



INSTITUTE FOR
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IMPROVEMENT

Systems and Organisational Change and Leadership

Carol Haraden, PhD

Antimicrobial Stewardship: Measuring, Auditing
and Improving

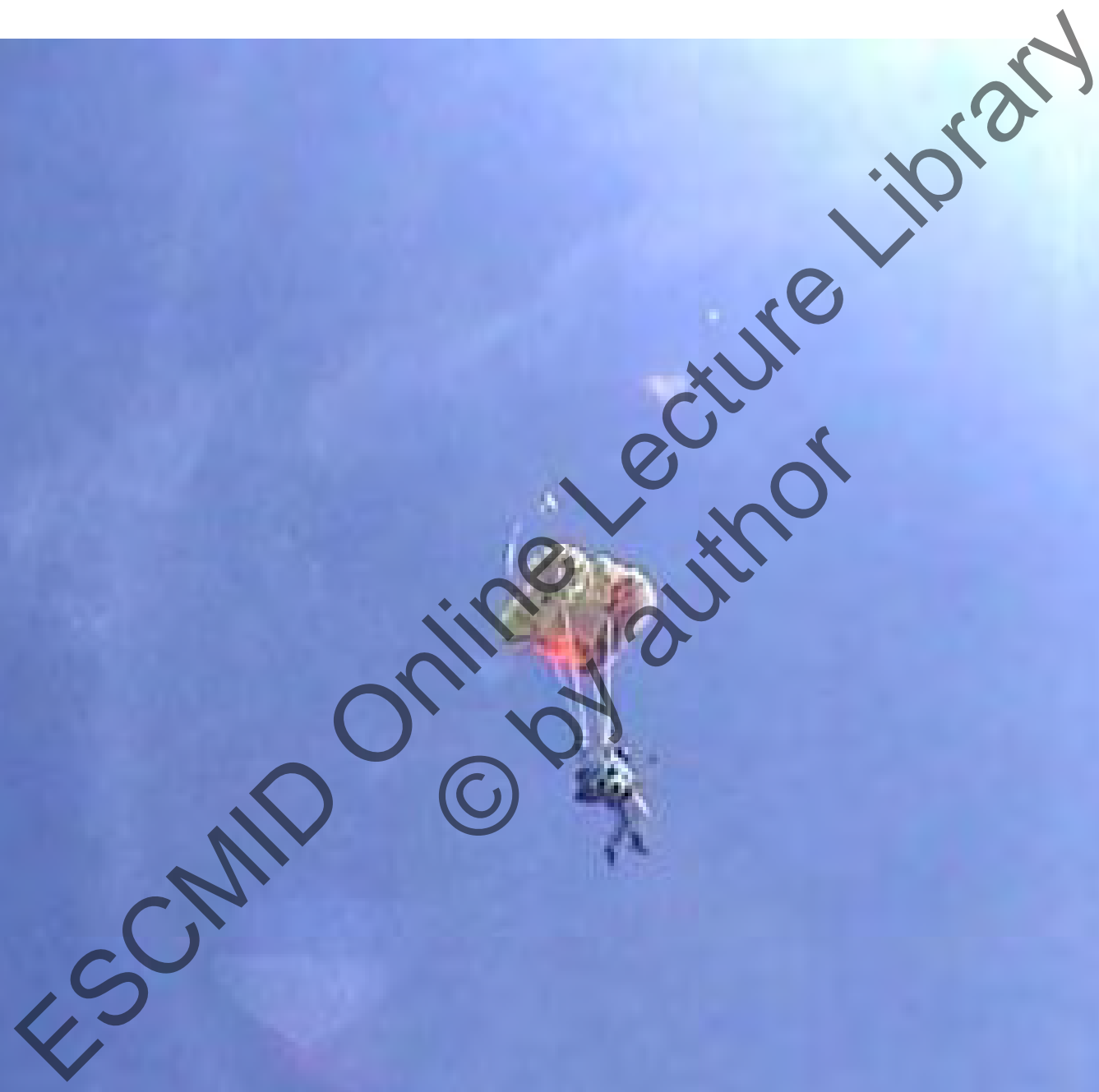
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Eras of quality

- **1) The 1990s – Evidence based medicine**

What you get:	Grounded in:	Impact on clinicians:
<ul style="list-style-type: none"> • Evidence on what to do • Knowledge has general applicability <ul style="list-style-type: none"> – Context systematically stripped out 	<ul style="list-style-type: none"> • Biomedical model and statistics • Analysis of few variables • RCT is gold standard methodology 	<ul style="list-style-type: none"> • Excellence defined as knowledge • See the world ‘one patient at a time’ • ‘Patients with AMI should get drugs X and Y’

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A photograph of a person skydiving against a clear blue sky. The person is in a spread-eagle position, with their arms and legs outstretched. The sun is visible in the upper right corner, creating a bright, hazy area. The image is overlaid with a diagonal watermark that reads "ESCMID Online Lecture Library" and "© by author".

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

Gordon C S Smith, Jill P Pell. BMJ 2003;327;1459-1461

- **Aim:** To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.
- **Design:** Systematic review of randomised controlled trials
- **Results:** Our search strategy did not find any randomised controlled trials of the parachute.

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

Gordon C S Smith, Jill P Pell. *BMJ* 2003;327;1459-1461

Conclusion:

As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials.

Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data.

We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute

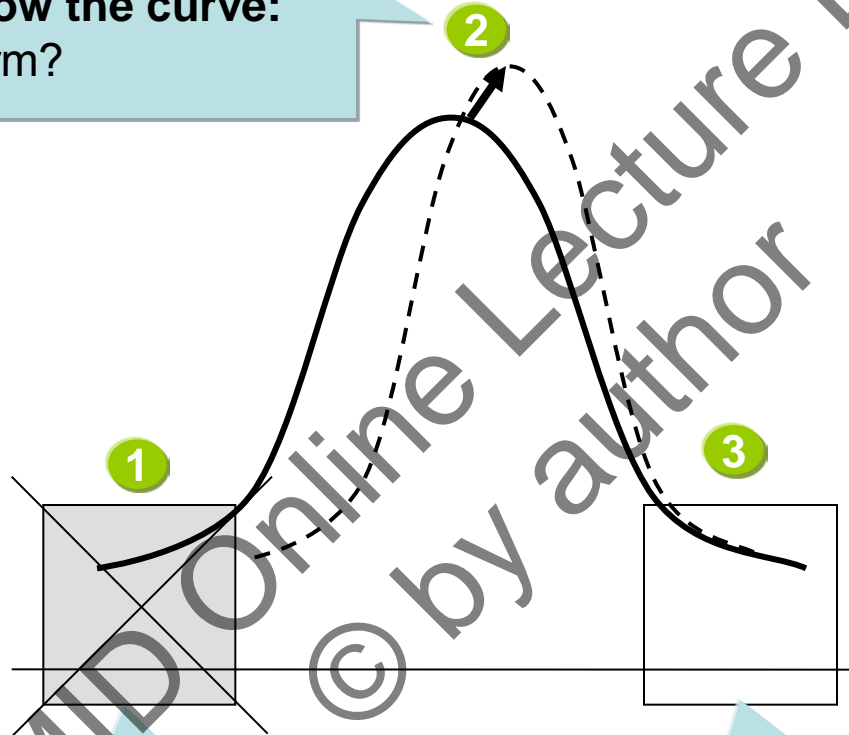
Eras of quality

- 2) The 2000s – ADD Evidence based delivery

What you get:	Grounded in:	Impact on clinicians:
<ul style="list-style-type: none"> • Evidence on <i>how</i> to organise so that what we know gets done <i>here</i> reliably and efficiently • Knowledge has limited generalisability <ul style="list-style-type: none"> –Context explicitly built-in 	<p><i>Additionally</i></p> <ul style="list-style-type: none"> • Social sciences, including <ul style="list-style-type: none"> –Management –Leadership –Organisation • Operations 	<ul style="list-style-type: none"> • Excellence is additionally in applying knowledge • See patients and populations simultaneously • ‘To reach optimal delivery for AMI in this hospital we need to do X and Y’

The “Quality Curve”

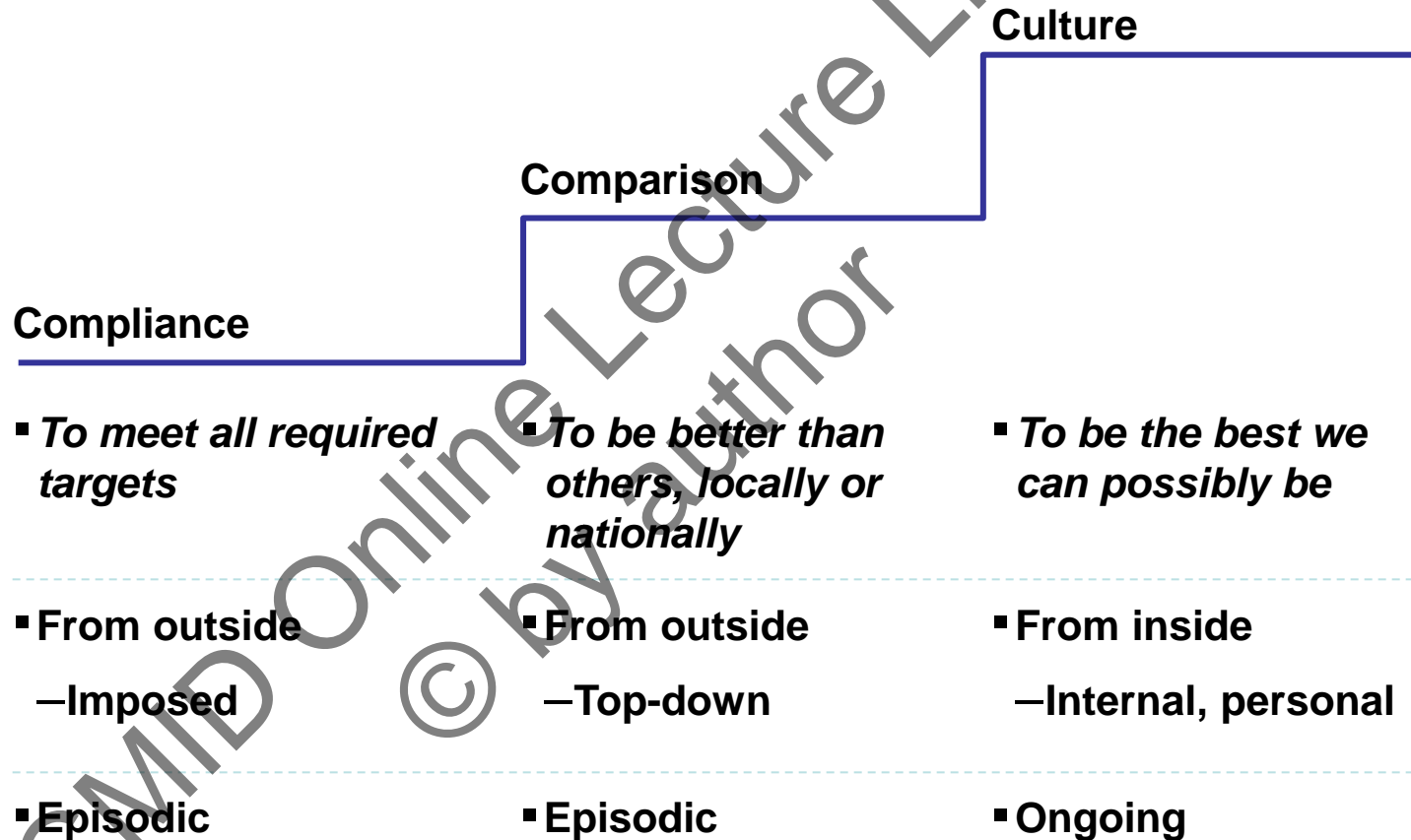
Shift and narrow the curve:
What is the norm?



Cut the tail:
What is unacceptable?

Extend the ambition:
What is great? (What is possible?)

The “Quality Journey”



How we define 'good'

Source of motivation to deliver

Duration



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What is safety?

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Traditionally.....

It is the absence of defects.

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New thinking...

From: simply reducing the negative (a reduction in the number of adverse events)



To: improving the positive (the ability to succeed under varying conditions)

Changing Expectations About System Performance

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We get what we tolerate.

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-
- Do we honestly know how good we could be?
 - How could we discover this?
 - Once discovered, will we expect this of everyone everywhere?
 - What will be our methodology for change?



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August 16, 2010

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Over 550 days since the last
OR event

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Quality and Safety at Celenese



I am not reassured...

by the level of safe and reliable care because:

- While policies, procedures and clinical guidelines are plentiful, only a handful are actually used and useable making staff employ work-arounds to get work done.
- Staff and leadership often do not have current data on the safety and reliability of their clinical processes to inform their decision making.

-
- We do not insist on outcome data
example: surgical site infection
 - When we do have data, it is often months old or aggregated making it almost impossible to know where improvement is needed.

No Event = Safety = Excellence

We read 'non-events' as 'the system is safe'.

HOWEVER

When we look at the underlying processes driving the outcome, they are often unreliable.

THEREFORE

What appears as safe and reliable is often a infrequent event just waiting to happen.

And when it does....

We are often surprised.

But it was just that once... it looks like special cause variation.

It will happen again unless the processes that improve the outcome become reliable.

Standardize AND encourage adaptability and resilience

- Standardize that which is standardize-able and *nothing more*
- Allow improvisation and adaptation as methods to cope with the unknown
- Cultivate a culture where these adaptations are not 'breaking the rules'
- **INSIST ON DISCUSSION AND LEARNING** from both standardization and adaptation

Adaptations

- Variability that adds value.
- Based on expert judgment that the standard process will not work or is not appropriate.
- Keeps us safe in novel situations that are truly rare and unpredictable.
- Must be documented and understood so that we might all learn.



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Adaptation and customisation
are based on the needs of the
patient not clinician preference

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$$S_t \text{ (Safety total)} = S_i \text{ (Safety imposed)} + S_m \text{ (Expertise, Safety managed)}$$

Understanding resilience

Resilience $S_t = S_i + S_m$

S_t (safety total) = S_i (safety imposed) + S_m (expertise, safety managed)

NORMS / QUALITY + **EXPERTISE: RESILIENCE**

**Observed
Safety**

=

**Best practices
Rules
Constraints**

**Surprise
management**

**Based on
human expertise**

**Adaptive learning
systems**

Paradoxes of Resilience

Significant safety improvements always detrimental to S_m

Craftman industry

$$S_t = S_i + S_m$$

Safety Improvement

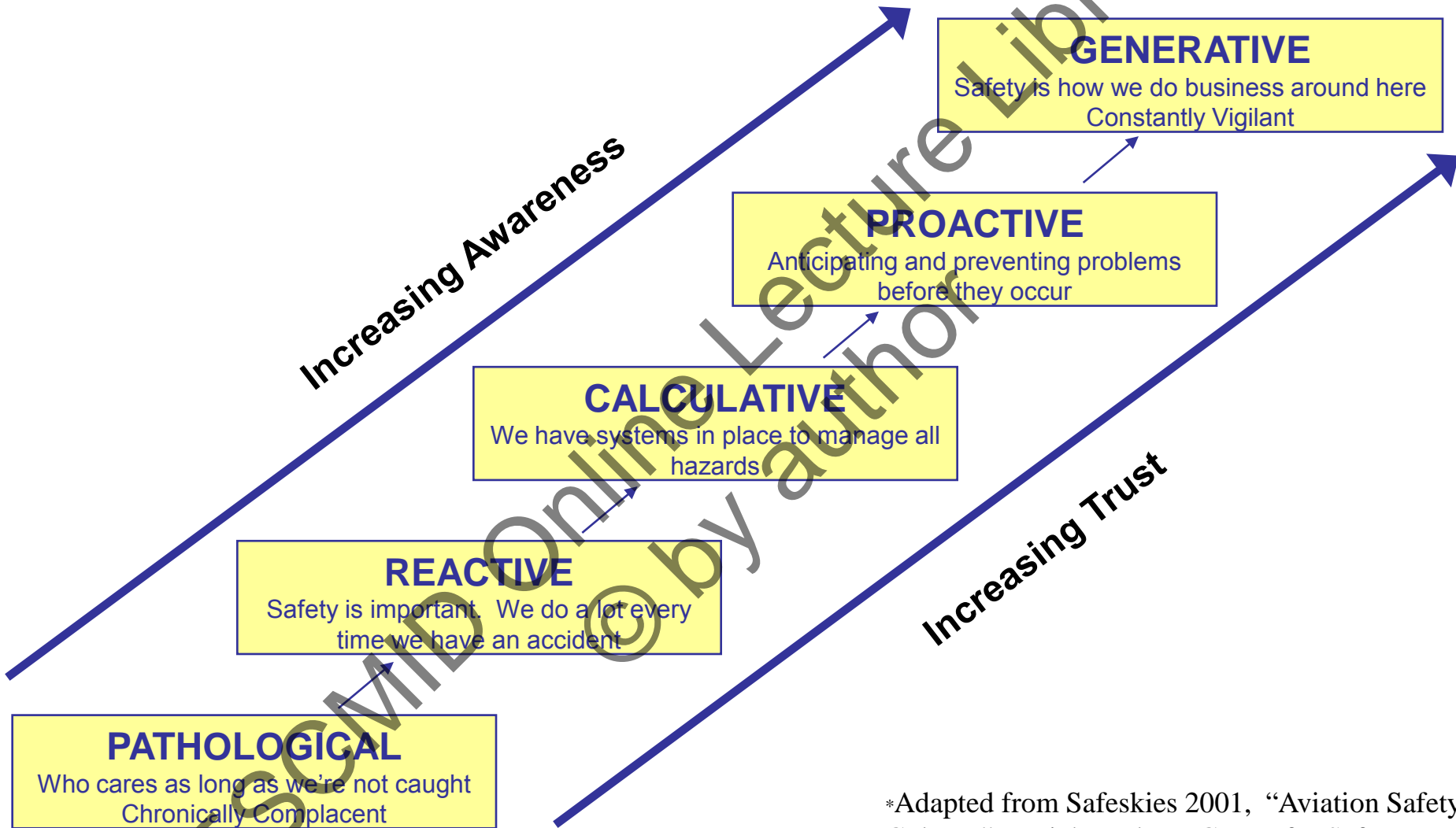
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Ultrasafe systems

$$S_t = S_i + S_m$$

The next challenge : Preserving S_m while Improving S_i

$$S_t = S_i + S_m$$

Evolution to a Safety Culture



*Adapted from Safeski's 2001, "Aviation Safety Culture," Patrick Hudson, Centre for Safety Science, Leiden University



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Can we improve?

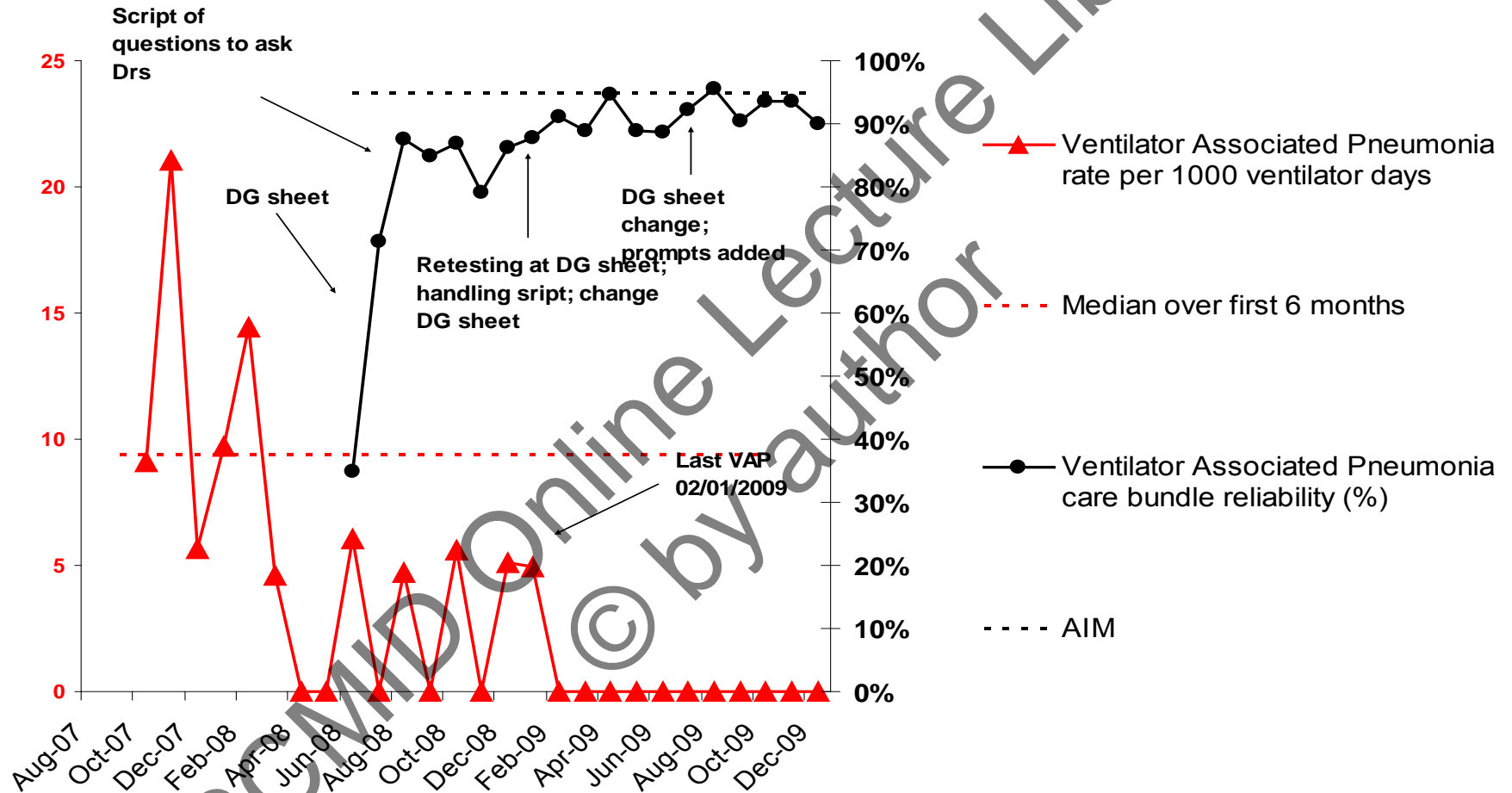
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Scottish Patient Safety Programme

- Intensive care
- Central line infection: 92% reduction
- VAP reduction: 62% reduction
- C-diff: 90% reduction
- SAB rate: 79% reduction
- General Ward
- SAB reduction: 31%
- C-diff reduction: 88%
- Medication Rec: 15% improvement
- Surgery
- DVT prophylaxis: 72% improvement;
- On-time antibiotic: 13% improvement

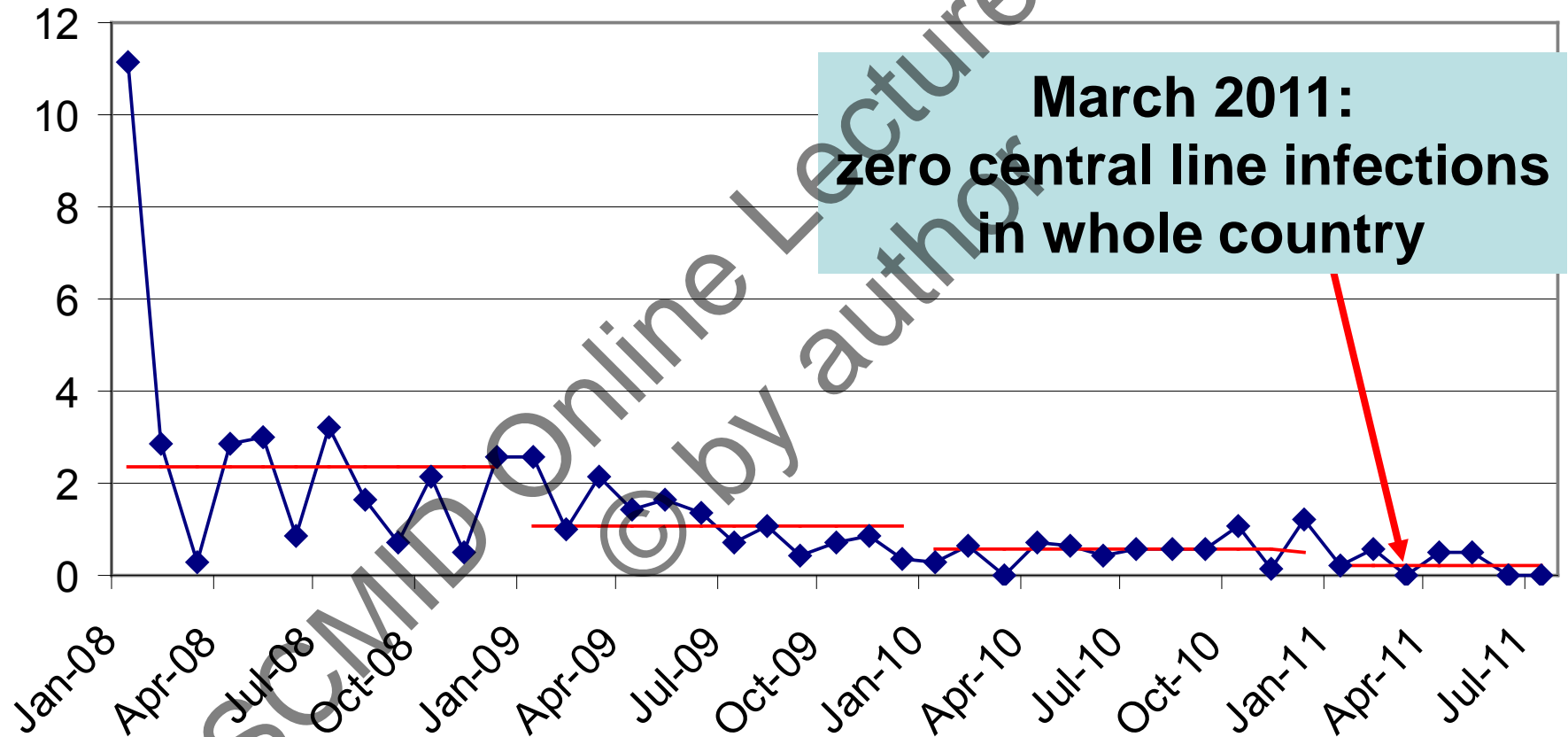
GRI VAP Prevention Bundle Reliability and VAP rate per 1000 ventilator days

Aim: > 95% reliability by March 2009



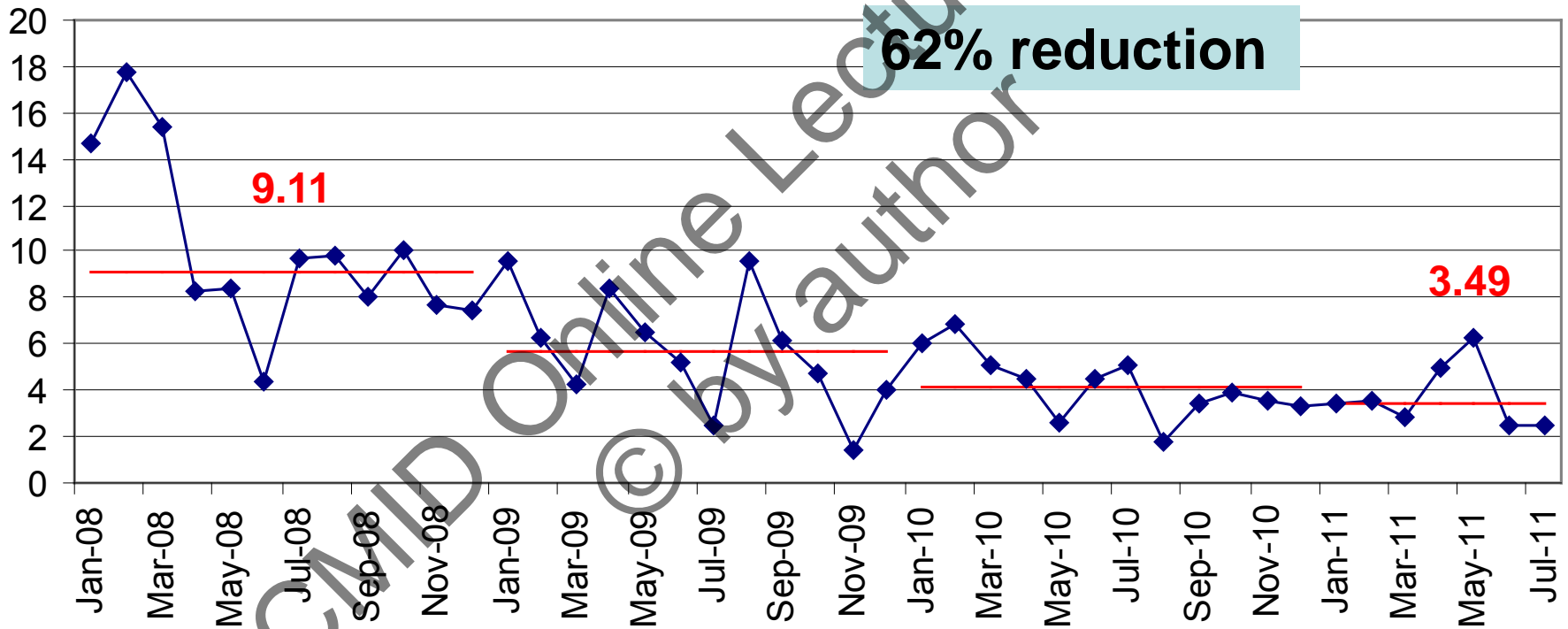
Central line infection rate

(per thousand line days)



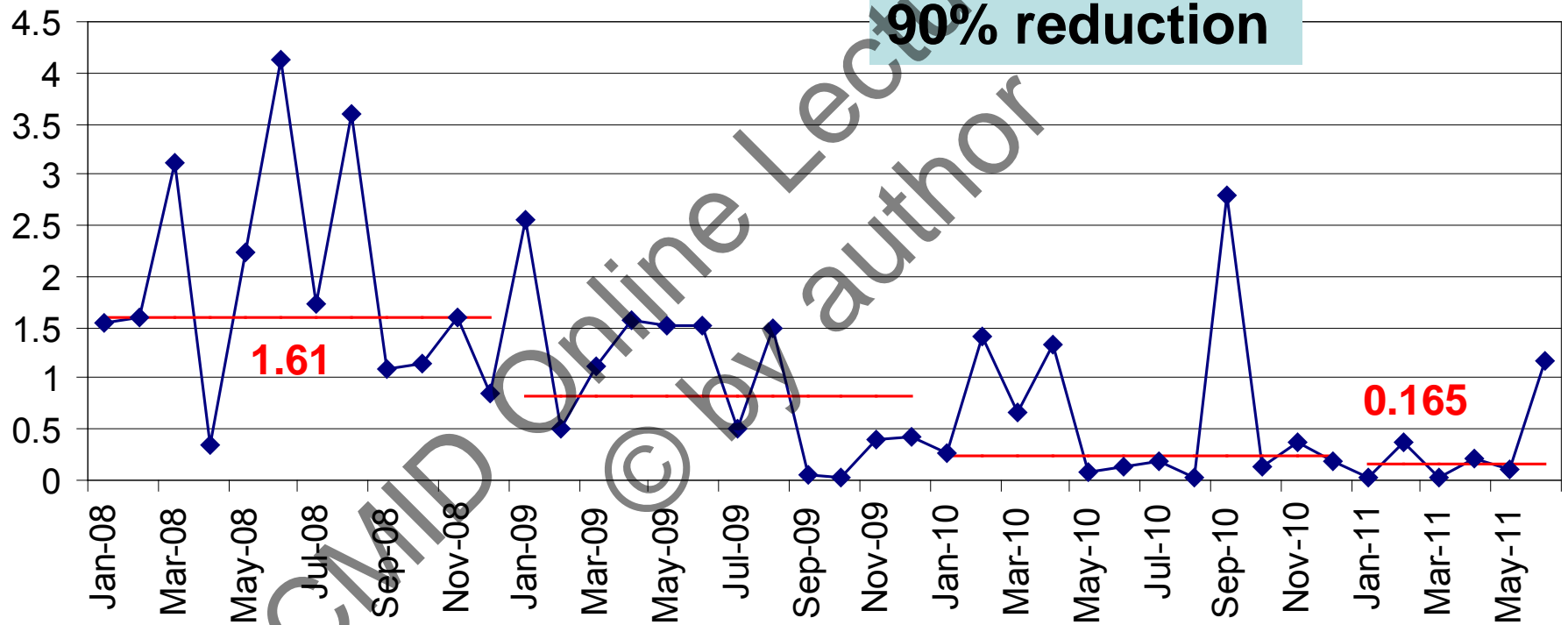
VAP rate

(per thousand ventilator days)



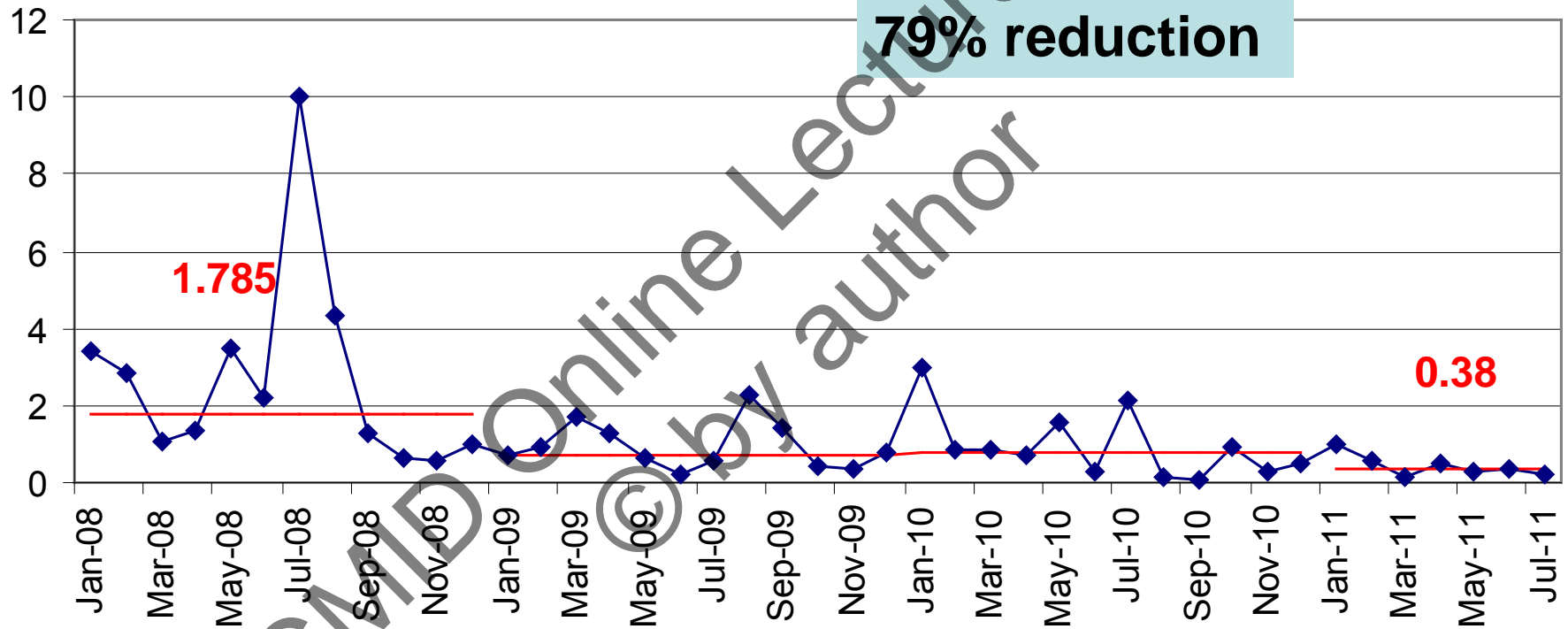
Critical care C-Difficile rate

(per thousand bed days)

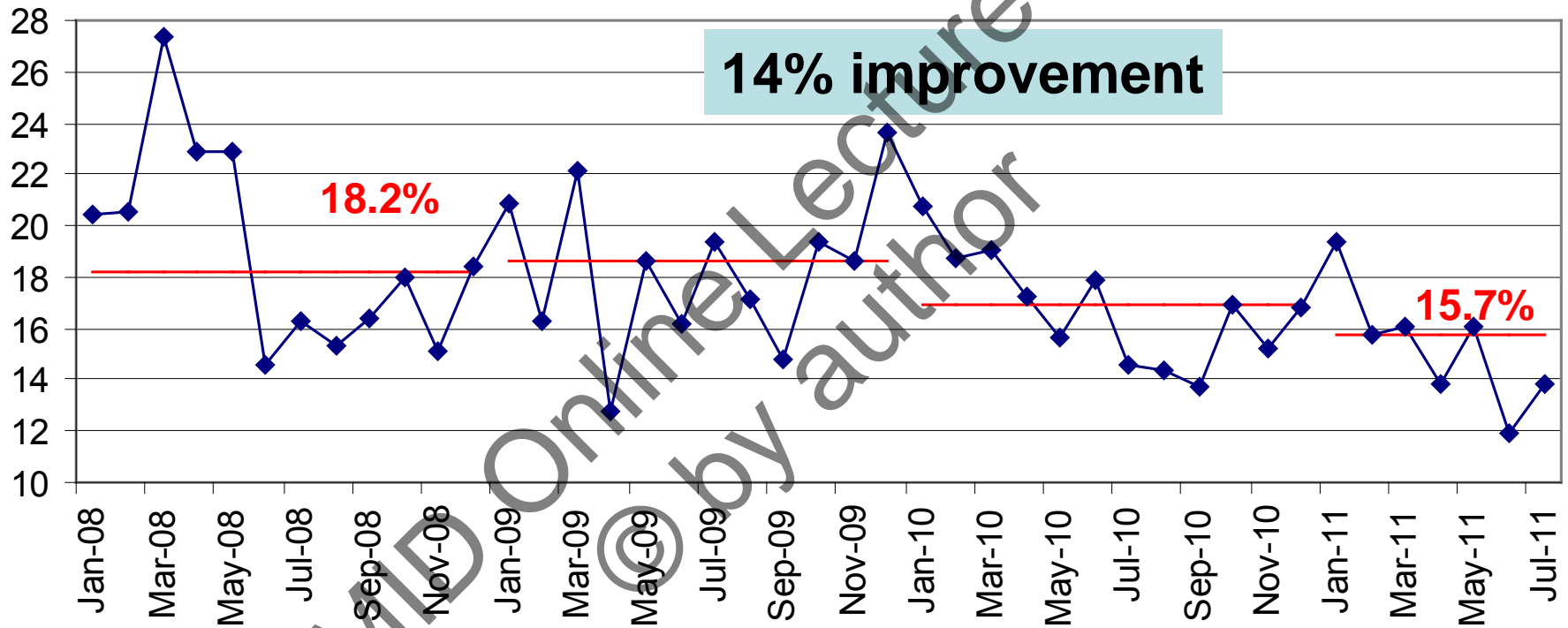


Critical Care – SAB rate

(per thousand bed days)

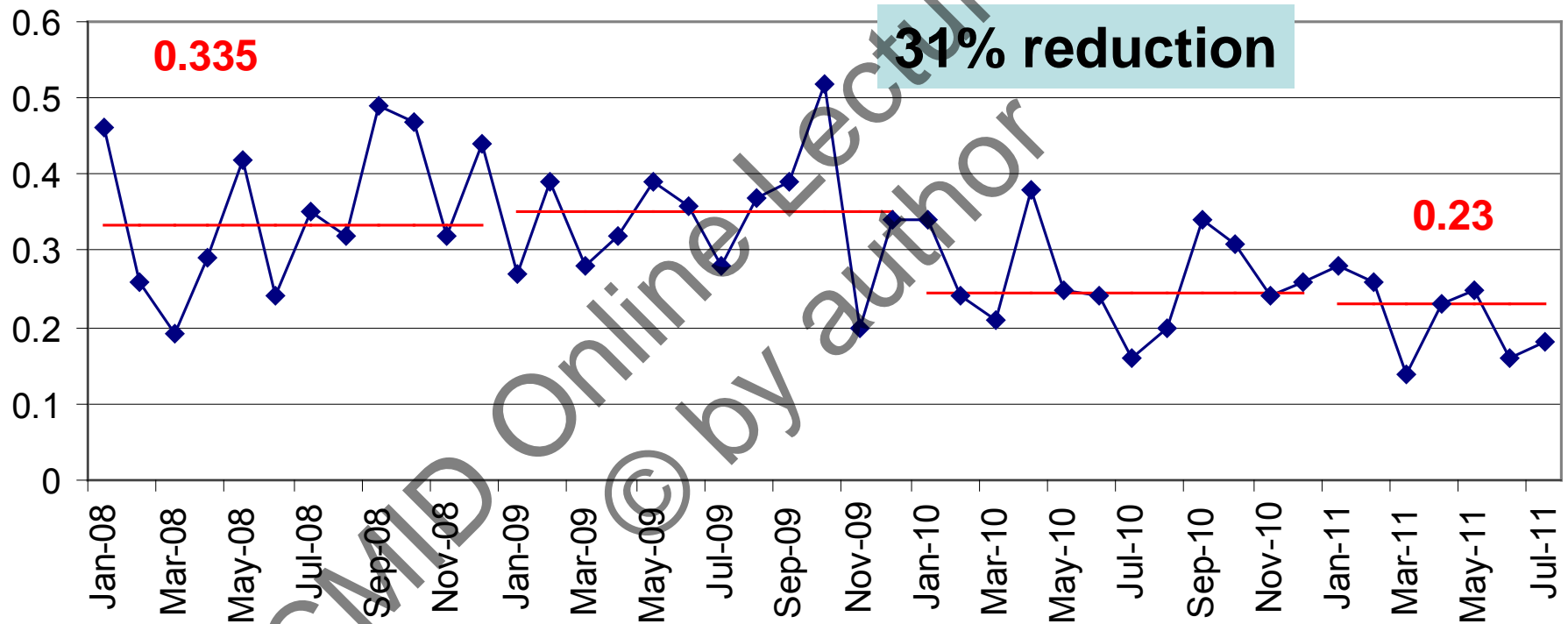


% ICU mortality



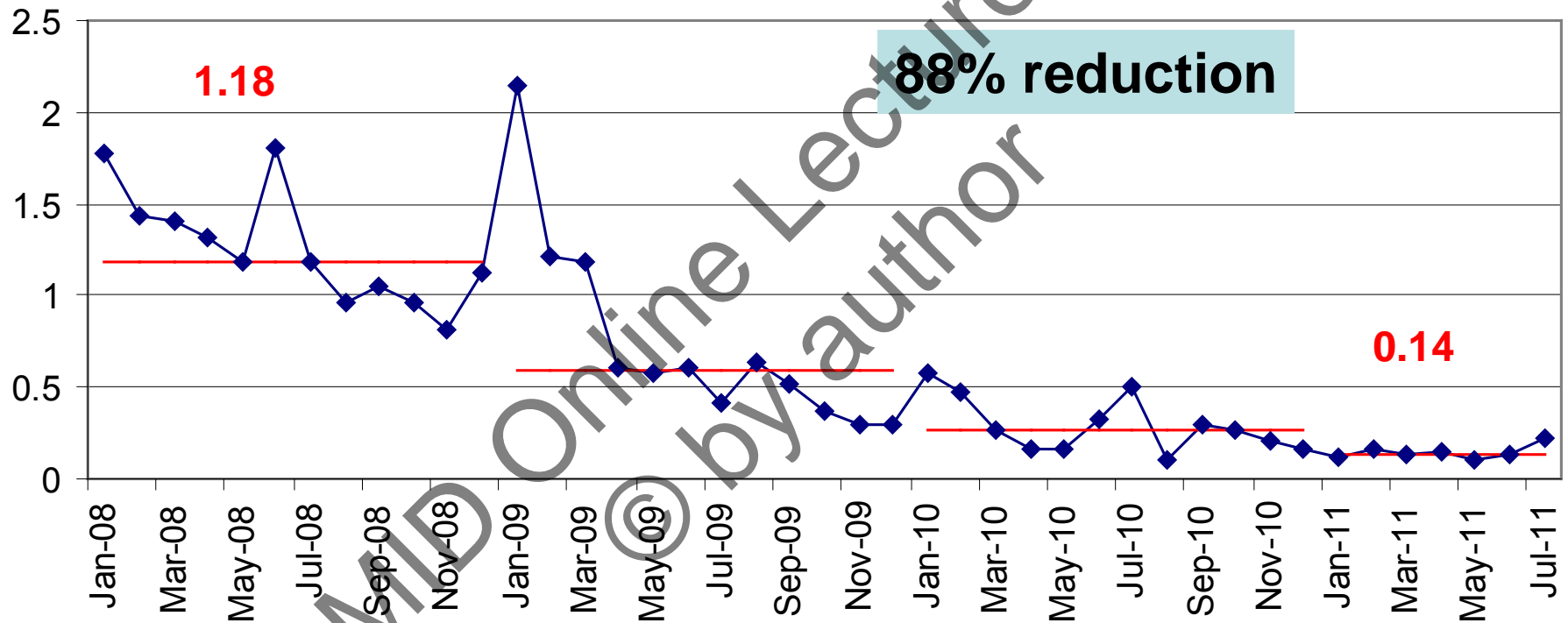
General ward SAB rate

(per thousand patient days)

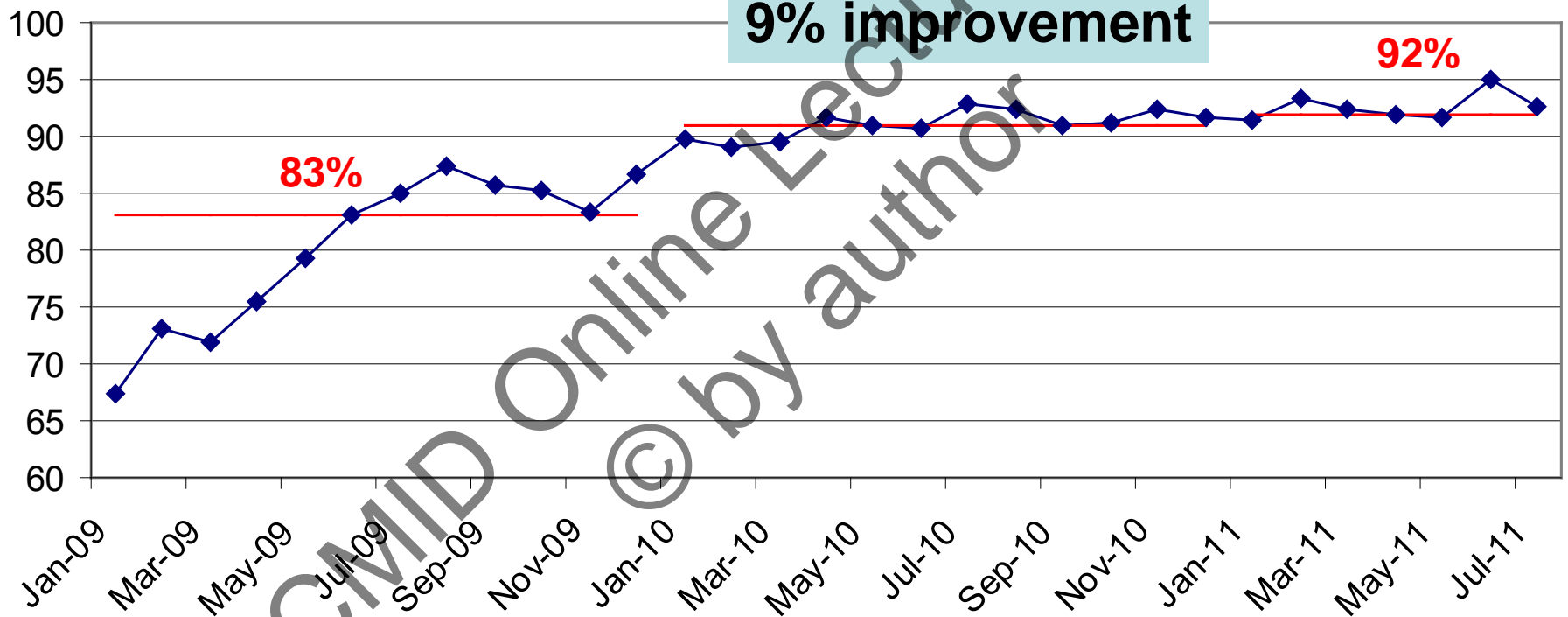


General ward C.Difficile rate

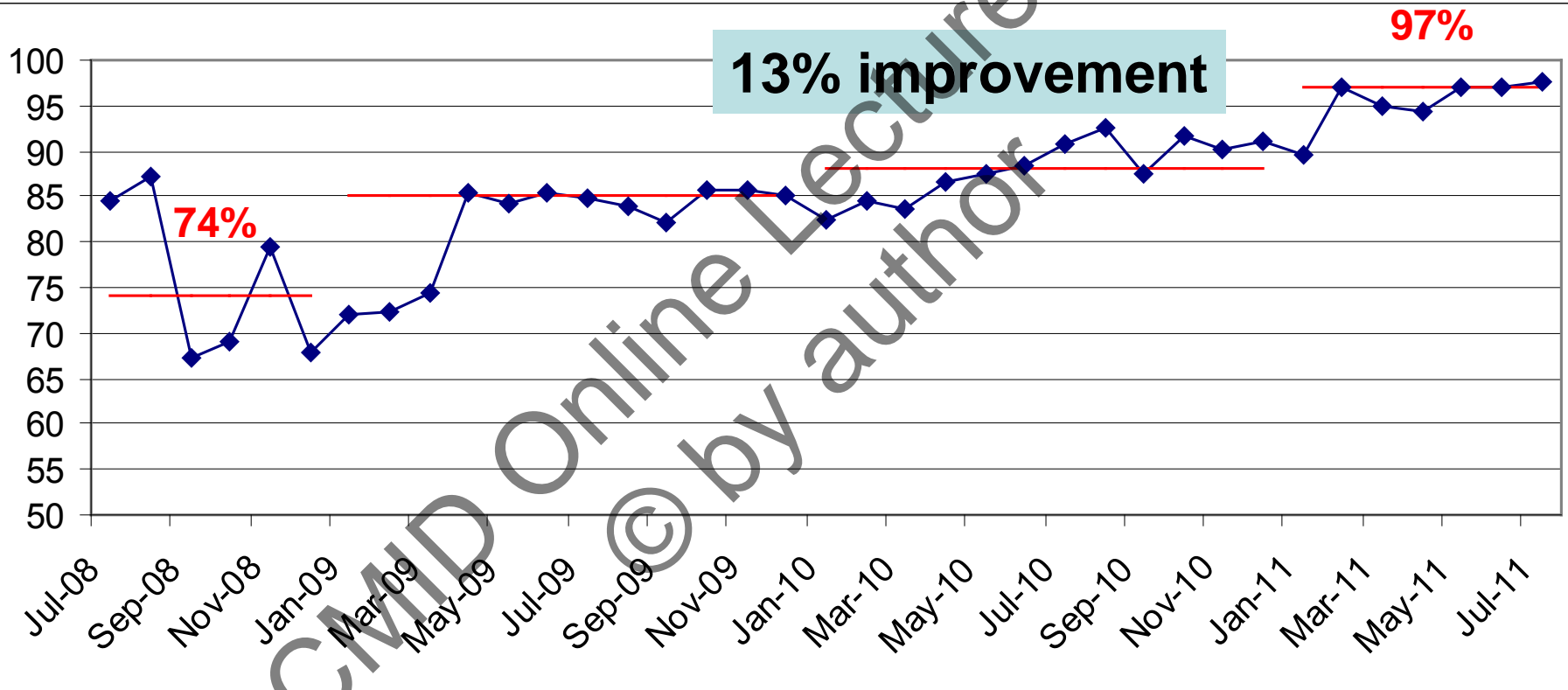
(per thousand patient days)



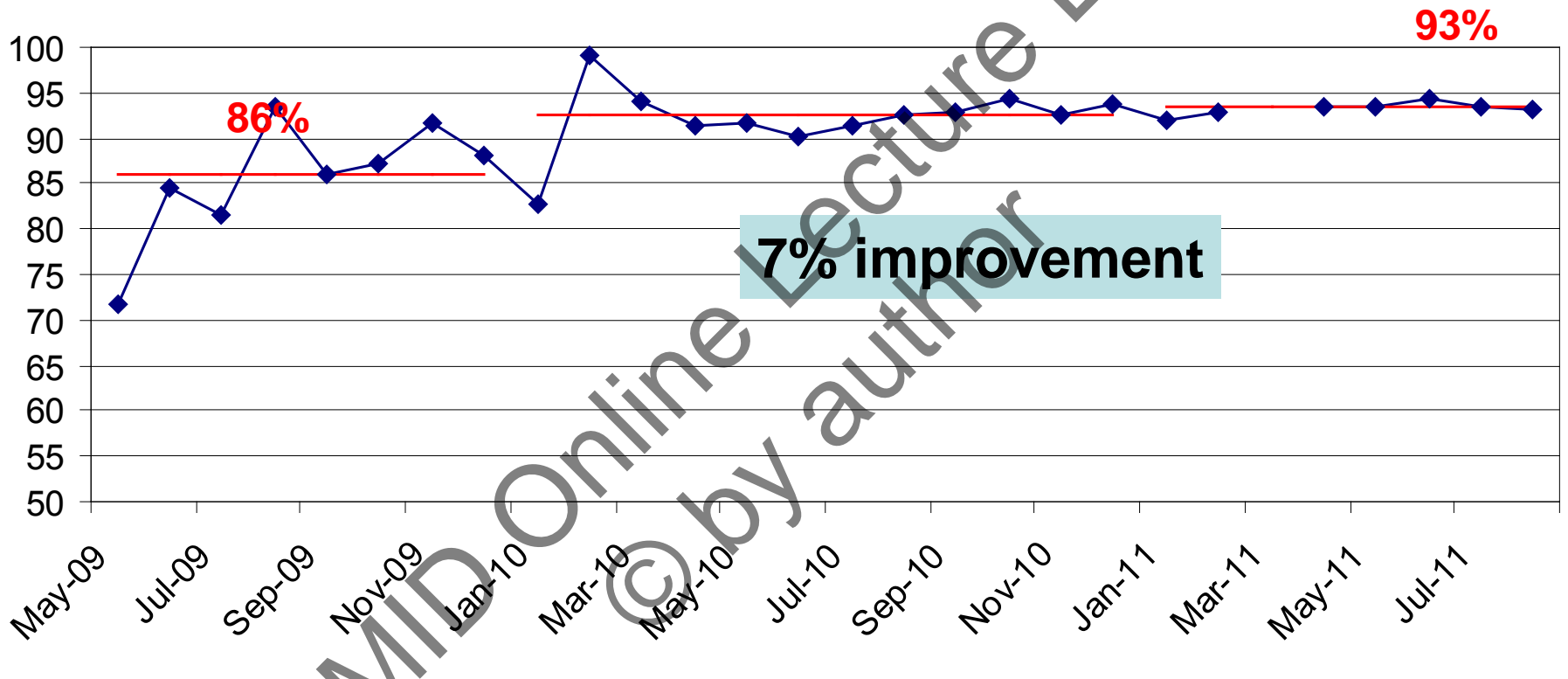
% of procedures with surgical checklist



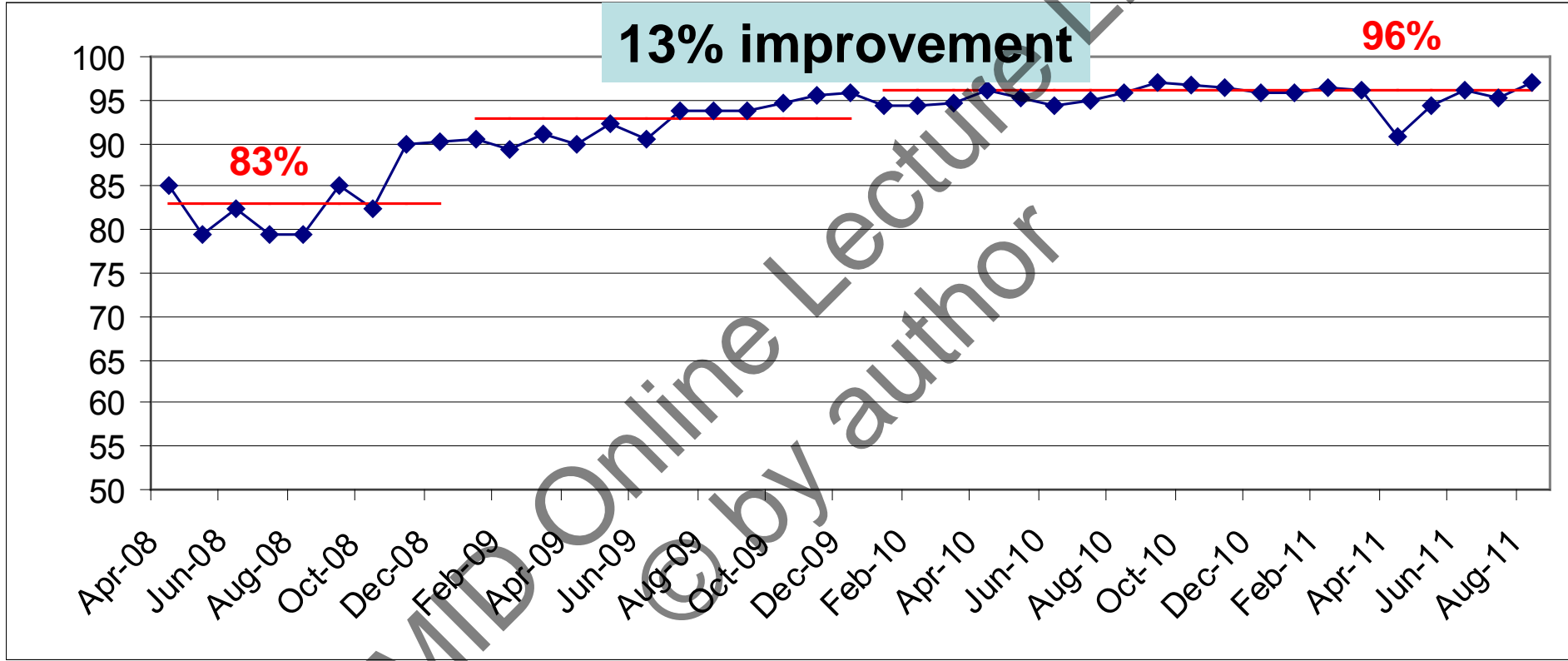
% on-time antibiotics



% PVC bundle compliance



General ward hand hygiene





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It is a very exciting time!

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Leaders Role

- Set expectations for success EVERYWHERE
“This will be coming to a theatre near you!”
- Build a learning system that requires looking inward and outward
- Encourage professional judgment and adaptation/customisation only when patient needs require it
- Become conversant with reliability science
- Support clinicians with tools and processes that promote reliable care



**ALBERT M. GREENFIELD
ELEMENTARY SCHOOL**

We Made Adequate Yearly Progress in 2004

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