Intravascular Complications of Central Venous Catheterization by Insertion Site

- Three anatomical sites are commonly used to insert central venous catheters:
  - In this multicenter trial, patients were randomly assigned nontunneled central venous catheterization in patients in the adult intensive care unit (ICU) to the subclavian, jugular, or femoral vein in a 1:1:1 ratio.
  - The primary outcome measure was a composite of catheter-related bloodstream infection and symptomatic deep-vein thrombosis.
  - Multicenter study out of France.
  - If one of the three sites was not suitable on both the left and right sides of the body, the catheterization site was assigned in a 1:1 randomization scheme for the other two sites (two-choice scheme), an approach termed “selective exclusion.”
  - A total of 3471 catheters were inserted.

- In the three-choice comparison, there were 8, 20, and 22 primary outcome events in the subclavian, jugular, and femoral groups, respectively (1.5, 3.6, and 4.6 per 1000 catheter-days; P = 0.02).
  - Higher in the femoral group than in the subclavian group (hazard ratio, 3.5).
  - Jugular group than in the subclavian group (hazard ratio, 2.1).
  - Femoral group was similar to that in the jugular group (HR 1.3).

- Pneumothorax requiring chest-tube insertion occurred in association with 13 (1.5%) of the subclavian-vein insertions and 4 (0.5%) of the jugular-vein insertions.

Results

- These findings are consistent with the Centers for Disease Control and Prevention guideline for preventing intravascular catheter-related infections, in which the recommendation is to “use a subclavian site, rather than a jugular or a femoral site, in adult patients.”

- The overall risk of mechanical, infectious, and thrombotic complications of grade 3 or higher was similar among the three insertion sites which suggests that an ideal site for central venous catheter insertion does not exist when all types of complications are considered to be of equal concern.
The HEART Pathway Randomized Trial Identifying Emergency Department Patients With Acute Chest Pain for Early Discharge

CIR CARDIOVASC QUAL OUTCOMES 2015 MAR;8(2):195-203.

Background

• Each year 8 to 10 million patients complaining of chest pain present to an emergency department (ED) in the United States
• American College of Cardiology/American Heart Association guidelines recommend that low-risk patients with acute chest pain should receive serial cardiac markers followed by objective cardiac testing
• Among low risk patients, who have ACS rates <2%, objective cardiac testing is associated with a substantial number of false-positive and nondiagnostic tests, which often lead to invasive testing

The HEART Pathway

• which combines the HEART score with 0- and 3-hour cardiac troponin tests, is a recently developed decision aid designed to identify ED patients who are safe for early discharge.
• HEART Pathway can classify >20% of patients with acute chest pain for early discharge while maintaining a negative predictive value (NPV) for a major adverse cardiac event (MACE) rate of >95% at 30 days
• can safely identify low risk patients with acute chest pain for early discharge from the emergency department without stress testing or coronary angiography

EXCLUSION

• New ST-segment elevation ≥1 mm
• Hypotension
• Life expectancy <1 year,
• A noncardiac medical, surgical, or psychiatric illness determined by the provider to require admission
• Previous enrollment
• Non-English speaking, and incapacity or unwillingness to consent.

Methods

• Randomized controlled single-center clinical trial funded by the American Heart Association from 9/2012-2/2014.
• All participants provided witnessed written informed consent and were randomized to the HEART Pathway or usual care strategies.
In the HEART Pathway arm, ED attending physicians used the HEART Pathway guide testing and disposition decisions. In the usual care arm, providers were encouraged to follow American College of Cardiology guidelines

Randomization

Circ Cardiovasc Qual Outcomes. 2015;8:195-203. DOI: 10.1161/CIRCOUTCOMES.114.001384.
Results

- 282 patients with symptoms suggestive of ACS were enrolled, with 141 randomized to each arm.
- Compared with usual care, use of the HEART Pathway decreased objective cardiac testing at 30 days by 12.1% and LOS by 12 hours and increased early discharges by 21.3%.
- Within the HEART Pathway arm, 2.8% (4/141) had cardiac-related repeat ED visits compared with 4.3% (6/141) in the usual care arm. Cardiac-related nonurgent hospitalizations occurred in 1.6% (6/141) of patients in the HEART Pathway arm compared with 2.8% (4/141) in the usual care arm.
- No patients identified for early discharge had missed a Major Adverse Cardiac Event in either group during 30-day follow-up. No patients identified as low-risk by the HEART Pathway had an index or nonindex MACE. Index MACE occurred in 5.7% (8/141) patients in the HEART Pathway arm compared with 6.4% (9/141) in the usual care arm.

Finding the Holy Grail Is Not a Short-Term Project

- Emergency physicians have identified 1% as the maximum miss rate that would acceptable to them in order to actually use such a tool in the clinical setting.
- Early instruments had unacceptably low sensitivity: Goldman Risk score, ACI-TIPI, TIMI score, GRACE.
- North American Chest Pain Rule: Sensitivity of 100% in the derivation phase, and allowed for early discharge of 18% of patients. Although the sensitivity remained high in validation studies, the proportion of patients eligible for early discharge dropped to 11%.
- ASPECT: Has been validated using high-sensitivity troponins, and has shown high sensitivity while identifying >20% of patients for early ED discharge.
- HEART Pathway: 100% sensitivity using 2 sets of conventional troponins, although it has a lower confidence interval of 72%. An external validation study of the HEART Pathway had a miss rate of 1.7%; lowering the low-risk score cut-off from 3 to 2 resulted in a miss rate 1.1%.

Mahler study:

- There was no difference in Major Adverse Cardiac Events (MACE) at 30 days; however, the study was not powered to find a difference in MACE.
- Although the authors present this as a real-world test of the HEART Pathway, the clinicians were alerted if they had miscalculated (underestimated in) the patient’s HEART score, which may also have led to underestimation of MACE.
- Is the aim of decreasing outpatient testing after ED discharge a good thing?
  - Retesting the safeguard of subsequent outpatient cardiac testing on patients with a reasonable presentation for ACS is not likely to gain widespread traction; in one Canadian study, this is how 17% of the ACS were identified.
  - The ACC/AHA recommends that low-risk ED patients should undergo objective cardiac testing, either in hospital, observation unit, or soon after ED discharge.
- As there is a high rate of false positives with objective testing of low-risk patients, the goal should be to reduce inappropriate cardiac testing in low-risk chest pain patients, as opposed to reducing outpatient cardiac testing overall.
Elder Abuse

Definitions

- Major Types of Elder Abuse
  - Physical Abuse: acts carried out with the intention to cause physical pain or injury
  - Psychological or verbal abuse: defined as acts carried out with the aim of causing emotional pain or injury
  - Sexual abuse: defined as nonconsensual sexual contact of any kind
  - Financial exploitation: involving the misappropriation of an older person’s money or property
  - Neglect: the failure of a designated caregiver to meet the needs of a dependent older person

Risk Factors

- Most studies indicate that older women are more likely than older men to be victims of abuse
- Among older adults, a younger age has been consistently associated with a greater risk of abuse
  - One possible reason for this finding is that the “young old” more often live with a spouse or with adult children, the two groups that are the most likely abusers
  - A shared living environment is a major risk factor for elder abuse living with a larger number of household members other than a spouse is associated with an increased risk of abuse especially financial and physical
- Having a lower income has been associated with a greater likelihood of financial abuse, emotional and physical abuse, and neglect
- Isolation and a lack of social support are important risk factors for elder abuse
- With the exception of dementia, which is a documented risk factor for financial exploitation, specific diseases have not been identified as conferring a greater risk of abuse
- Functional impairment and poor physical health have consistently been shown to be associated with a greater risk of abuse among older persons

Perpetrator of abuse

- adult children or spouses
- male
- to have a history of past or current substance abuse
- to have mental or physical health problems
- to have a history of trouble with the police
- to be socially isolated
- to be unemployed
- financial problems
- to be experiencing major stress

Identification and Screening

- Victims may conceal their circumstances or be unable to articulate them owing to cognitive impairment
- the high burden of chronic illness in older people creates both false negative findings (e.g., fractures misattributed to osteoporosis) and false positive findings (e.g., spontaneous bruising misattributed to physical abuse) in the evaluation
- Cultural and language barriers may hinder the disclosure of abuse
- Definitive determination that abuse is taking place may take weeks or months, and physicians may be required to intervene before such a determination has been made
Assessment Strategies

- People suspected to be the victims or the perpetrators of elder abuse should be interviewed separately and alone.
- Indirect questions can be used initially with the potential victim, since they may be less threatening (e.g., “Do you feel safe at home?” “Does someone handle your checkbook?”).
- Direct questioning, if necessary, should be similar to that in the investigation of other forms of domestic abuse and can include questions such as “Does anyone in your home hurt you?” and “Has someone not helped you when you needed their help?”
- Because dementia increases the risk of elder abuse and because depression is very common among older adults, no evaluation is complete without a formal assessment of cognition and mood.
- Interprofessional involvement is an indispensable part of both assessment of the victim and intervention. Referral to Adult Protective Services.

Interventions

- Successful interventions in cases of elder abuse are typically interprofessional, ongoing, community-based, and resource-intensive.
- It is usually not feasible for physicians to initiate or sustain successful interventions in cases of elder abuse on their own.
- Interprofessional involvement is an indispensable part of both assessment of the victim and intervention. Referral to Adult Protective Services.

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Elder Abuse in Long-Term Care Facilities:

- Mistreatment of residents by staff members occurs with sufficient frequency to be of concern to physicians.
- Studies have pointed to the very high prevalence of mistreatment of nursing home residents by other residents, in the form of physical, verbal, and sexual aggression.
- Whatever the cause of the abuse, physicians may encounter abused patients in nursing homes, often when patients are transferred to the ED.

QUESTIONS