Crazy? Not really!
A brainstorming on ideas to change anesthesia practice on the next ten years

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Background and goals: Thinking unconventionally in an open-minded setting, were no idea is discarded as useless until proven so, may be a very creative way of looking to problems and finding opportunities of improvement, not normally addressed. The educational goal for our residents is training how to develop a new idea from the outset, in an cooperative effort as opposed to individual thinking. This could lead to a investigation project or the development of secondary areas of interest not initially though of.

Material and methods: We challenged our group of 30 residents to a brainstorming on unconventionally approaches to actual or hypothetical problems, viewed by it's possible solutions rather than the problem itself. Only condition was the belief that it could be eventually feasible. Discussion of each idea received input from others, eventually leading to a proposal that was technically possible or could be developed in an near future.

Results : Ten ideas were selected for presentation, based on the premise that they could eventually be part on our practice on the next ten years, and could help or solve some practical problems or improve patient care.

A complete Anaesthesia Workspace, integrating the patient information fom all sources.
Monitoring and anesthesia delivery (ventilator, infusion systems,...) data could be integrated with automatic anesthesia recording with trending interpretation and alerts, medical record and imaging. Remote networking with other anesthesiologists could help in decision making, remote monitoring with alerts for early warning of patients needing additional resources or help.

3D face mask printing.
Patients with facial dysmorphy and risk of difficult mask ventilation could have an unique face mask created with a 3D printer. This would allow for adequate mask fitting and safe ventilation during airway management. Recycling (instead of disposal) of the ink used would make it economically sustainable.

Anesthesia Vending machine
Commonly used and emergency less used drugs could be prepared from a central OR dispenser. Standart dosing, concentration and patient identification would be basic features, but error redution, nurse time economy and automatic prescription accountability could pay for the investment.

Local or segmentar cell "ionization".
What if we could reversibly "paralyze" cell function on a limited area, creating a localized anesthesia state sufficient for surgical manipulation. Fracture focus mobilization, abscess drainage, painful wound dressing could be done any place in the hospital without systemic drug side effects or need for airway control or special monitoring.

Color labeled drugs
Instead of relying only on procedural error redution practices with color-labeling of drugs, why not a colored drugs used for special purposes? Muscle relaxants, potent vasoactive or cytostatic drugs, would be excellent candidates for a special warning system like this.

Surgical table based monitoring.
Instead of cable from the anesthesia equipment, all monitoring would based on the surgical table, with a minimum of cables. Communications via WiFi or Bluetooth with the monitoring equipment would filtrate and amplify patient biological signals.
A no-cables patient monitoring facilitating positioning, access and patient care.

Medical Exoskeleton
Already on military (not only movie and sci-fi!) application, it's time to buy a few ones for our patients! Assisted early post-operative mobilization, intensive care physiotherapy, trauma and neurologic patients care are obvious applications. Modular applications of oxygen, monitoring or even a portable ventilator would free the patient from bed confination.

Editable anesthesia ID Card, QR code and chip.
All relevant patient information could be permanently updated, available during patient hospital stay, downloaded to medical record.
Patient identification, allergy alerts and transfusion coding would be permanently available for use with OR bar-code reading equipment.

Wearable monitoring.
If high competition athletes can have their physiologic parameters monitored, why can't our patients?
Light clothing with embedded vitals monitoring could be used either pre- and post-operatively, allowing for early warning of complications, yet not interfering with a much needed perioperative deambulation
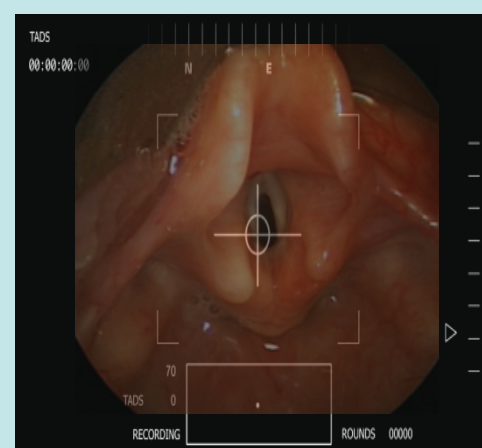
Computer assisted imaging of airway.
Video laryngoscopy combined with already ubiquitous image recognition technologies, could be the next step or airway imaging and management. Pattern recognition of structures could make a wrong intubation almost a rarity. Assisted learning is a more probable application, but why not remote assistance for lesser trained doctors (e.g in a pre-hospital setting or remote locations like ships or off-shore platforms)

Conclusions: Stimulating unrestricted free-thinking in a controlled setting may make us aware of simple solutions to old problems, and suggest ways of putting present day technologies to the service of our patients.
The brainstorming idea had however other purposes - in a teaching hospital setting, it is practical tool to stimulate investigation ideas development and cooperative development of investigation projects.