

Hackathon Research for Team #31

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Challenge Name

GENERAL SURGERY TRACK - Pre-operative safety

General Description of the Idea

Making the timeout procedure more efficient

Research Inquiries

1. Understand the problems and failures with the timeout procedure.
2. What are the top solutions?
3. Timeout procedure in Israel vs USA.

Findings

The “time out” procedure is a safety protocol designed to minimize errors during surgery, mostly involving mistakes in identification of the patient, the operated organ, or the type of procedure - “wrong-site, wrong procedure, wrong person” mistakes, which are recognized as medical mistakes that should never happen.

It is a part of a safety and readiness protocol that involves 4 parts:

1. Pre-procedural verification
2. Sign-In
3. Time-out
4. Sign-Out

Each part is done separately and for the purpose of ensuring the completion of all processes, it is often integrated into the HER (Chameleon in most cases in Israel).

The 'Time-Out' step is considered to be crucial as it is done just before the first incision and requires the full attention of all the participants, that is the surgeon(s), the anesthesiologist, the scrubbed and circulating nurses, and every other relevant member of staff. This is as opposed to the other steps which are either done by a single staff member or by multiple personnel separately.

During 'Time-Out' the entire OR team should cease all actions and be in attendance while one of the members, usually the circulating nurse, reads out the details listed below:

1. Patient identity
2. Type of procedure in accordance with the HER
3. Marking of the procedure site
4. Verification of signed informed consent forms

After the readout, all members should agree to all the details in the procedure or voice any concerns that they have, and only then the procedure is allowed to begin. The procedure time is documented by a staff member, usually the circulating nurse. Some hospitals also add other clauses to the 'Time-Out' procedure, and it also changes by country. See the example below:

Timeout procedure - Israel and US:

See MOH protocol:

- Israel - https://www.health.gov.il/hozer/mr04_2022.pdf
- USA - https://www.jointcommission.org/-/media/tjc/documents/standards/universal-protocol/up_poster1pdf.pdf

פסק זמן- טרום חתך
 תאריך: 20/09/2022 שעה: 12:54 מבצע ההליך: lidia

פרטים לאימות

1. זיהוי המטופל:
 השם ומספר ת.ז. תואמים לידון
 השם ומספר ת.ז. תואמים לגיליון המטופל
 בדיקת הדימות על הצג תואמות למטופל

2. הימצאות טפסי הסכמה חתומים:
 לניתוח/פעולה פולשנית מתן דם ומוצרי

3. סוג הניתוח:
 פונדופליקציה + גסטרוסטומי

4. האיבר בו מתבצע הניתוח:
 איבר: בטן

5. סימון האיבר:
 אין צורך

6. תנוחת המטופל:
 מותאם לסוג הניתוח

7. רגישות המטופל לחומרים/תרופות:
 ידון זיהוי גיליון המטופל
 רגישות ל: לא ידוע

8. מתן אנטיביוטיקה מניעתית במהלך 60 דקות לפני הניתוח:
 אנטיביוטיקה ניתנה

9. הערות:

As can be seen, this is not a laborious task, it does not take a long time to perform and does not require any special skills. The average 'Time-Out' was measured at 60.8 ± 21.3 seconds.

Factors hindering the execution of 'Time-Out' could be:

1. Distractions such as staff members performing various actions (either related or unrelated to surgery) patient instability, coming and going of staff, equipment issues, music or cellphones, etc.
2. Lack of attention by the entire team.
3. Lack of awareness of the importance of the time-out procedure among healthcare professionals.
4. Lack of information - patient medical history, medications, allergies, post-surgery placement/plans, etc.

5. Lack of participation of the entire OR team.
6. Time-outs occurring before all staff members are ready or before prep and drape occur.
7. Lack of senior leadership engagement in the time-out
8. Staff feels unable to speak up about concerns or when observing mistakes, mostly due to hierarchy (trainees are less likely to speak up, as was shown in studies)
9. Rush or eagerness to start surgery leading to a hastened protocol.
10. Inability to verify the attention of the team to details and thus to verify true agreement to the details (that is- staff members just agree without actually paying attention to details).
11. Not all staff members are exposed to all pieces of information – the surgeon did not see the signed forms of consent, and the anesthesiologist did not see the marked surgical site.
12. While only the circulating nurse signs the EHR, all team members should agree to the details and take responsibility to it.
13. There is nothing physically limiting the procedure from commencing without a 'Time-Out', occasionally it is done after the incision has been made.
14. Interruptions during 'Time-Out'.
15. The person who performed the tasks reviewed in 'Time-Out' is not present. E.g., the staff who explained and had the patient sign the consent, the team member who marked the surgical site, etc.
16. The procedure is not integrated into the work in the OR - it is not an integral part of the procedure and is an 'unnatural pause' seconds before incision (debatable whether this is an advantage).
17. Feeling of redundancy.
18. Lack of structured design, leading to mistakes in the 'Time-Out' protocol.
19. The perception that 'Time-Out' is time-consuming and delays surgery, and is a bureaucratic burden.

Efforts and possible solutions:

- The 'Time-Out' procedure is integrated into the HER in most situations to increase compliance.
- In general, teaching hospitals appear to be more compliant with 'Time-Out', possibly due to an atmosphere promoting teaching.
- Some hospitals employ pre-recorded checklists (which may be integrated into the EHR), Video-based checklists, or interactive checklists that can be seen by the entire staff and are linked to either the EHR or the forms held by the circulating nurse. In some forms the checklist does not display all the clauses immediately, rather each clause appears only after the previous one was marked as agreed by every team member individually (or one member documents the agreement of all the members).
- Another approach was to designate an independent observer to monitor 'Time-Out', such as a medical student.
- Some hospitals use reminders, such as plates labeled 'Time-Out' that are found on top of the surgical tools in the sterile carts.
- Educational programs, simulations, and leadership-based programs have been documented to improve compliance. Involving the patient might also improve the outcome, but as 'time-out' is traditionally done just prior to incision this may not be feasible.
- When introducing deliberate errors to the 'Time-Out' forms 50% went unnoticed by the OR team, showing that even when the 'Time-Out' protocol is followed the information can still be wrong. Errors were most commonly detected by the anesthesiologist.
- Technological measures such as computer vision, barcode markings, and AI were suggested, as well as voice recognition of staff members.

References:

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8. <https://pubs.asahq.org/anesthesiology/article/125/3/484/19598/Electronically-Mediated-Time-out-Initiative-to>
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12. <https://www.sciencedirect.com/science/article/pii/S174391911930158X>
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