Working towards standard operating procedures in medicine : Checklists in surgery

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Implementation of checklists – Why?

Today's working reality

Cost effectivness brings:

- less Nurse stuff
- less Doctors
- less education
- less time in the OR for surgeons

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Implementation of checklists – Why?

Today‘s working reality

Cost effectivness brings:

- more unspecific work for nurses
- more unspecific work for doctors
- less time for the patient

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Implementation of checklists – Why?

Today‘s working reality

Less education:

Time in the OR for a surgeon when finishing a speciality is one third compared to 25 years before

Prof.Trentz, University Hospital Zurich, Department of Traumasurgery, Zurich, Switzerland

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Implementation of checklists – Why?

Today‘s working reality

Less time:

- more and more ambulant procedures
- because of minimal invasive surgery shorter hospital stay
- more and more documentation

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Implementation of checklists – Why?

Problem:

Less time for specific work and timepressure means less time for planning and preparation of e.g. surgical procedure

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Implementation of checklists – Why?

Problem:

- Procedures get more and more technical e.g. navigated knee TEP has additional 20-30 steps to learn
- The most complex procedures are operated less often
- No team training (nurse staff – surgeon)

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Implementation of checklists – Why?

Standardised operation procedures

- work flow not dependend on individual knowledge
- Reduction of Errors
- Stress reduction during complications?

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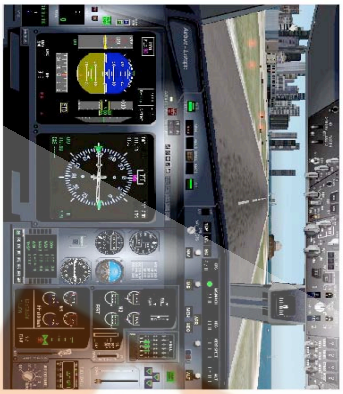

Airbus A320-200

Microsoft Flight Simulator 2004

Aircraft : Mike Stone's gmax Airbus
Panel : AIRPACK project by
Giovanni Combattelli and Ruggero Osto, Italy

Foto: Gerhard Vyncas

Foto: Airbus Industries

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Other simulator checklists and other sim/real aviation items available for download at http://www.fastest.com and http://www.fastest.com/downloads/simchecklists/simchecklists.html

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Introduction of checklists – How to do ?

Checklist for whole procedure

- Diagnostic
- preoperative
- day of surgery
- Intraoperative?
- postoperative

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Checkliste Anordnungen „Kolon“

Vortag

- EKG
- Rö- Thorax ab 65J
- Aufklärung OP
- bei Tumorpat.: Clexane 0,4ml 1x/d, PDK: Clexane 0,2ml reduzieren
- Bei Tumorpatienten: Sonografie Abdomen
- Blutgruppe bestimmen; bei pathologischem Hb 2EK´s kreuzen
- Labor (BB / Quick, PTT / K+, Ca2+, BZ, Crea, Hst / GGT, AP, Bili, GOT,GPT)
- Tumormarker CEA/CA19 -9
- Abführen: 2l Moviprep

OP-Tag

- Monitorüberwachung
- Schmerztherapie nach Anästhesie, sonst 7,5mg Dipidolor Kl
- Novalgin 1g Kl 0 -1-1
- BB und E´lyte um 18:00, klinische Untersuchung
- Tee/Wasser schluckweise, abends Yoghurt/Fresubin/Suppe
- 17.30 Uhr BB -Kontrolle

1. pop. Tag

- Novalgin 1g Kl 1 -1-1, bei Bedarf 1g Perfalgan Kl
- Labor: Profil B
- DK entfernen
- Trinken frei, Infusionen 2l Sterofundin, Suppe, Yoghurt, Fresubin

2. pop. Tag

- Trinken mi n. 1,5 l, Schonkost
- Novalgin 1g Kl 1 -1-1
- Infusionen nach Anordnung
- Tumomarker ab 5. Tag, falls prä -op erhöht
- Passierte Kost

Bemerkungen

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Implementation of checklists – How to do ?

Implemented:

- Diagnostic
- Preoperative
- Day of surgery
- postoperative

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Implementation of checklists – How to do ?

Implemented:

Diagnostic

e.g. diagnostic protocoll for polytraumatised patients

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Implementation of checklists – How to do ?

Implemented:

Diagnostic

Preoperative

implemented in some hospitals as necessity, which means no operation if not done

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Implementation of checklists – How to do ?

Implemented:

- Diagnostic
- Preoperative
- **Day of surgery**
- **postoperative**

e.g. standardized scheme of medicaments (pain killers), standardized gradual return to solid food

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Implementation of checklists – How to do ?

Intraoperative

-How to get the checklist information?

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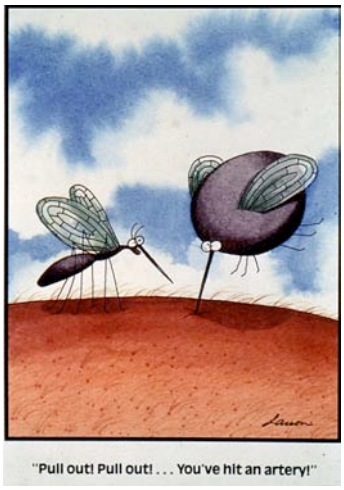
Implementation of checklists – How to do ?



Intraoperative

- How to get the checklist information?
- Assistent reading the checklist?

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Implementation of checklists – How to do ?

Intraoperative

-How to get the checklist information?

- Assistent reading the checklist?
- In Endoscopic surgery implementation as voice controled help Menu?

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Implementation of checklists – How to do ?

Intraoperative

- How to get the checklist information?
- Assistent reading the checklist after asked?
- In Endoscopic surgery implementation as voice controled help Menu?
- No implementation during operation?

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Implementation of checklists – How to do ?

During Operation

- Checklist only for surgeon or for the team?
- Only implementation of standard procedures?
- Algorithms for complication solution – possible or impossible because of complexity?
- variabel Checklists depending on complications?

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Implementation of checklists - setting

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Introduction of checklists - setting

- 40 medical students without former lap. experience
- Two groups, one with and the other without cheklist
- Participants are randomly assigned to the groups

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Implementation of checklists - setting

- Every student had no experience with simulation
- Every participant was introduced to the simulator through experienced trainer
- One hour lecture about laparoskopic surgery and lap. Cholecystectomy
- familiarization with two tasks with different severity

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Implementation of checklists - setting

- Cholecystectomie procedure was chosen (dissection of cystic duct and artery)
- Procedure performed three times in increasing severity
- Stress was measured through skin resistance
- Errors and Results were measured through sim

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Implementation of checklists - setting

- Stress was measured with Biofeedback device (Fa. Schuhfried)
- Checklist information was given through trainer when asked
- Group members of checklist group had to use checklist

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JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Checkliste Galle

Auswahl der geeigneten Instrumente durch Herausziehen beider Arbeitsinstrumente

Wechseln der Instrumente mittels Öffnen und Schließen des betreffenden Instrumentes

Auswahl des Thermohakens

Beginn der Präparation am Callot'schen Dr eieck

Vorsichtige Präparation des Ductus Cysticus und der Arteria Cystica durch ausreichendes Anspannen des Gewebes und Elektrokauthersation

Sofortige Blutstillung bei auftretenden Blutungen

Erkennen von Problemen seitens der Anästhesie

Sofortiges Nachfragen welche Probleme entstanden sind und Absprache, ob weiteroperiert werden kann

Wenn ja, weiteroperieren

Wenn nein, abwarten und Absprache mit Anästhesie, wann Probleme gelöst sind

Fortfahren der Dissektion

Ausreichende Präparation mit sie herem Darstellen der A. cystica und des D. Cysticus

Vorsichtige und sichere Clipapplikation

2 zentrale (zu den Abgängen der Gefäße liegende) und 1 peripherer Clip

Durchtrennen der Gefäße zwischen den zentralen und dem peripheren Clip

Bei Auftreten von chirurgischen oder anä sthesiologischen Komplikationen immer nach dem Checklistenvorgehen fragen

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Results

Technical Skills equally distributed in both groups

Stress measurement at rest equally distributed

Groups equally build concerning age, gender, interest of speciality, computer game experience

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Results

Preliminary results

- A trend for better performance on the Lap sim
- Better Performance at higher severity levels
- Less Stress

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Results

Less stress measured through skin resistance

- less stress events counted
- less overall stress

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Results

Since introduction of pre- and postoperative Checklists in our hospital

- significant error reduction concerning
  - missing diagnostic
  - preoperative preparation
  - postoperative pain
  - time of return to solid food

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Conclusion

- Implementation of checklists is usefull and possible
- International consensus for treatment procedures is necessary
- Checklist must cover the whole „treamtment team“ and „treatment procdure“

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