

By three methods we may learn wisdom:  
First, by reflection which is the noblest;  
Second, by *imitation* which is the easiest;  
And third by *experience* which is the  
bitterest.

Confucius (551 – 479 BC)

Teaching Medical Students to Reflect “Deeper”

# REFLECTION

# Teaching Medical Students to Reflect “Deeper”

**Amy Hayton MD,**

Associate Clerkship Director, IM Clerkship

**Ilho Kang MD,**

Associate Clerkship Director, IM Clerkship

**Raymond Wong MD,**

Clerkship Director, IM Clerkship

**Lawrence Loo, MD**

Vice-Chair for Education & Faculty Development



# REFLECTION

Internal Medicine Junior Student Clerkship, Dept. of Medicine, School of Medicine;  
Faculty Development Showcase Week Workshop, Wednesday – February 26, 2014

# CME Disclosures

“All Relevant Financial Relationships”


**NONE**



“Commercial Interest” is defined by the ACCME ([www.accme.org](http://www.accme.org)) as “any entity producing, marketing, re-selling or distributing health care goods or services consumed by or used on patients.”



# Goals and Objectives

- Participate in a sample of our curriculum innovation designed to teach medical students to enhance the quality and depth of their critical reflection.
    - Define and identify the components of critical reflection
    - Practice evaluating the quality of written reflection papers using a previously validated tool, the REFLECT rubric.<sup>1</sup>
    - Discuss and “reflect” on the limitations and strengths of teaching and evaluating reflection.
- 

# Teaching Medical Students to Reflect “Deeper”

## Overview: Background & Purpose

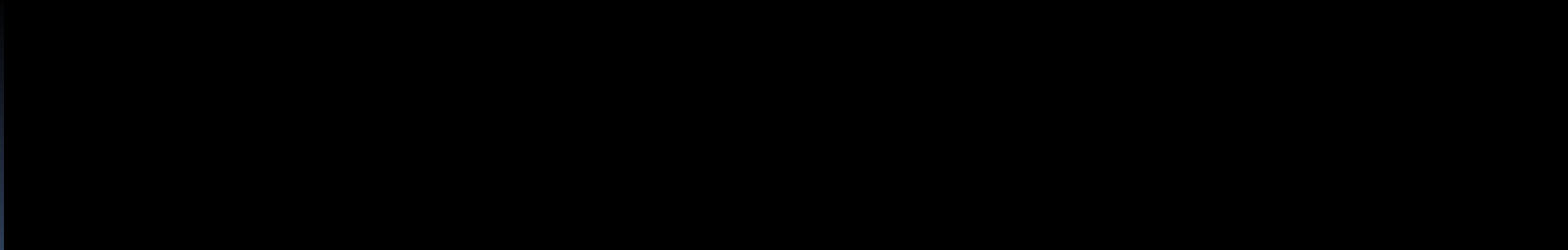
**Amy Hayton, MD**

VA Associate Clerkship Director,  
IM Clerkship  
Assistant Professor of Medicine



# REFLECTION

(IM Student Clerkship, Dept. Medicine, School Medicine Workshop – February 26, 2014)




## Scrubs Video: “My Old Lady”

(Season 1, Episode 4, Aired October 16, 2001 on NBC)



# Scrubs Video Discussion

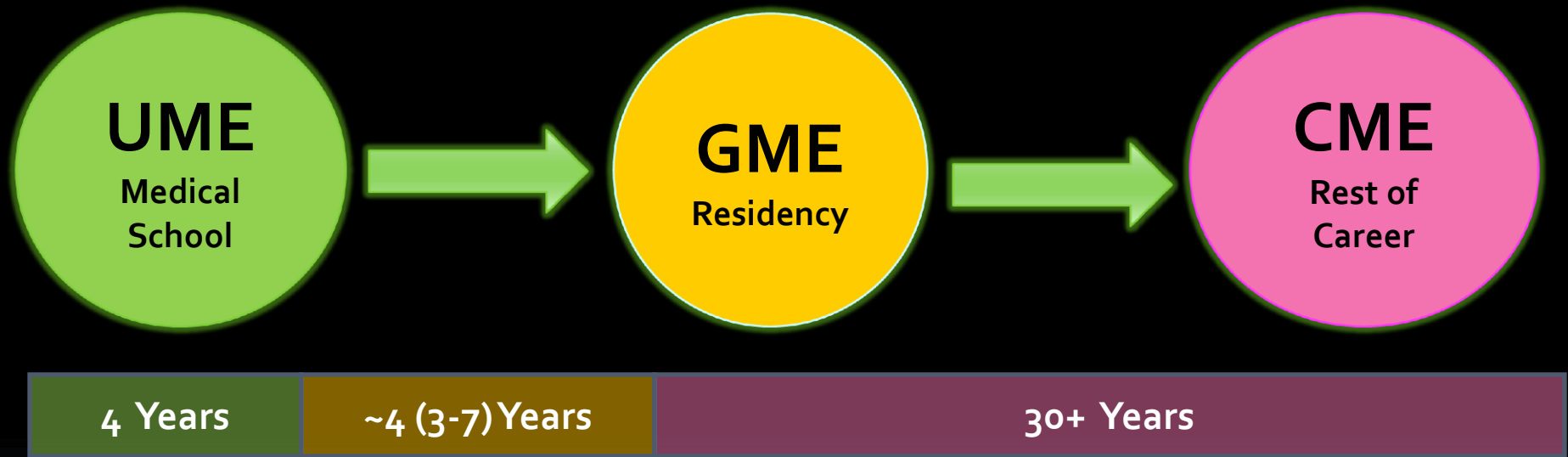
- What did JD learn through this patient experience and his reflection about it?
  - What methods did JD use as he reflected?
  - Have any of you experienced such a reflective moment recently?
  - Why does reflection matter?
- 



Why Do Reflection?



# The Continuum of Medical Education & Practice



# Why Do Reflection?

Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: A systematic review. *Adv Health Sci Educ Theory Pract.* 2009;14:595-621

- Develops critical thinking skills and clinical reasoning
- Failure to reflect leads to “physician overconfidence” and diagnostic errors in medicine
- Fosters professionalism
- Improved therapeutic relationship
- Necessary for effective use of feedback




# What Is Reflection?



# Reflection Defined

“Reflection means letting future behavior be guided by a systematic and critical analysis of past actions and their consequences.” **Driessen E: BMJ 2008;336:827**



“Critical reflection is the process of analyzing, questioning and reframing an experience in order to make an assessment for purposes of learning and/or improve practice.”

**Aronson L: Med Teacher 2011;33:200-5**

# “Deep” versus “Superficial” Reflection

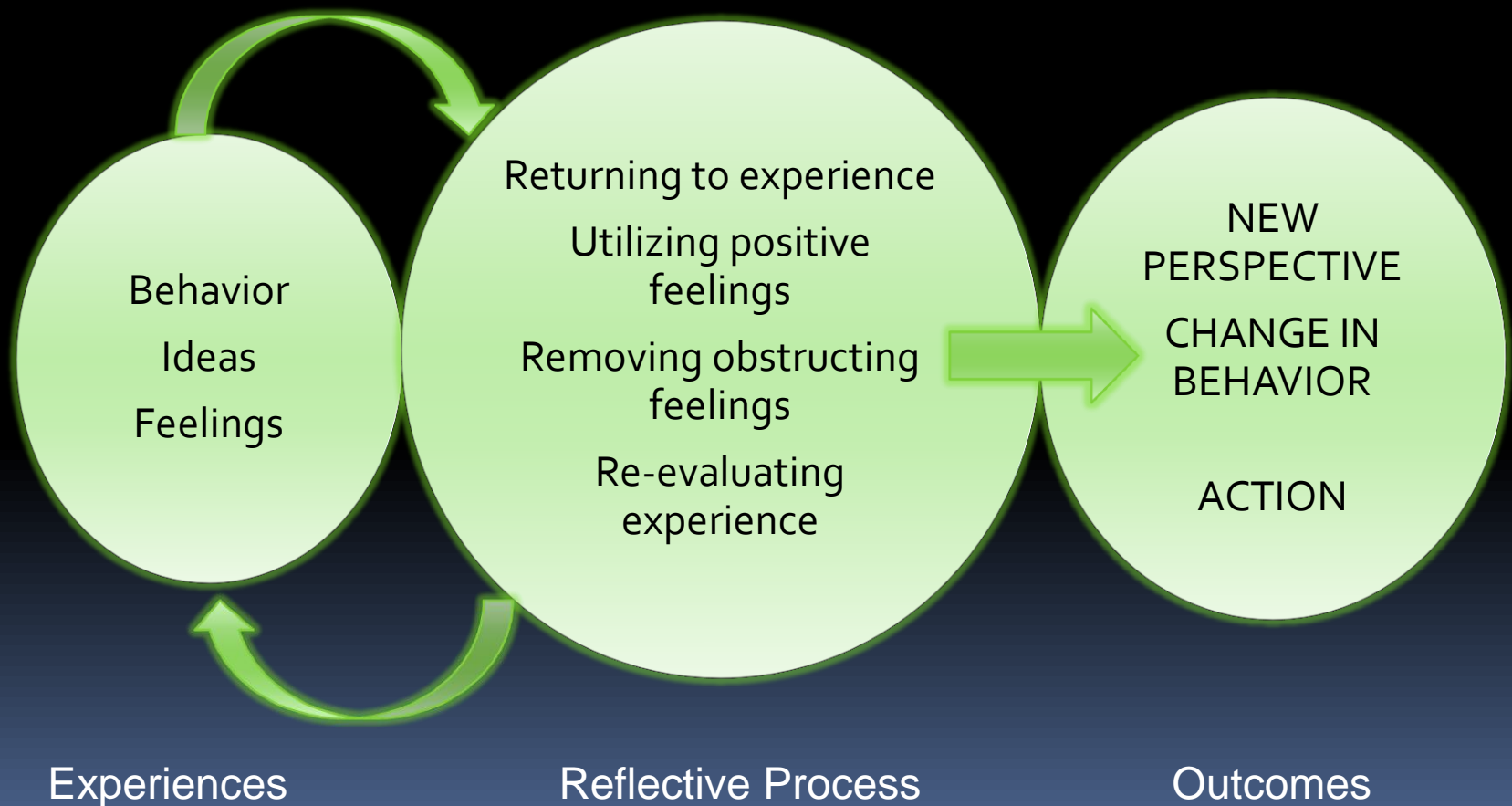
- “Deep” reflection is where the learner is trying to understand the meaning of the material and integrates it into previous ideas or reconsiders it into new ideas.
- “Superficial” reflection is where the learner is concerned to memorize the material and needs to be retained for the moment (at least until the next exam) and does not ‘file it’ for any lasting purpose.
  - Jenny Moon 2001 Reflection in Higher Educ Learning



How Do We Do Reflection?

# Model of Reflection

Boud, Keogh and Walker, 1985



# Components of Reflection



- **Noticing** an event → Description
  - What happened?
  - Awareness of discomfort / apprehension that may prompt reflection
  - “Recognizing when one’s existing mental model and personal theory is being challenged by an experience” Mezirow J.1981
  - **JD was hit by a ton of bricks- this event caught him off-guard “ I think I am ready to die”**



# Components of Reflection



- **Noticing** an event → Description
- Arise from “**disorienting dilemmas**” - a situation that one cannot resolve using previous problem solving strategies
  - A situation where you did not have the necessary knowledge or skills
  - A situation that went well but you are not sure why?
  - A complex, surprising or clinically uncertain situation
  - A situation where you felt personally or professionally challenged

# Components of Reflection



- ***Making Meaning* of an event → Analysis**
  - Why did it happen?
  - Identify new learning needs by asking:
    - Does anything surprise me about the situation?
      - **JD was surprised that someone would choose dying early over living on dialysis**
    - Do I have the information or skills to deal with this situation?
      - **JD realized he was totally inept to figure out how to “help” this patient with her decision**
      - **The patient helped JD realize what he needed to learn**

# Components of Reflection



- ***Making Meaning* of an event → Analysis**
  - Reflection can be prompted by strong feelings that lead to deeper questioning:
    - What am I feeling and what are my emotions?
      - **JD was scared**
    - Why do I feel like this?
      - **JD realized he was afraid of death as he analyzed his discomfort**
    - Are there other situations in my life when I feel the same?

# Components of Reflection



- ***Learning* → Action Plan**

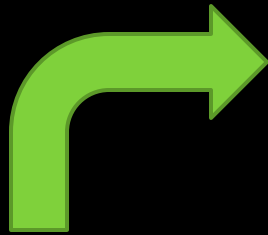
- What should I do next time?
- Reflection can confirm something we already knew to be true
- Reflection can lead to transformative learning-  
Change our understanding, values, actions in the future
- **JD faced his fear of death, received compassion from his patient, understood patient autonomy all through his process of reflection**

# Experiential Learning Cycle

(Andrea Corney at [www.edbatista.com/2007/10/experiential.html](http://www.edbatista.com/2007/10/experiential.html))

**ACT**

Noticing an Event  
Facts (What happened?)



**APPLY**

Action Plan  
Future (What will I do differently?)

**REFLECT**

Reflective Observation  
Feelings (What did I experience?)



**CONCEPTUALIZE**

Making Meaning – Analysis & Learning  
Findings (Why did this happen? What did I learn?)





# Personal Reflection

- How has reflection helped me?
- 

# Teaching Medical Students to Reflect “Deeper”

**Recognizing Critical Reflection**  
(Small Group Activity)

**Raymond Wong, MD**  
Clerkship Director, IM Clerkship  
Associate Professor of Medicine



# REFLECTION

(IM Student Clerkship, Dept. Medicine, School Medicine Workshop – February 26, 2014)

# Small Group Exercise

1. Each group read both versions of the account of the student's presentation in sequential order
2. As a group, Identify the actual sentences, words or phrases from the written scenarios that are:
  - Description, analysis and action plan
3. Be prepared to present to the larger group the following: **(Please designate a reporter!)**
  - Group A present the **noticing/description** elements as they compare/contrast in all three versions
  - Group B present the **analysis** elements as they compare and contrast in all three versions
  - Group C present the **action plan** elements of all three versions as they are similar and different





# Small Groups Working

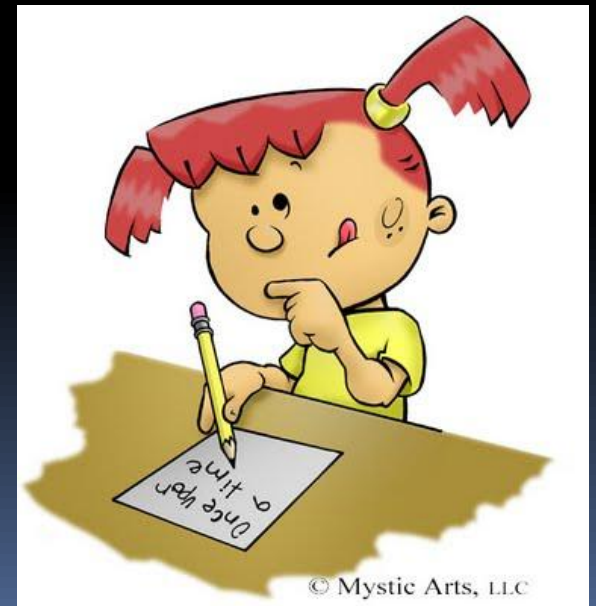


# Components of Reflection

- **Description-Group A**
  - May arise from a “disorienting dilemma”
  - Describes the triggering event
- **Analysis- Group B**
  - Why did it happen? Explores motives for behaviors.
  - May be prompted by strong feelings that lead to deeper questioning?
- **Action Plan- Group C**
  - What should I do next time?
  - Confirm something we know or change our understanding, values, actions



# Large Group Reports



# Teaching Medical Students to Reflect “Deeper”

## Grading Written Reflection Papers (Small Group Activity)

**Ilho Kang, MD**

RCRMC Associate Clerkship Director,  
IM Clerkship

Assistant Professor of Medicine



# REFLECTION

(IM Student Clerkship, Dept. Medicine, School Medicine Workshop – February 26, 2014)

# Teaching Medical Students to Reflect “Deeper”

Introduction of a new evaluation tool –  
**REFLECT RUBRIC**

Hands on experience of grading student  
reflection papers using REFLECT RUBRIC

Limitation of REFLECT RUBRIC

# Teaching Medical Students to Reflect “Deeper”

Evaluating Reflective Writing

## Fostering and Evaluating Reflective Capacity in Medical Education: Developing the REFLECT Rubric for Assessing Reflective Writing

Hedy S. Wald, PhD, Jeffrey M. Borkan, MD, PhD, Julie Scott Taylor, MD, MSc,  
David Anthony, MD, MSc, and Shmuel P. Reis, MD, MHPE

education. The authors developed a new evaluative tool that can be effectively applied to assess students' reflective levels and assist with the process of providing individualized written feedback to guide reflective capacity promotion.

### Method

Following a comprehensive search and analysis of the literature, the authors developed an analytic rubric through repeated iterative cycles of development, including empiric testing and

Warren Alpert Medical School of Brown University students' 2009 and 2010 RW narratives with determination of intraclass correlations (ICCs).

### Results

The final rubric, the Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT), consisted of four reflective capacity levels ranging from habitual action to critical reflection, with focused criteria for each level. The rubric also evaluated RW for transformative

REFLECT iteration analysis.

### Conclusions

The REFLECT is a rigorously developed, theory-informed analytic rubric, demonstrating adequate interrater reliability, face validity, feasibility, and acceptability. The REFLECT rubric is a reflective analysis innovation supporting development of a reflective clinician via formative assessment and enhanced crafting of faculty feedback to reflective narratives.

# Teaching Medical Students to Reflect “Deeper”

## ■ REFLECT Rubric (Wald HS et al: Acad Med 2012: 87:41-50)

Reflection Level	Non-Reflective 1	Thoughtful Action 2	Reflection 3	Critical Reflection 4
<b>Writing Spectrum</b>	Superficial descriptive writing approach (fact reporting, vague impressions)	Elaborated descriptive writing approach and impressions without reflection	Attempting to understand, question, or analyze the event	Exploration and critique of assumptions, values, beliefs, and/or biases and the consequences of action
<b>Sense of Writer Presence</b>	Writer partially present	Writer partially present	Writer largely or fully present	Writer largely or fully present
<b>Description of Conflict, Disorienting Dilemma, Challenge or Issue of Concern</b>	No description	Absent or weak description	Description	Full description that includes multiple perspectives, exploring alternative explanations, and challenging assumptions
<b>Attending to Emotions</b>	Little or no recognition or attention to	Recognition but no exploration or attention to	Recognition, exploration, and attention to	Recognition, exploration, attention to and gain of emotional insight
<b>Analysis &amp; Meaning Making</b>	None	Little or unclear	Some	Comprehensive



# Teaching Medical Students to Reflect “Deeper”)

## REFLECT Scoring Sheet

(Wald HS et al: Academic Medicine 2012; 87:41-50)

Reflection Level	Non-Reflective 1	Thoughtful Action 2	Reflection 3	Critical Reflection 4
Writing Spectrum	Superficial descriptive writing approach (fact reporting, vague impressions) without	Elaborated descriptive writing approach and impressions without reflection	Movement beyond reporting or descriptive writing to reflection (i.e. attempting to understand, question, or analyze the	Exploration and critique of assumptions, values, beliefs, and/or biases and the consequences of

### Instructions for Raters:

The process of applying the REFLECT rubric to a reflective narrative consists of four steps:

- 1) **Read the entire narrative.**
- 2) **Fragmentation:** Zoom in to details (phrases/sentences) of the narrative to assess the presence and quality of all criteria. Determine which level each criterion represents.
- 3) **Gestalt:** Zoom out to consider overall gestalt of the narrative (while taking into consideration the detailed analysis of Step 2). Determine which level the narrative as a whole achieves. (If the Critical Reflection is achieved, determine whether either or both learning outcomes - transformative or confirmatory learning - were also achieved.)
- 4) **Defend** the assignment of level and learning outcomes with examples from the text. Do not “read between the lines.”

Defend the assignment of level and learning outcomes with examples from the text. Do not “read between the lines.”

Level of Reflection	Non-Reflective 1	Thoughtful Action 2	Reflection 3	Critical Reflection 4
Paper #1				
Paper #2				
Paper #3				



# Teaching Medical Students to Reflect “Deeper”

- Research Design:

- Two prompts → 2 reflection papers per student

- First open-ended prompt: Please write a 1-2 page typed Reflection Paper regarding interactions you have had with patients. Ideas for the theme include:

- 1) The impact a certain patient had on you or your impact on a patient,
- 2) some personal lesson learned,
- 3) some struggle a patient had to endure.

- There are no right or wrong topics for this exercise. To pass you must turn your assignment in on time.

# Small Groups Activity



1. Read reflection paper #1 and #2
2. Grade those two papers independently using REFLECT RUBRIC
3. Record your score on the scoring sheet

**Compare your score with others and discuss**

**Reach common consensus**

**Come up with one final level as a group**



# Small Groups working



# Small Groups Activity



1. Read reflection paper #1 and #2
2. Grade those two papers independently using REFLECT RUBRIC
3. Record your score on the scoring sheet

**Compare your score with others and discuss**

# Teaching Medical Students to Reflect “Deeper”

	Amy Hayton	Ray Wong	Ilho Kang	Larry Loo
Paper #1	2	2	2	2
Paper #2				
Paper #3				

**Compare your score with others and discuss**

# Teaching Medical Students to Reflect “Deeper”

	Amy Hayton	Ray Wong	Ilho Kang	Larry Loo
Paper #1	2	2	2	2
Paper #2	4	4	4	4
Paper #3				

**Compare your score with others and discuss**

# Small Groups Activity



1. Read reflection paper #3
2. Grade this paper independently using  
REFLECT RUBRIC
3. Put down your score in your scoring sheet

**Compare your score with others and discuss**

**Reach common consensus**

**Come up with one final level as a group**



# Large Group Discussion





# Teaching Medical Students to Reflect “Deeper”

	Amy Hayton	Ray Wong	Ilho Kang	Larry Loo
Paper #1	2	2	2	2
Paper #2	4	4	4	4
Paper #3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Common Consensus → ?? \_\_\_\_\_ ??

# Teaching Medical Students to Reflect “Deeper”

	Amy Hayton	Ray Wong	Ilho Kang	Larry Loo
Paper #1	2	2	2	2
Paper #2	4	4	4	4
Paper #3	4	3	2	4

Common Consensus = Level 4 (Critical Reflection)

# Teaching Medical Students to Reflect “Deeper”

Summary Findings of the IM Clerkship Experience  
(June 2012 – June 2013)

**Lawrence Loo, MD**

Vice-Chair for Education & Faculty Development  
Professor of Medicine

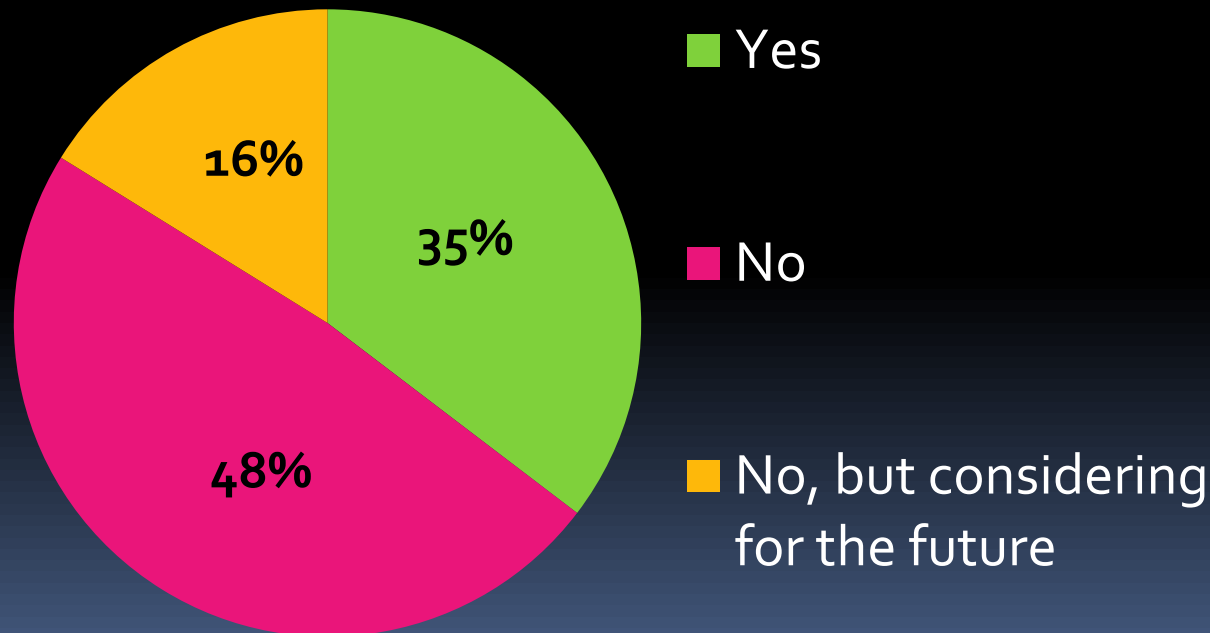


# REFLECTION

(IM Student Clerkship, Dept. Medicine, School Medicine Workshop – February 26, 2014)

Chretien KC, et al.: Reflective Writing in  
IM Clerkship: A National Survey of Clerkship  
Directors in IM. (Teach Learn Med 2012;24:42-48)

**Do you require students to complete a reflective writing assignment during your internal medicine clerkship?** (N=86/107 - 80% response)



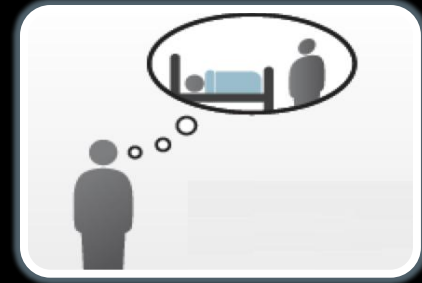
# Teaching Medical Students to Reflect “Deeper”

- **Problem Statement & Background:**

- While many studies have examined the importance of reflection in the professional development of a physician, there is a paucity of empiric evidence for particular interventions to enhance the quality or “depth” of reflection among medical students.
- To facilitate the development of written critical reflection, a new curriculum enhancement was introduced during the third year of medical school

# Teaching Medical Students to Reflect “Deeper”

- 90-Minute Curriculum Reflection



Four minute video from the TV show *Scrubs*, highlighting a young doctor's reflection experience of a patient facing death.

Large group discussion of the key concepts and core components of critical reflection.

Small group interactive exercise where students compared and contrasted three essays portraying different levels of reflection.

A faculty presenter shared a personal reflection critical to her own professional development.

# Teaching Medical Students to Reflect “Deeper”

- Research Design:

- Pre-Post Study: Historical Control Group Comparison\*

- Written reflection papers from the current academic year July 2012 – June 2013
- Compared to written reflection papers from the past 3 academic years matched to the same month of the academic year

- Two prompts → 2 reflection papers per student / 10 week rotation

- First prompt: Open-ended
- Second prompt: Directed to address the hidden curriculum

\* Fraenkel JR, Wallen NE. 2003. *How to design and evaluate research in education*. New York, McGraw Hill)

# Teaching Medical Students to Reflect “Deeper”

- Research Design:

- Written Reflection Papers

- Four faculty reviewers “graded” each reflection papers using the *REFLECT* rubric
    - Faculty were “blinded” to the names of the students and the year written for the first open-ended prompt
    - Discrepancies in grading were resolved by consensus
    - Faculty piloted the process with 30 past reflection papers (not included in the final analysis)

- Primary Outcome - “Critical Reflection” level 4 using the REFLECT rubric\*

\* Wald HS et al.: Fostering and evaluating reflective capacity in medical education: developing the REFLECT rubric for assessing reflective writing. Acad Med 2012;87:41-50.



# Teaching Medical Students to Reflect “Deeper”

## ■ REFLECT Rubric (Wald HS et al: Acad Med 2012: 87:41-50)

Reflection Level	Non-Reflective 1	Thoughtful Action 2	Reflection 3	Critical Reflection 4
<b>Writing Spectrum</b>	Superficial descriptive writing approach (fact reporting, vague impressions)	Elaborated descriptive writing approach and impressions without reflection	Attempting to understand, question, or analyze the event	Exploration and critique of assumptions, values, beliefs, and/or biases and the consequences of action
<b>Sense of Writer Presence</b>	Writer partially present	Writer partially present	Writer largely or fully present	Writer largely or fully present
<b>Description of Conflict, Disorienting Dilemma, Challenge or Issue of Concern</b>	No description	Absent or weak description	Description	Full description that includes multiple perspectives, exploring alternative explanations, and challenging assumptions
<b>Attending to Emotions</b>	Little or no recognition or attention to	Recognition but no exploration or attention to	Recognition, exploration, and attention to	Recognition, exploration, attention to and gain of emotional insight
<b>Analysis &amp; Meaning Making</b>	None	Little or unclear	Some	Comprehensive

# Teaching Medical Students to Reflect “Deeper”

(IM Clerkship, Loma Linda University School of Medicine: WGEA May 3-7, 2013)

- **Research Design:**

- **Statistical Analysis:**

- Primary Outcome: non-parametric tests using Mann-Whitney U & Kruskal-Wallis tests
    - Inter-rater reliability: kappa statistic
    - Effect size: Cohen's d

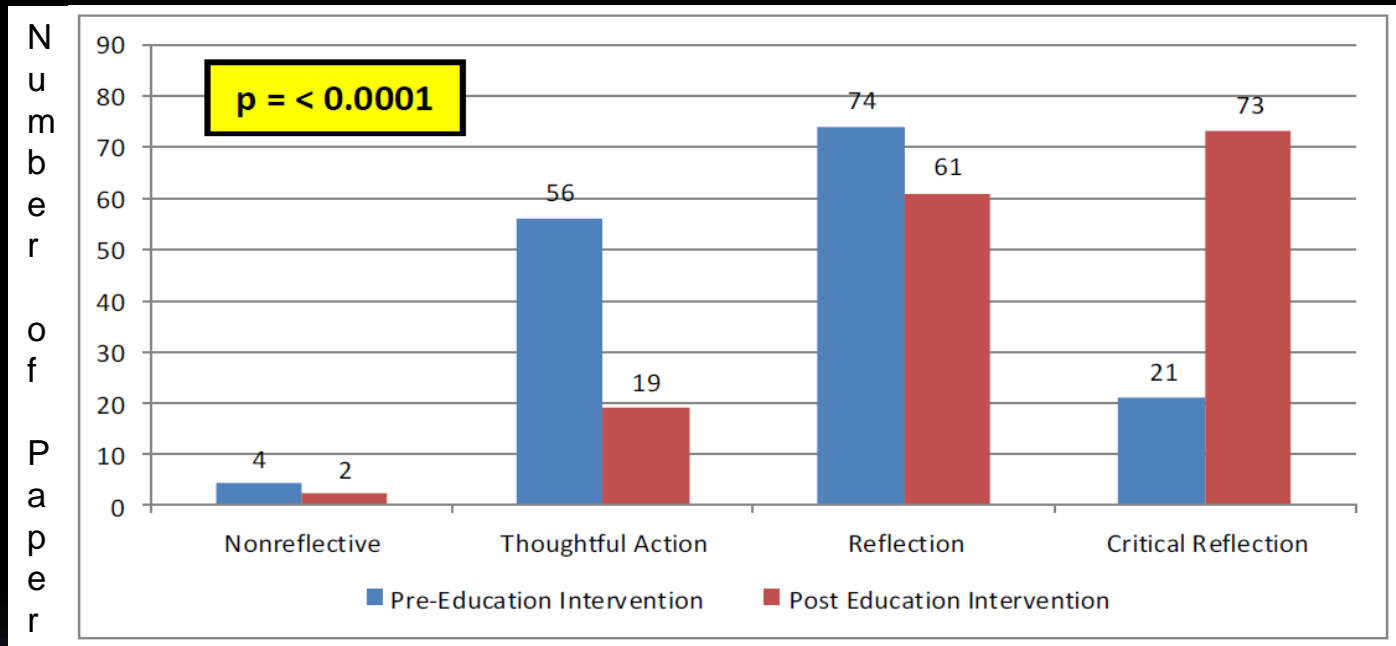
- **Statistical Significance:**

- Standard  $p \leq 0.05$

# Teaching Medical Students to Reflect “Deeper”

(IM Clerkship, Loma Linda University School of Medicine)

## Results : Primary Outcome – Level IV



Reflection Level	1	2	3	4	Sum
Reflection Interpretation	Nonreflective	Thoughtful Action	Reflection	Critical Reflection	
Pre-Educational Intervention Count (%)	4 (2.6%)	56 (36.1%)	74 (47.7%)	21 (13.6%)	155 (100%)
Post-Educational Intervention Count (%)	2 (1.3%)	19 (12.3%)	61 (39.4%)	73 (47.1%)	155 (100%)

# Teaching Medical Students to Reflect “Deeper”

(IM Clerkship, Loma Linda University School of Medicine)

## ■ Results: Inter-rater Reliability (kappa statistic)

10-week Junior Medical Student Rotation	Kappa Statistic*
Group A (June – August 2012)	0.33
Group B (August – November 2012)	0.37
Group C (November – January 2013)	0.36
Group D (January – April 2013)	0.27
Group E (April – June 2013)	0.38

### Kappa statistic interpretation\*

#### Agreement Description

$K = 0$  - “poor”

= 0 – 0.20 “slight”

= **0.21 – 0.40 “fair”**

= 0.41 – 0.60 “moderate”

= 0.61 – 0.80 “substantial”

= 0.80 – 1.0 “almost perfect”

\* Users’ Guide to the Medical Literature. A Manual for Evidence-based Clinical Practice. 2008. page 486

# Teaching Medical Students to Reflect “Deeper”

(IM Clerkship, Loma Linda University School of Medicine)

- Results: Blinding of “old” (O) versus “present” (P) written reflection papers

**Overall Percentage Agreement = 59%**

(Overall percentage agreement expected by chance = 50%)

**$p > 0.05$**

Kappa ( $K$ ) statistic = **0.17** (“poor”)

**Effect Size (Cohen’s  $d$ ) = 0.62** (“medium” or “of moderate practical importance”)\*

\*Cohen J 1987, Statistical Power Analysis for Behavioral Sciences, Hillsdale, NJ: Erlbaum. Hojat M, Xu G: A visitor’s guide to effect sizes. Adv Health Sci Edu 2004;9:241-49.

# Teaching Medical Students to Reflect “Deeper”

(IM Clerkship, Loma Linda University School of Medicine)

## ■ Interpretation & Conclusions:

- **Conclusion:** Our 90-minute educational intervention improved “critical reflection” (level 4 of the REFLECT rubric) by junior medical students
- **Strengths of Study:**
  - Blinding of faculty graders was successful
  - Comparison group pre- and post-intervention
  - Curriculum based on underlying theoretical framework
- **Limitations of Study:**
  - Historical comparison group (not a true randomized trial)
  - Low Inter-rater reliability of faculty graders when using the REFLECT rubric
  - Single center study with one time intervention



# Teaching Medical Students to Reflect “Deeper”



## END

## ! Thank You !



Amy Hayton MD  
[Amy.hayton@va.gov](mailto:Amy.hayton@va.gov)

Ilho Kang MD  
[lkang@co.riverside.ca.us](mailto:lkang@co.riverside.ca.us)

Raymond Wong MD  
[rwong@llu.edu](mailto:rwong@llu.edu)

Lawrence Loo MD  
[lkloo@llu.edu](mailto:lkloo@llu.edu)