to ‘bad’ wards: Hospital A

RESULT
Incomplete/inaccurate picture of hand hygiene in relation to practice & across the organisation

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Audit: implications of poor validity for practice

AUDIT = overview: ‘quick & dirty’

- Today clinicians are sophisticated: dissatisfaction if method does not appear fit for purpose, infection control ‘fatigue’
- Consequences of low adherence → negative feedback → poor morale → poor staff retention → high workload for remainers → vicious circle
- Patient concern
- Poor institutional reputation
- BUT 100% adherence is not credible
- Artificial inflation → complacency → no impetus for continuous quality improvement

Research: implications of poor validity

- RESEARCH = precision, truth
- Purpose = guide hand hygiene policy & practice locally, nationally, globally
- Wrong conclusions → misleads scientific & clinical community → could harm patients/services, could lead to mis-use of resources
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Blurred boundaries

- Distinction between audit & research is ill-defined: methodologists argue
- ESPECIALLY challenging for hand hygiene
- ‘Research’ is often not a-priori
- Hand hygiene interventions – success assessed with big datasets collected routinely over years
- BUT hand hygiene monitoring is not rigorous
- Likely to ‘drift’ over years of data collection especially without rigorous auditor training, revalidation & quality control
- Poor monitoring has major consequences for what we can conclude from ‘research’

Choosing a method fit for purpose: key decisions

- How will the data be used – now/in future? Audit or research?
- Who will use the data? Infection prevention personnel, managers or clinical staff?
- Acceptability: health workers, patients, managers
- Cost: purchase, installing & maintaining equipment
- Priority: depends on country, health service
- Resources: time for analysis – computer/video footage requires detailed analysis
- Where will the data be collected? One method may not be appropriate in all clinical settings
- How much detail is wanted?: Outside screens or intra-patient care episodes?
- How will we deal with issues of privacy, ethics?
- How will we deal with poor performance if ‘quick & dirty’ audit is used?
- How will monitoring inform training/education?
- Combining methods: troubleshooting vs. precision

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Directions for future research

- Do we need a clear distinction between data collection for audit & research?
- Audit to capture routine practice & precise monitoring for research studies?
- How can we measure the validity of hand hygiene audit/monitoring?
- Do we have a universal ‘gold standard’?
- Is our present gold standard good enough?
- How can we calibrate other methods against that gold standard?
- What methods/combinations of methods do we need for clinical audit?
- What methods/combinations of methods do we need to support robust research? Do we need a checklist for reporting? ORION, STROBE
- How can we ensure acceptability of monitoring methods to all stakeholders?

In summary

Robustness of study designs in intervention studies to improve hand hygiene adherence is improving: evidence from Cochrane reviews

Robustness of hand hygiene monitoring needs methodological re-consideration

Routine audit in clinical situations needs to be practical & robust: patient safety, service quality, health workers

Ensuring that hand hygiene measurement is robust is the next big challenge

Key role for clinicians, academics and industry working together

Thank you

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