Universitätsklinikum Hamburg-Eppendorf

Students from different undergraduate medical curricula reveal different ordering patterns for laboratory and radiology tests

Sigrid Harendza

Universitätsklinikum Hamburg-Eppendorf

Background

- The overuse of laboratory tests and computer tomography remains a problem amongst physicians.[1]
- Two thirds of common laboratory investigations ordered during the hospitalisation of patients have no influence on management decisions.[2]
- Reasons for excessive ordering of tests by doctors include defensive behaviour and uncertainty, lack of experience, inadequate educational feedback, and clinicians' unawareness about costs.[3]
- Medical students do not receive any information about costs of medical tests during their undergraduate training.[4]

[1]Migliorette 2011, [2]Miyakis 2006, [3]Hindemarsh 1996, [4]Toker 2007

Background

Vertically integrated (VI) curricula…

… provide clinical experience early and throughout the curriculum.

… focus on increasing responsibility levels for trainees.

… prepare graduates better for clinical practice.

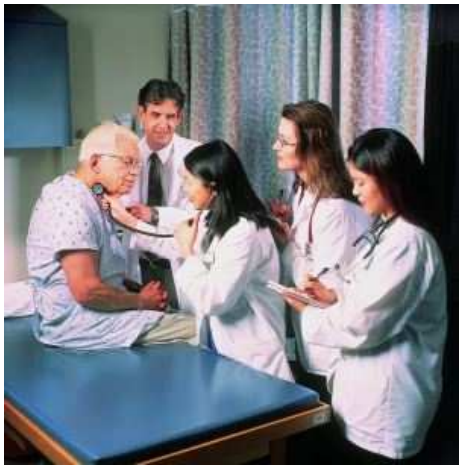
Wijnen-Meijer 2010

Research questions

- Do near graduates from a VI curriculum display different ordering patterns for laboratory and radiology tests than near graduates from a non-VI curriculum?
- Are students' ordering patterns associated with their respective competence score for a "scientifically and empirically grounded method of working"?

Utrecht-**H**amburg **t**rainee **r**esponsibility in **u**nfamiliar **s**ituations **T**est[1]

- Maximal simulation of a clinical environment
- Combination of Triple-Jump[2] and PAME[3]



- ➢ Consulting hour with 5 standardized patients (1 hour)
- ➢ Worktime with standardized “disturbances” (3 hours)
- ➢ Discussion with consultant (30 minutes)

[1]Wijnen-Meijer 2013, [2]Smith 1993, [3]MacRae 1997

Patients in UHTRUST

1. 5-year-old girl with weakness and diarrhea
   (Coeliac disease)

2. 53-year-old man coughing blood
   (Wegener's granulomatosis)

3. 58-year-old woman with abdominal pain
   (Perforated sigmoid diverticulitis)

4. 65-year-old woman with problems to speak and to swallow
   (Myastenia gravis)

5. 36-year-old man with rheumatism and fever
   (Varizella zoster infection)

Methods

Laboratory requests

- Hematology
- Clinical chemistry
- Blood gas analysis
- Clotting tests
- Other

Radiology requests

- X-ray
- CT scan
- Other

Scientifically and empirically grounded method of working

The physician uses evidence-based procedures whenever possible and relies on scientific knowledge. He/she searches actively and purposefully for evidence and consults high quality resources. He/she uses his/her scientific knowledge critically and carefully in his/her work for clinical reasoning.

Laboratory requests

Total laboratory requests

Patient	Utrecht	Hamburg
1	47	85**
2	69	116**
3	54	83**
4	50	84*
5	63	98**
Total	283	466**

* p<.05; ** p<.01

Requests for clotting tests

Patient	Utrecht	Hamburg
1	0	7**
2	4	16**
3	1	17**
4	0	8**
5	4	12*
Total	9	60**

* p<.05; ** p<.01

Universitätsklinikum Hamburg-Eppendorf

Radiology requests

Total radiology requests

Patient	Utrecht	Hamburg
1	7	20**
2	28	38
3	36	46
4	7	19*
5	19	33**
Total	97	156**

* p<.05; ** p<.01

Requests for CT-scans

Patient	Utrecht	Hamburg
1	0	20**
2	4	11*
3	24	25
4	3	11*
5	0	5*
Total	31	72**

* p<.05; ** p<.01

Results

- Near graduates from a VI curriculum order significantly less laboratory and radiology tests than near graduates from a non-VI curriculum to get to the correct diagnosis of a patient.
- Near graduates from a VI curriculum use CT scans predominantly in situations when they are absolutely required in the diagnostic process.
- Ordering patterns for laboratory tests correlate highly with the score for a “scientifically and empirically grounded method of working” in near graduates from a VI curriculum.

Hypotheses to be investigated

- Near graduates from a VI curriculum might have better training in clinical reasoning strategies.
- Near graduates from a VI curriculum might be more aware of costs and radiation safety procedures.
- Near graduates from a VI curriculum might be embedded from the beginning in a different culture of clinical thinking.