



Improving venous thromboembolism prevention

Ciara Kirke, HSE QID, 2016

HSE QID / SCP Patient Safety Programmes

- HCAI / AMR
- Sepsis
- Safermeds
- Pressure ulcers
- Early warning scores
- Falls



HSE QID Framework



Safermeds

Safermeds Briefing
Update on the National Medication Safety Programme



May 2016



□ National Medication Safety Programme

□ Goal: Reduce harm related to medication or its omission

□ Systematic approach:

- whole hospital commitment to improving medication safety
- medication safety facilitator (usually a pharmacist, ideally full-time), with input from a doctor and a nurse
- primary focus is improvement



Priorities for improvement

- ✓ **Managing the risks of high-risk medication**
 - Highest impact: anticoagulants, NSAIDs, opioids, diuretics, antiplatelets, antimicrobials, insulin and hypoglycaemic drugs
 - Also high-risk: methotrexate, theophylline, digoxin, beta-blockers, chemotherapy, sedatives and contrast media
- ✓ **Improving medication safety at transitions in care**
 - Medication reconciliation at transitions to and from hospital
 - Improving access to patient medication record
- ✓ **Reducing polypharmacy and improving medication appropriateness**
- ✓ **Minimising acute kidney injury associated with medicines and modifying medicine choice and dosing in patients with acute or chronic renal impairment**

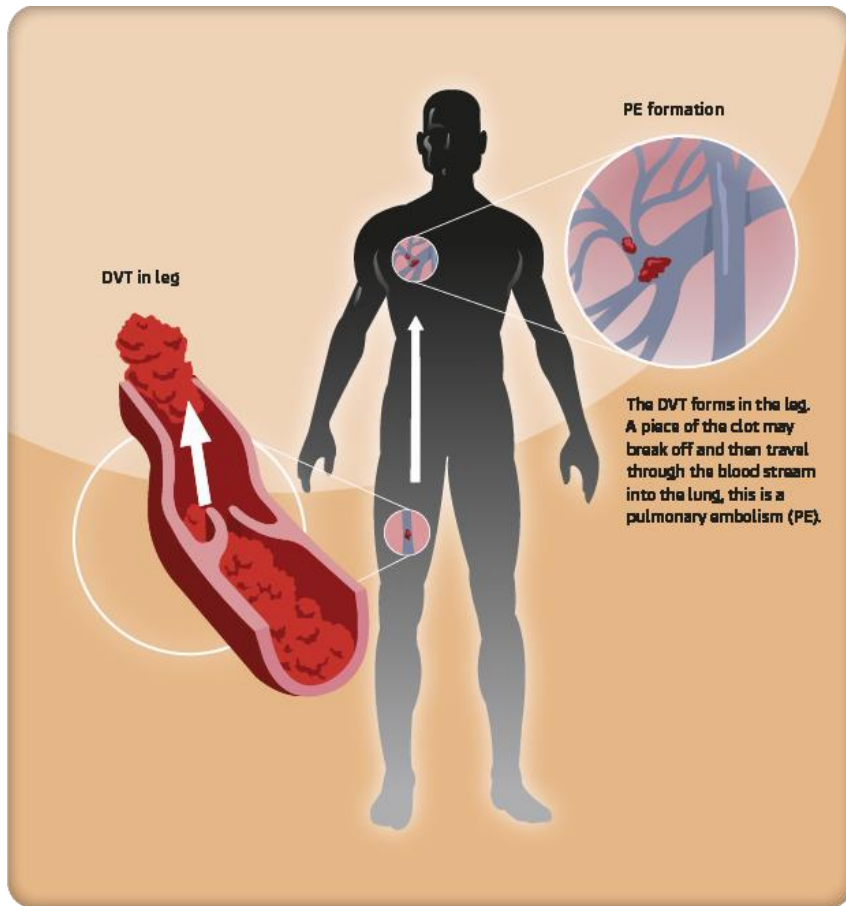




Preventing VTE in Hospitals Improvement Collaborative



What is Venous Thromboembolism?



- Venous thromboembolism (VTE), or blood clots, consists of DVT + PE
- Blood clots (thrombus) can form within deep veins (DVT)
- These clots can fragment and travel to lungs leading to Pulmonary Embolism (PE)
- Venous stasis, hypercoagulability and vascular injury contribute

Why VTE?

Mum of five dies suddenly from blood clot a week after giving birth to triplets

12:47, 9 MAR 2016 | UPDATED 13:29, 9 MAR 2016 | BY RHIAN LUBIN

Cassia Rott, 36, gave birth to triplets on January 29 but died suddenly a week later, leaving her husband Joe to raise their five children.



Enter your e-mail for our daily newsletter

Subscribe



Mother died nine days after routine surgery, inquest hears


Karen McCabe (46) suffered blood clot after undergoing procedure to remove varicose veins

Thu, Feb 18, 2016, 19:04

Louise Roseingrave



Karen McCabe (46) of Bewley Drive, Lucan, Co Dublin, underwent radiofrequency ablation, a minimally invasive procedure to remove extensive varicose veins at the Bons Secours Hospital in Dublin on August 6th, 2014.

 A 46-year-old mother of three died nine days after routine surgery on varicose veins in her legs, an inquest has heard.

<https://www.youtube.com/watch?v=kQEofv3bQW8>



Why VTE?

- 10% of hospital deaths
 - ▣ Cohen et al. Haemostasis 1996; Lindblad et al. BMJ 1991; Sandler et al. J R Soc Med 1989
- 0.4% of hospital admissions
 - ▣ Khan et al. Haematology Association of Ireland Annual Meeting 2015
- Approx 7000 patients and 2000 admissions with hospital-acquired VTE in Ireland annually
- Healthcare costs of €161 million
 - ▣ Cohen et al for VITAE. Thromb Haemost 2007; 98: 756–764
- Most preventable by thromboprophylaxis in at-risk Geerts et al 2001 and 2004



Thromboprophylaxis in at-risk patients prevents most VTE

	Probability of VTE event			
	Without prophylaxis		With prophylaxis	
At-risk population	DVT*	PE†	DVT*	PE†
Surgical				
Moderate risk	0.150	0.052	0.041	0.027
High risk	0.300	0.103	0.081	0.054
Highest risk	0.600	0.241	0.162	0.126
Medical				
Myocardial infarction	0.240	0.025 (0.27)§	0.075	0.008
Stroke	0.547	0.057 (0.067)§	0.235	0.024
Other medical‡	0.160	0.017 (0.047)§	0.040	0.004

*Objectively verified by venography (i.e. all deep-vein thrombosis [DVT] events – both symptomatic and asymptomatic). †In order to calculate mortality, the frequency of pulmonary embolism (PE) for surgical patients was inflated from the probability of diagnosed clinical PE to the probability of all PE (i.e. to include undiagnosed clinical PE) (37). For medical patients, the PE frequency was calculated by applying the Oster algorithm (33) to DVT frequencies. ‡Cardiac, respiratory, and inflammatory diseases and severe infections. §Figures based on clinical trials and inflated from the probability of diagnosed clinical PE to the probability of all PE.



Geerts et al 2001 and 2004

Tailoring prophylaxis to risk

- 39.7% high-risk (Padua Prediction Score 4 or greater)
 - VTE in 11% (31/283) of high-risk medical patients who did not receive thromboprophylaxis
 - VTE in 2.2% (4/186) of high-risk medical patients who received thromboprophylaxis; bleeding in 1.6%
 - VTE in 0.3% (2/711) of low-risk patients without thromboprophylaxis
- Barbar S et al. J Thromb Haemost 2010;8:2450-7
- Recommended by ACCP



Need to choose wisely

- Thromboprophylaxis of medical in-patients
 - ▣ Reduced PE (OR, 0.70 [CI, 0.56 to 0.87])
 - ▣ Total mortality (RR, 0.93 [CI, 0.86 to 1.00]; $p=0.056$)
 - ▣ Increased all bleeding (RR, 1.28 [CI, 1.05 to 1.56])
 - ▣ Increased major bleeding (OR, 1.61 [CI, 1.23 to 2.10])
 - ▣ Absolute reduction 3 PEs, absolute increase of 9 bleeding events of which 4 were major per 1000 patients treated with heparin

- Lederle. Ann Intern Med. 2011;155:602-615



How are we doing?

- Three Irish hospitals in ENDORSE
 - ▣ 59% of **surgical** patients at risk, of whom 64% received appropriate prophylaxis
 - ▣ 43% of adult **medical** patients were at risk, of whom 47% received appropriate prophylaxis
 - Murphy O et al. Ir Med J. 2012 May;105(5):140-3
- 11 Irish acute hospitals in PREVENT-VTE
 - ▣ 29.7% of at-risk adult **medical** in-patients received LMWH
 - Adamali H et al. Ir Med J. 2013 Nov-Dec; 106(10):302-5

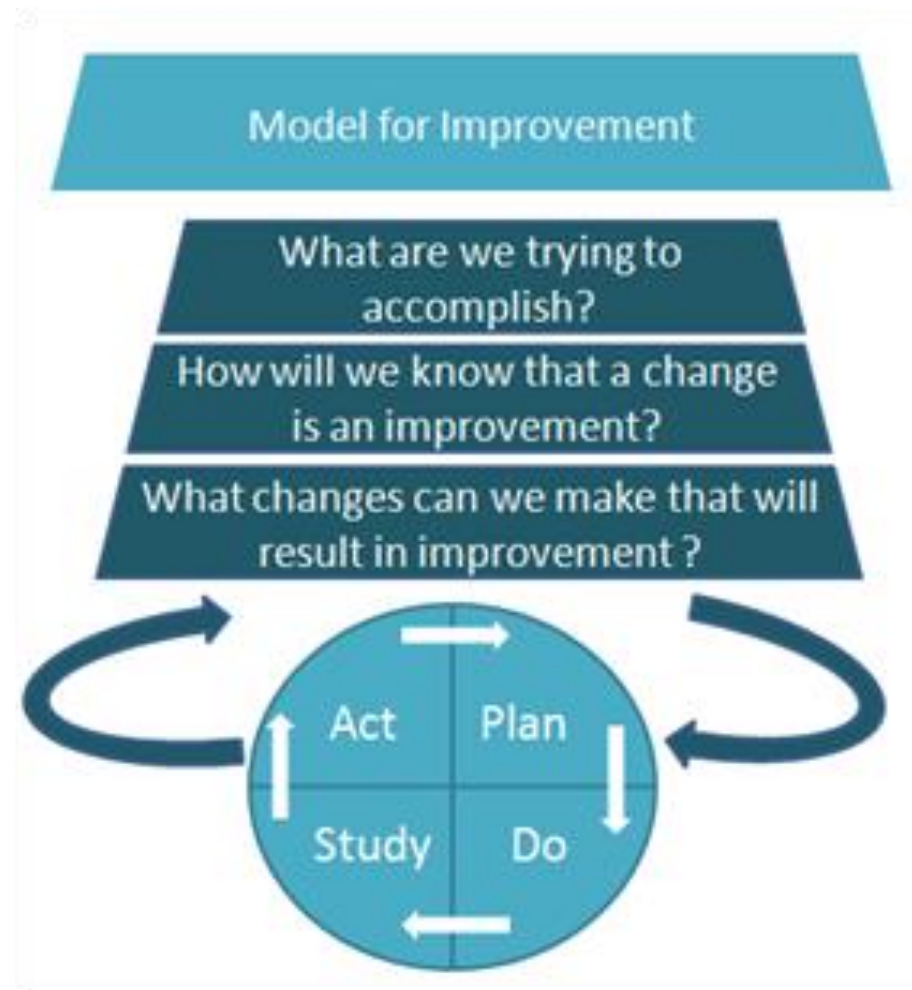


Our collaborative

- Multidisciplinary teams from 29 acute hospitals
 - Sponsor
 - Improvement team
 - Wider project team – e.g. subject-matter, process and quality improvement expertise, e.g. haematologist, physician, surgeon; QI coach...
- Local governance and reporting
- Four learning sessions Sept, Nov, Feb, May
- Online sharing & coaching between



Improvement methodology



What are we trying to accomplish?

- Prevent hospital-acquired VTE and harm from unnecessary prophylaxis by ensuring
- Appropriate* thromboprophylaxis prescribed and administered within 24 hours of admission for [hospital defined subset of] in-patients

**In line with hospital guidelines*



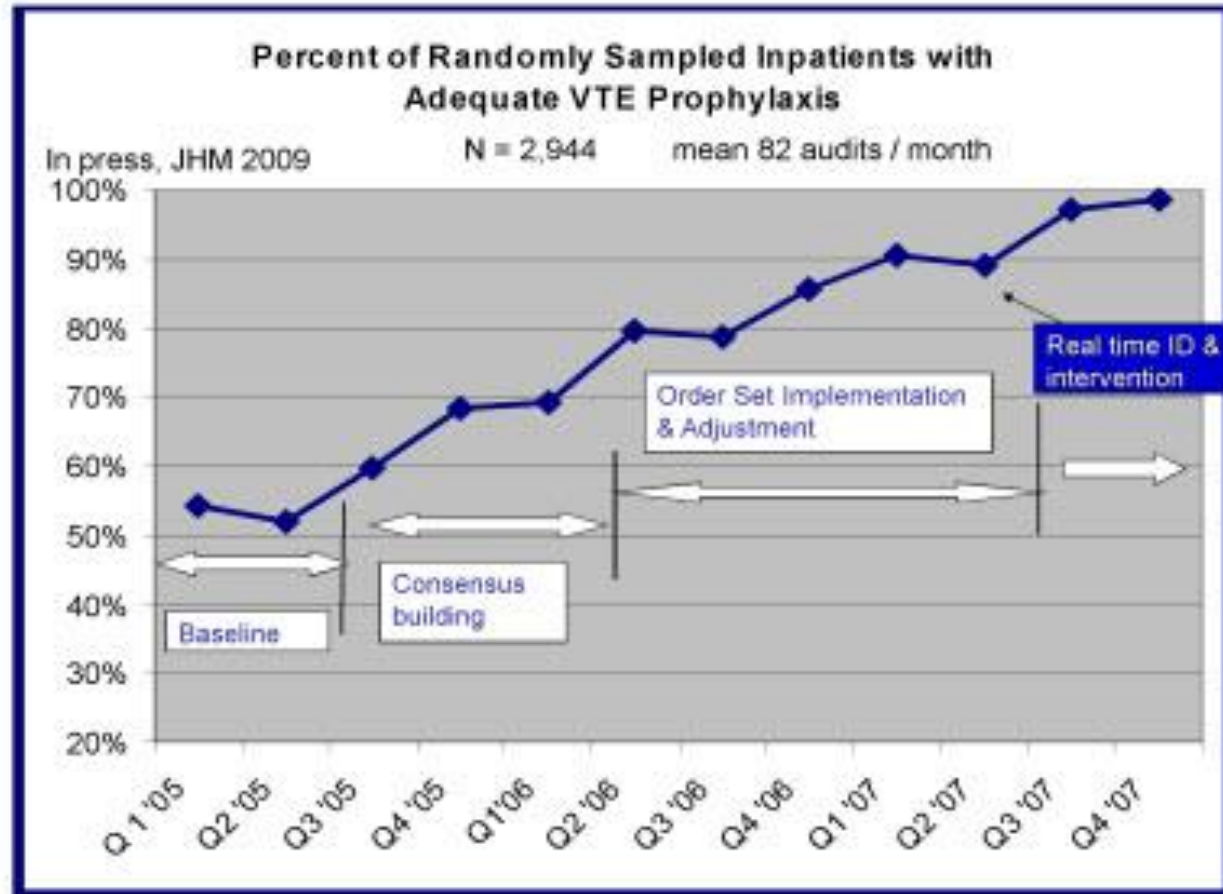
How do we know that a change is an improvement?

□ Main measure:

% of patients with appropriate thromboprophylaxis at 24 hours post-admission



Track progress over time



Hospital-defined elements

- Which patient group(s)
- Which guidelines
- Which ideas for change
- Which tests of change and how they test
- Which changes are implemented (based on learning from testing) and how
- Any additional measurement

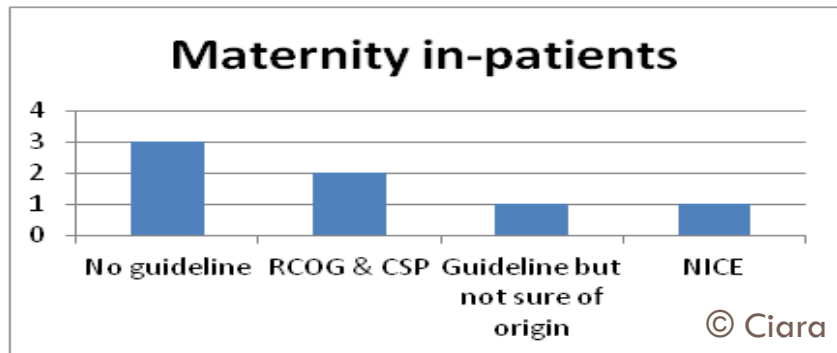
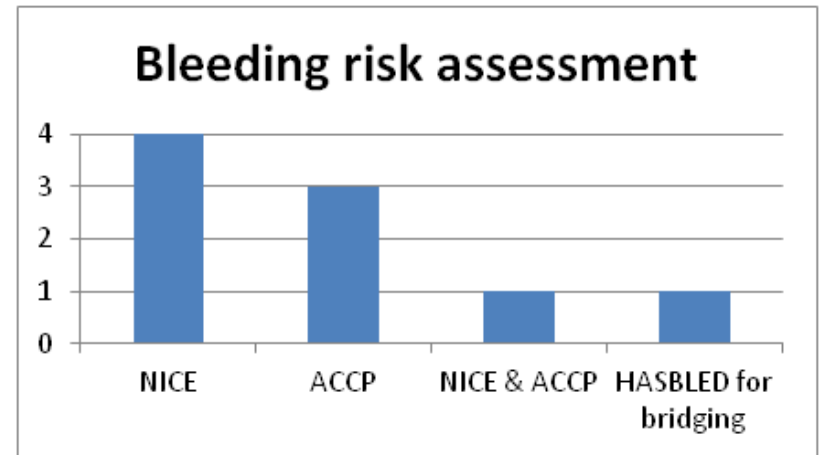
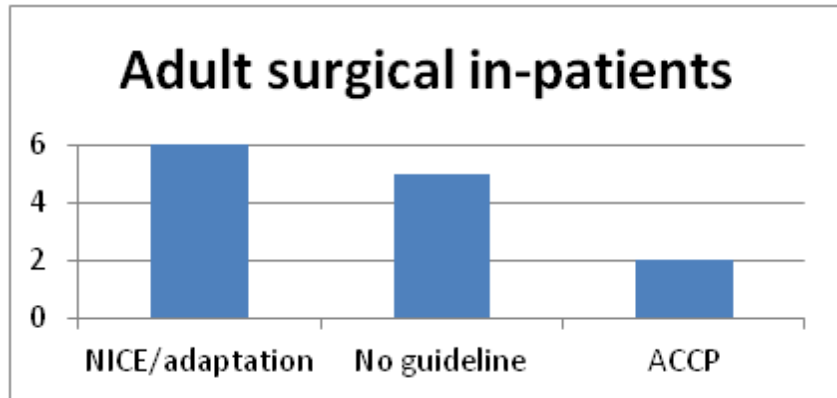
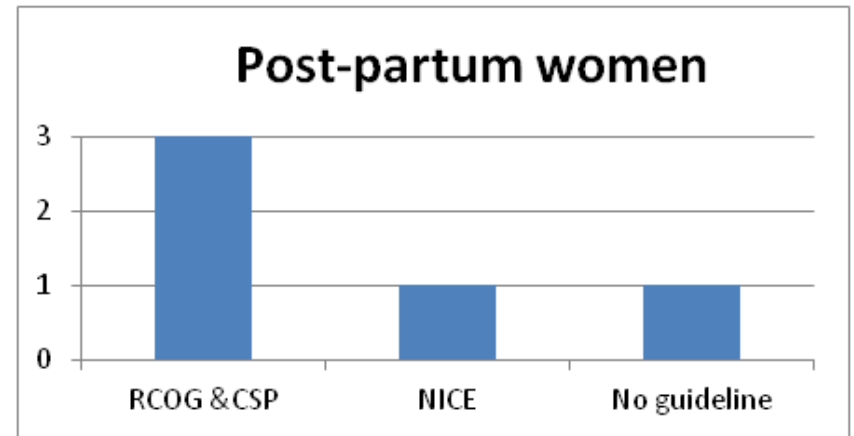
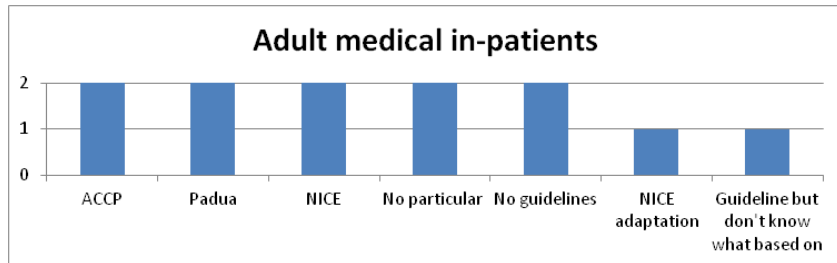


Survey results

- Written guidelines, poster or tools (12/21)
- Written (6/21) or electronic (1/21) risk assessment tools
- 19/21 use tinzaparin, 14/21 enoxaparin, 3/21 others, 4/21 heparin
- 2 Brevets and TEDS, 2 Brevets, 2 TEDS, 2 Medivam Class 2
- 10/21 indicated they use intermittent compression devices



Survey – which guidelines?



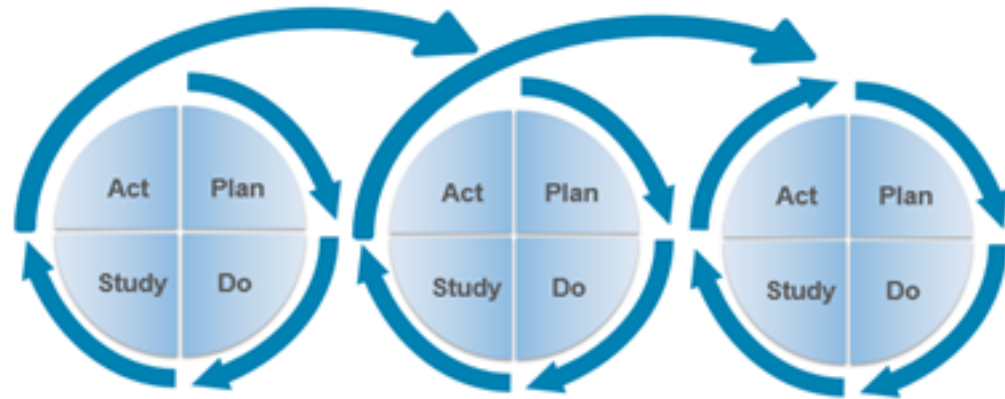
What works?

- Multi-faceted interventions, alerts and education Kahn Cochrane 2013
- Education, posters, guidelines and pre-printed prophylaxis box - 39% appropriate to 57% ($p < 0.001$) Lyons O IMJ 2013
- Education - 48% to 63% ($p = 0.041$) Kent BD Ir J Med Sci 2011
- Medical admission proforma reminder -37.5% appropriate in 2006, 75% in 2009, 86% in 2012 Osman AE Ir J Med Sci
- Prompt to assess risk in drug chart - 38% to 89% Coleman N IMJ 2014
- Drug chart with VTE prophylaxis section – 59 to 71% Cunningham R Ir J Med Sci 2015
- Thrombocalc- 92% risk-assessment Cooley SM Am J Obs&Gyne



Testing changes

- Plan-Do-Study-Act cycles
- Not audit cycles



- Very small-scale
- Adapt, abandon or adopt
- Test under different conditions until strong confidence will work, then implementation PDSA(s)



Thank you

- Individuals and hospitals participating in collaborative
- Philip Crowley, Maeve Raeside, Alison Cronin
- Advisory group for collaborative
 - Olive O'Connor, Jeremy Sargent, Oran Quinn, Olivia Sinclair, Fionnuala Ni Ainle, David Vaughan, Brian Cleary, Sean Tierney, Susan O'Shea, Mary Browne, Catriona O'Leary
- Anne-Marie Cushen, Nuala Doyle & Beaumont





www.safermeds.ie

Twitter@ciarakirke

Email: safermeds@hse.ie