Lies, damn lies and statistics!

Who are we really fooling?

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Using Quality Indicators for improved resident outcomes
Wednesday 5 June 2013 11:00am
Department of Health Ageing & Aged Care Forum on Quality Indicators
Meeting Room 219 & 220, Stair 3 Doors 6 & 7
Melbourne Exhibition Centre
Aim

- Interactive session
- Practical examples or puzzles
- Information
  - Decisions about how to report
  - How we analyse and interpret
  - Exploring human motives
Rule #1: Context is everything
Reporting: What do numbers these mean?

Discuss as a group how to interpret this information
Reporting Information

- 1984 ➔
- 21y ➔
- 30° ➔
- Average ➔
- Better than expected ➔
- 1 in 10,000 days ➔
- $A = 0.95US ➔$
Context

- Write a description of a typical RACS
- Compare this with a colleague
  - Similarities?
  - Differences?
Reporting:
What do numbers these mean when reported as QI falls?

Discuss as a group how to interpret this information
Reporting Again: QI Falls

- 1984
- 21 years
- 30°
- Average
- Better than expected
- 1 in 10,000 days
- $A = 0.95US$
Who wants information?

60 seconds, 6 stakeholders
Stakeholders

- Department (DoH or DoHA)
- Board
- Management team
- Staff
- Residents
- Public
What are their information requirements?

Choose two stakeholders
Compare & contrast their desire; need and ability to understand QI information
Information to report

- 1000 falls
- 1000 falls per annum
- 20 fractures per annum
  - Per 1,000 residents
  - Per 365,000 resident days
- Every resident falls once a year
- Previous year
  - 500 falls
  - 30 fractures
- Highest number of falls in all 50 RACS in our region
You can report only one item, which is the most important?

Did you agree?

Is there any information missing?
Skewed reporting includes

- 0.0055 fracture per 10000 resident days
- 20 fractures per 365,000 resident days

Substantial improvement on last year
- Fracture rate dropped by 1/3, 33%

Highest number of falls in all 50 RACS in our region
- Least restrictive practice
- Most ‘resident focussed’
- Best incident reporting culture
What number do you trust?

- An anecdote: someone once told me!
- A case: I saw this happen to a resident
- A case series: Four residents said they had lost weight
- Half the residents are losing weight in this RACS
- RACS is the best in the region as 95% of their residents are weighed
Why do we report numbers

- Evidence to support
  - a point of view
  - a recommendation or
  - a decision
- To get the full picture?
Pictograms for board reports!
Rule #2: Applicable and clinically significance

The mysterious case of the lost 10kg
'Loss of weight'

Which worries you the most
- A resident loses 10kg
- Ten residents lose 1kg
- Three residents lose 3.3 kg

Why?
You are:
Poirot, Miss Marple, Sherlock Holmes, Encyclopedia Brown, Nancy Drew

What do you do?
Let's use the two rules

**Context**
- Who are you?
- Who do you represent?
- What do they want to achieve?

**Applicable**
- Who should be weighed?

**Clinically significant**
- When is weight loss healthy?
- When is it unhealthy?
Some thoughts

- Weight loss
  - Is not always unexpected
  - In some disease states beneficial (Heart Failure)

- Resident receiving palliative care
  - Monitoring their weight is irrelevant
  - Represents an unnecessary intrusion

- How do care needs change if there is a loss of weight?

- Assessing and drawing conclusions
  - Done in the context of each individual residents' needs and diagnoses
Rule #3: People make mistakes

Give an example of a mistake to the person sitting next to you
People make mistakes measuring

Give an example of a mistake with QI data
Measurement Errors

- Definition
- Collection
- Data Entry
- Checking
- Analysis and interpretation
- Reporting
Case One

Equipment
88-year-old male
- metropolitan low-level care facility
- used a wheelchair following major hip surgery

He died from
- 'aspiration pneumonia
- complicating a right frontal brain contusion
- sustained in a fall”.

Report to the coroner: wheelchair
- “the frame was damaged” and
- “the chair shows a definite lack of maintenance’
Questions

- How do we know if this is a “one-off”?
- How do we know if the other equipment is well maintained?
- Anything else?
We are examining our equipment and maintenance register.

- How many wheelchairs in RACS?
- When wheelchairs last checked?
- Whether safe for operation?
RACS-AAA said
"We checked 18 wheelchairs and 14 are safe for operation"

RACS-ZZZ said
"We checked 10 wheelchairs and 9 are safe for operation"
So what do you make of that?

Will you put a smiley face or a bomb on the QI summary report?
What do these numbers mean

Who is better at checking?

- **RACS-AAA 18/20=90%**
- **RACS-ZZZ 10/20=50%**
What do these numbers mean

Who is “safe for operation”

RACS-AAA 14/18=78% 

RACS-ZZZZ 9/10=90%
Setting Targets

- People set the rules
- Some use
  - research evidence or science
  - others are happy to go with an opinion
  - Statistical limits
- Setting targets is more about psychology
  - realistic/pragmatic;
  - optimistic/aspirational;
  - or absolute.
Setting Targets

Let's apply this to skin care and development of pressure ulcers.
As a group set out what is acceptable.
Pressure Injury

- **Realistic target**
  - same number this year as last year

- **An aspirational target**
  - half the number by next year.

- **An absolute target**
  - ‘there should be no pressure ulcers at all’
Which do you prefer?

What do the residents prefer?
How do we behave with the different targets?
Surveillance

- Regularly check what is happening
  - To reach our goals and to act early when we are going off track
  - We often set a 'threshold'

- You and four friends saving $1200 over 12 months for holiday
  - Threshold $600 by mid-year
  - Two people have not saved enough

- What do you do?

- Thresholds for action could be the occurrence of a single event e.g., death due to medication error and/or as a rate e.g., 20% of residents are prescribed a particular medicine.
Case Two
Case

98-year-old female requiring high-level care
  Developed a new deep venous thrombosis
  Requiring treatment

Death
  “as a result of complications of anticoagulant therapy prescribed to manage a deep venous thrombosis”

Recommendation
  Mandatory follow-up of laboratory tests
  Documentation of results in the medical record
Questions

- How do we know the level of follow-up?
- How do we know about documentation?
- Where do we look?
- What is reasonable practice?
- Is it enough to look at the written notes?
Answer #1

- We report percentage adherence
  - 100% of our residents who had a blood test for warfarin had the laboratory test in the file.

- That sounds great, right?
- No, Why not?
Answer #2

What if we said only 33% of residents had a doctor’s note about the warfarin test in the file.

That sounds terrible, right?

No? Why not?
So, what do these numbers mean?

- 30 residents: 4 prescribed warfarin
- Check those who had coagulation blood tests in the past week (there are 3)
- Laboratory results for all three are in the file (3/3=100%) but only one resident has a doctor’s note written in their file (1/3 = 33%).
Both versions are mathematically correct.

What we observe is the presentation of relative values i.e., percentages are potentially misleading when we consider the absolute values (actual cases).

So be careful not to be fooled.
Case Three: A challenge
Details

88-year-old female resident requires high-level care
- End stage heart failure
- Treated with oral opiates for symptom relief of breathlessness
- Dies with poor symptom relief ‘a bad death’

Recommendation:
- ‘the principles of palliative care must become core values’ for RACS to meet the end of life needs of frail older residents.
What would you measure?
What to measure?

- Many different attributes

1. Is what we are measuring relevant to the needs of the residents?

   - For example, compare 'day trips and social activities' with 'pain management'.

   - measure areas
     - (i) dangerous-high risk;
     - (ii) occur often-high volume and;
     - (iii) expensive-high cost.
2. Does it have the required technical attributes i.e., is it valid and reliable? 
   - For example, we should all have the same understanding of what is a 'fall' and report this the same way every time in every RACS.

3. Is the measure sensitive enough to detect a real difference? 
   - Statistical significance does not mean it is clinically significant.
   - Very large population numbers always gives statistical significance

4. Is it user friendly? 
   - Able to understand and explain the results to others.
Some thoughts

- Much harder question to answer
  - About how people feel and behave

- It is possible to survey
  - Staff
  - Residents’ family and friends
  - Using a questionnaire or interview about their experiences.

- However, we know that
  - What people think,
  - What they say,
  - What they do
  - Are rarely the same thing

- For example, you think opiates are dangerous and over prescribed; you say opiates prescribed as ‘prn’ should be administered as needed and; you do always give it but in the smallest dose possible.
Conclusion

It is easy because it is about people
Using and interpreting numbers

- Rule #1: Context is everything
- Rule #2: Applicable, Clinical significance
- Rule #3: People make mistakes
Rule #1: Context is everything

- What is being measured?
  - Why?
- Who is measuring?
  - Why?
- What is our response?
  - Why?
Rule #2: Applicable, clinical significance

- Count: all, some or none?
  - Applicable
  - Adherence
  - Exceptions

- Clinical or statistical significance
Rule #3: People make mistakes

- Mistakes in measuring
- Mistakes of interpretation of numbers
- Mistakes in purpose
The end

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