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WEBINAR SERIES#4

Health Technology Assessment role on MD Reprocessing efficiency

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4 WEBINAR

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intro

Effectiveness and efficiency of MD reprocessing are achieved through proper selection, use, maintenance and technological updates of the equipment involved (decontaminators, washers/disinfectors, sterilizers, etc.) as well as adequate planning of workflows, procedures, staffing and organization in general in order to meet throughput needs.

Health Technology Assessment (HTA) takes all these aspects into account and therefore can play an important role in managing reprocessing efficiency.

01. Introduction to Health Technology Assessment

Health technology assessment is a systematic and evidence-based methodology that considers the multiple dimensions (safety, effectiveness, economic and organizational aspects, as well as social, ethical and legal implications) of healthcare technologies (equipment, drugs, devices, procedures).[1] This means that HTA can be applied to the MD reprocessing cycle as a tool for improving efficiency by measuring how changes in the process or novel methods compare to the current practice.

HTA is a multidimensional evidence-based methodology for supporting decision making.

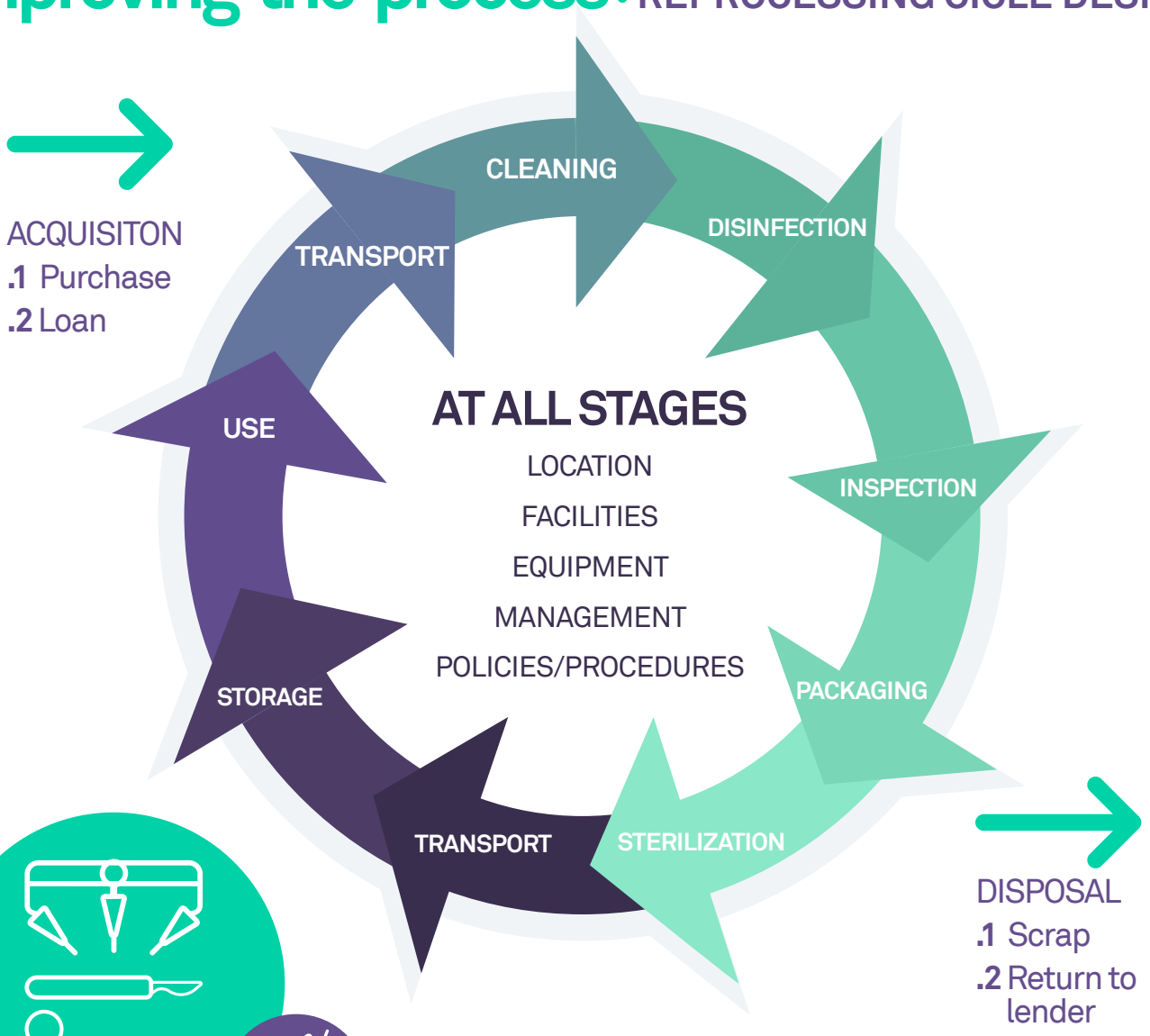
> *"HTA can be applied to the MD reprocessing cycle as a tool for improving efficiency."*

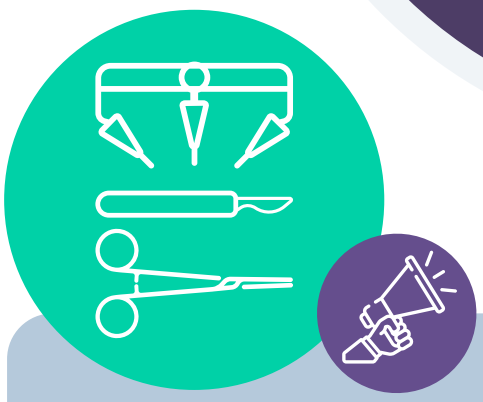
ASP Advanced Sterilization Products

02.HTA and its role in the reprocessing of MDs

Efficiency is achieved by maximizing the output of a process given the inputs.[2] The multiple system inputs can be represented as measurable variables relative to the hospital's productive assets and procedures; the same multidimensional elements are taken into account by the comprehensive HTA approach that is therefore useful in investigating reprocessing efficiency.
The technological evolution of medical devices poses a challenge to the reprocessing cycle: novel and more sophisticated medical devices are also more delicate and require procedures that are more complex.[3] Therefore, in assessing the introduction of a new device, it is important to consider implications in terms of training, staffing, equipment and time needed for reprocessing.

improving the process · REPROCESSING CICLE DESIGN





Reprocessing efficiency depends on all the productive assets involved.

> ***"In assessing the introduction of a new device, it is important to consider implications in terms of training, staffing, equipment and time needed for reprocessing."***

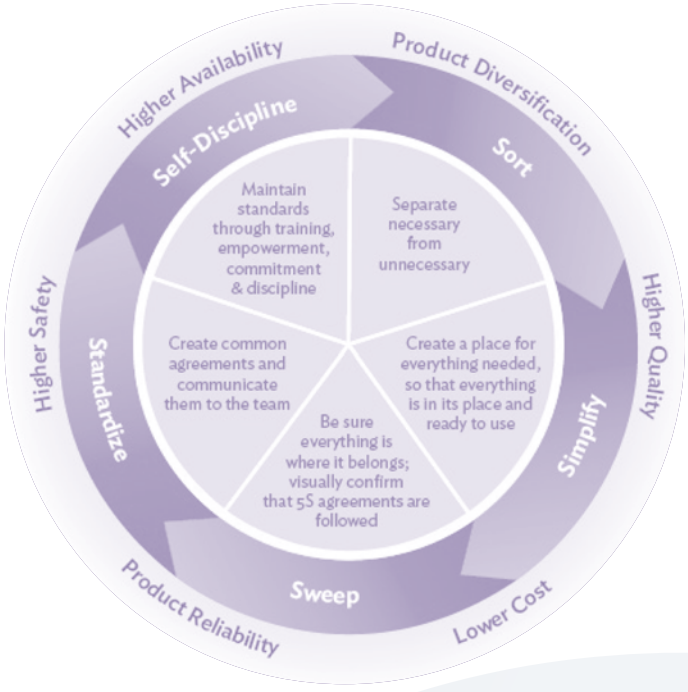
03. Efficiency in MD reprocessing and HTA applications

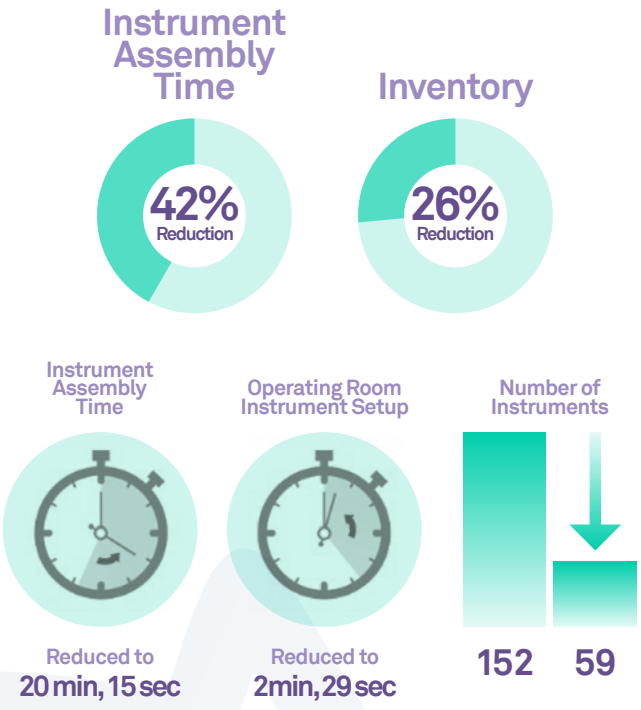
Efficiency in reprocessing is relative to a number of factors (ranging from time to energy to materials employed) each one of which is determined by the combination of all the operational elements involved. In order to meet performance requirements equipment must be kept in efficient state and running condition at all time; this is achieved through management of the machines which involves selection, upgrading, use, maintenance and replacement of all the elements employed (decontaminators, washers/disinfectors, steam and hydrogen peroxide sterilizers, heat sealers, etc.)[4]. Productivity and efficiency of the cycle can be tracked, and therefore improved, by measuring the process rate and operating time of the equipment.

Furthermore the reprocessing cycle[5] must be designed according to the service required (scheduled procedures, operating rooms, outpatient clinics, wards, etc.) while taking into account the available assets (staffing, equipment, instruments, etc.). Set optimization is an approach to gaining efficiency which allows saving on all resources[6,7,8]: time (washing and assembling), money (inventory reduction, less energy and water consumed, staffing, maintenance).

Both efficiency and effectiveness depend on equipment maintenance and IFUs.

In order to meet performance requirements equipment must be kept in efficient state and running condition at all time."





Source: Source: Virginia Mason Institute (2021) - Case Study | Surgical Setup Reduction Improves Patient Outcomes

Set Optimization

Example: head and neck trays

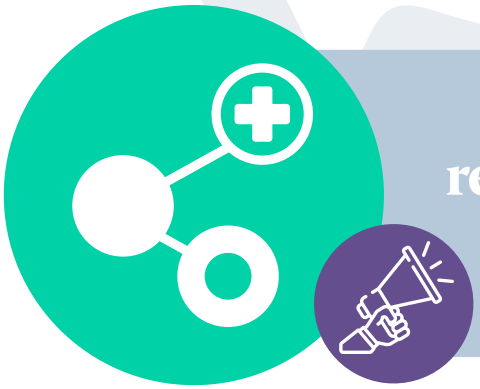
01 Original head and neck tray before instrument reduction.

02 Thyroidectomy and parathyroidectomy tray after instrument reduction.

Source: AR Dyas - Reducing cost and improving operating room efficiency: examination of surgical instrument processing - Journal of Surgical Research (2018)

04. MD reprocessing efficiency examples and future ahead

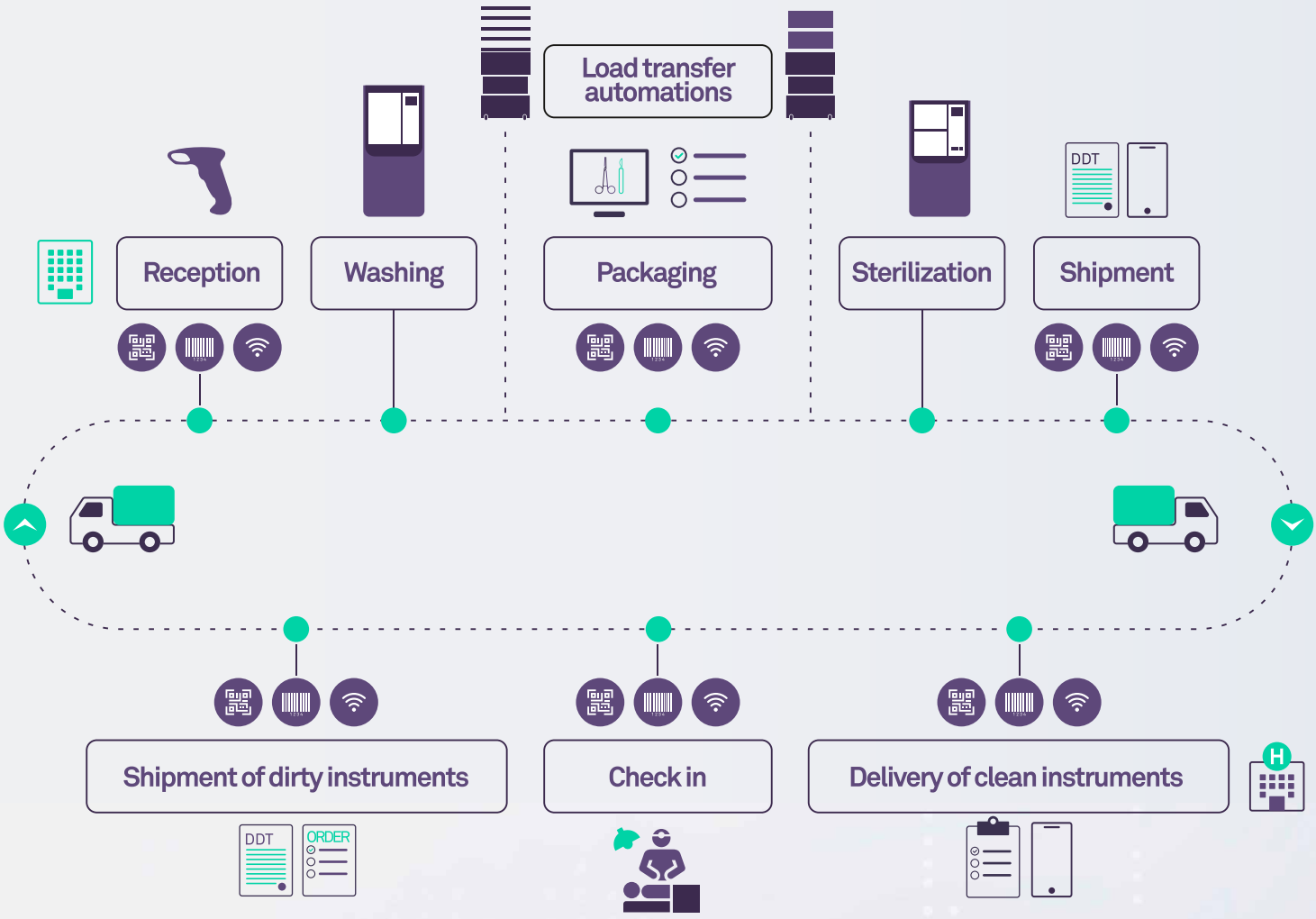
Contingent conditions (budget constraints, energy cost increase, material shortages) determine constant demand on process (and reprocessing) efficiency. Industrial advances in technology, such as automation and artificial intelligence, applied to MD reprocessing can be useful tools in achieving efficiency goals[9]. Monitoring systems can provide automated data and traceability collection and analysis while systems with AI can identify instruments and guide operators through kit assembly reducing complexity and human error while saving time[10,11].



New technologies can improve reprocessing by saving time, reducing human error, gathering and managing data.

> ***"Industrial advances in technology, such as automation and artificial intelligence, applied to MD reprocessing can be useful tools in achieving efficiency goals."***

Applications in MD reprocessing

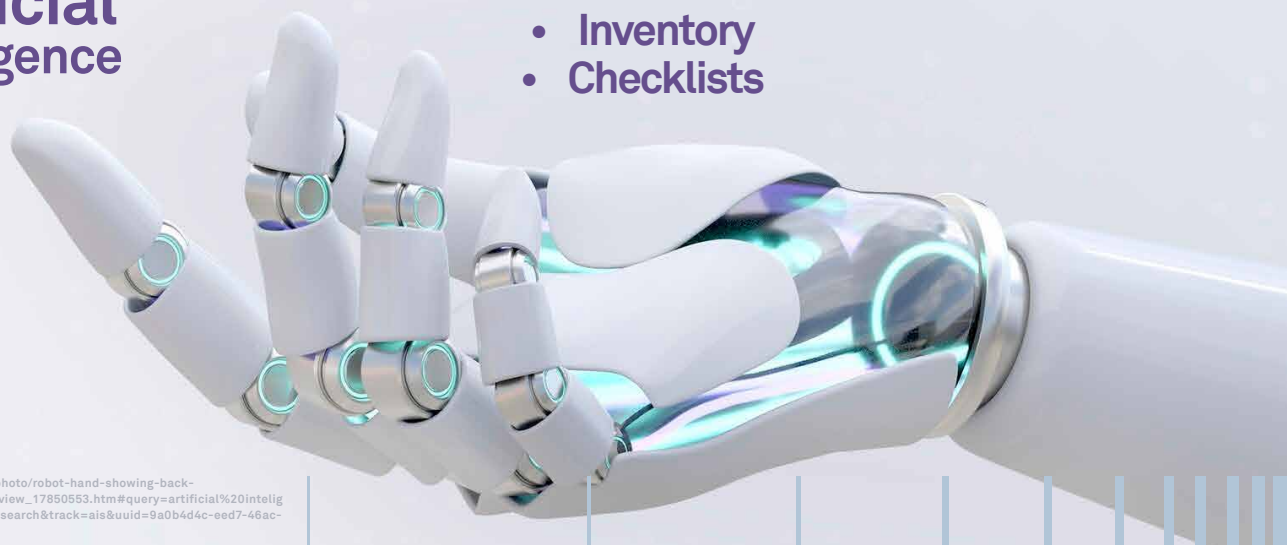


AI

artificial intelligence

Instrument vision systems

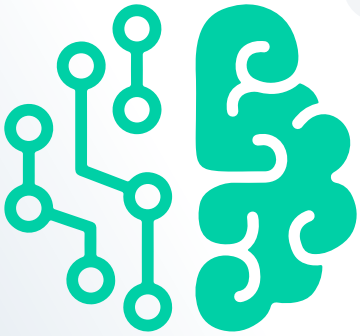
- Instrument recognition
- Human error reduction
- Time saving
- No DataMatrix or RFID
- Inventory
- Checklists



https://www.freepik.com/free-photo/robot-hand-showing-background-3d-ai-technology-side-view_17850553.htm#query=artificial%20intelligence&position=33&from_view=search&track=ais&uuid=9a0b4d4c-eed7-46ac-b417-7b25f06d99e1

Resume

ARTIFICIAL VS. HUMAN INTELLIGENCE



AI can help in error reduction and elaborating the thousands of variables in SP:

- IDENTIFYING INSTRUMENTS THAT ARE MORE LIKELY TO REQUIRE EXTRA ATTENTION DURING CLEANING AND STERILIZATION ALLOWS TECHNICIANS TO PRIORITIZE INSTRUMENTATION AND ENSURE THEY ARE PROPERLY REPROCESSED
- MONITORING THE STERILIZATION PROCESS TO ENSURE INSTRUMENTS ARE PROPERLY STERILIZED BEFORE USE
- MONITORING STERILIZATION EQUIPMENT TO ALERT TECHNICIANS IF THERE ARE FAULTS IN THE PROCESS

AI can help in error reduction and elaborating the thousands of variables in SP:

AI CANNOT REPLACE THE EXPERTISE OF HUMAN HEALTHCARE PROFESSIONALS IN STERILE PROCESSING. TECHNICIANS RELY ON THEIR TRAINING, EXPERIENCE, AND JUDGMENT TO ENSURE THAT INSTRUMENTS ARE PROPERLY PROCESSED AND READY FOR USE. AI CAN PROVIDE VALUABLE INSIGHTS AND SUPPORT, BUT IT IS ULTIMATELY UP TO TECHNICIANS TO ENSURE THE INSTRUMENTS ARE CORRECTLY PROCESSED.

01 HTA is a valuable tool in addressing MD reprocessing. It is a multidimensional and evidence-based approach.

02 Reprocessing efficiency depends of effective management of the multiple productive assets (staffing, planning, equipment, instruments) involved.

03 Productive efficiency is achieved by increasing the output/input ratio, therefore reducing materials, time, staff required and/or increasing the throughput.

04 Economic efficiency is achieved by reducing the costs associated with productive assets and retaining inventory value of the istruments.

05 Technological advances can improve efficiency through data management and error reduction.

Take home MESSAGES

THE ROLE OF **HEALTH TECHNOLOGY ASSESSMENT** IN **MD REPROCESSING EFFICIENCY**

References:

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