# Emergency department cardioversion of acute atrial fibrillation

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*Published in:*
The Lancet

*DOI:*
10.1016/S0140-6736(20)31311-8



*Publication date:*
2020

service, societal, psychological, and economic consequences of the emergency; each of which might affect all-cause mortality more than any association with COVID-19.

Our approach of providing absolute risk information on people similar to a given patient across a range of diverse health conditions is novel and might have uses, irrespective of COVID-19; previous approaches to risk are focused on one or a small number of related diseases. We have shown the high prevalence of multimorbidity for cancer[3] and cardiovascular diseases[4] in relation to COVID-19 excess mortality.

For the **online risk calculator prototype** see http://covid19-phenomics.org/PrototypeOurRiskCoV.htm

The OurRisk.CoV calculator accompanying our Article explicitly allows the user to choose different relative risks for each condition. Although evidence is emerging of how the short-term (eg, 90 day) risks of the specific outcome of COVID-19 varies across approximately 50 underlying conditions,[2] there is still little information on how long-term (≥1 year), all-cause mortality has been affected in people with each condition.

OurRisk.CoV has received more than 1·3 million visits since its release on May 12, 2020 (660 000 unique users). Despite the calculator being only a prototype for researchers to explore data, we believe that its use, and user feedback, strongly supports the public need to understand risk, tailored to age, sex, and a much wider[5] range of underlying conditions. The real challenge is not only estimating risk in a more granular way, as we have attempted to do, but also in communicating the concept of risk to populations and individuals.

We declare no competing interests.

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## Emergency department cardioversion of acute atrial fibrillation

Ian Stiell and colleagues[1] hypothesised that procainamide with eventual direct-current (DC) shock would be superior to immediate DC shock in patients with recent-onset atrial fibrillation at the emergency department, but this could not be proven in their study. By contrast, procainamide could enhance cardioversion in persistent atrial fibrillation, which is more resilient to DC shock than recent-onset paroxysmal atrial fibrillation.[2]

Likewise, the high effectiveness of DC shock in recent-onset atrial fibrillation precluded finding a difference between paddle positions, which is in contrasts with results of a previous study in persistent atrial fibrillation.[3]

The authors argue that, compared with our delayed cardioversion approach,[4] acute intervention is less burdensome for patients and the hospital because return visits are not needed. However, our strategy was associated with less cardioversions (30% *vs* virtually all patients), far fewer complications (1% *vs* 20%), and all-in-all less time spent in the emergency department (2 h *vs* 7 h).

The fact that hospitals cannot offer 24/7 cardioversion services, as the authors maintain, forms an argument in favour of initial rate control with eventual delayed cardioversion, since it turns disruptive acute care into more efficient planned care, and it also relieves patients who report outside of office hours. All these reasons suggest a lower burden to patients and hospitals.

An important drawback of acute intervention is that it precludes many patients experiencing that their arrhythmia might terminate by itself, which could enhance their confidence, reduce anxiety, and stimulate self-management. Acute treatments might distract physicians' attention from atrial fibrillation requiring assessment of stroke risk, and treatment of underlying cardiovascular diseases and risk factors contributing to atrial fibrillation.[5]

HJGMC reports grants from Netherlands Cardiovascular Research Initiative (an initiative with support of the Dutch Heart Foundation) and CVON 2014-9 (reappraisal of atrial fibrillation: interaction between hypercoagulability, electrical remodeling, and vascular destabilisation in the progression of atrial fibrillation [RACE V]), unrelated to this Correspondence. All other authors declare no competing interests.

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We applaud Ian Stiell and colleagues[1] for their well designed and executed trial comparing two common methods of cardioversion for stable emergency department patients with acute atrial fibrillation. Their efficacy and safety results will better inform the shared decision-making conversations we undertake with our emergency department patients eligible for elective cardioversion.

We have two crucial questions to help us evaluate the translatability of the findings to patient care. First, study participants "received up to three consecutive biphasic waveform shocks. The first shock was set at 200 J but could be higher for subsequent shocks".[1] The first shock did not restore sinus rhythm in 15% of patients (37 of 244). The protocol allowed for higher energy (>200 J) for the second and third shocks. However, many emergency departments, including ours in Spain and across the US, have only biphasic defibrillators that deliver a maximum of 200 J. This might preclude us from replicating the study's cardioversion success rates. It would be helpful if the authors could report the number of cases that received energy levels over 200 J.

Second, pretreatment with intravenous procainamide has not been shown to have clinical benefit with monophasic direct-current (DC) cardioversion of patients with atrial fibrillation.[2,3] This study found similar results in patients receiving biphasic DC cardioversion: the procainamide pretreatment group was no more responsive to DC cardioversion than those without pretreatment. This result disconfirmed the authors' hypothesis as mentioned in their appendix. We would like to know how the authors interpreted these results.

TWB reports grants from Portola Pharmaceuticals, outside the submitted work. DRV, BK, and BC-V declare no competing interests.

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I read with great interest the Article by Ian Stiell and colleagues.[1] The findings of this well designed trial will add substantially to the literature on the topic of cardioversion for patients with acute atrial fibrillation presenting to an emergency department.

One point made in the Article deserves clarification. Inadvertently perhaps, the authors appear to overstate the benefits of emergency department cardioversion, and this might cause some confusion about the management of patients with acute atrial fibrillation. The benefits of emergency department cardioversion of acute atrial fibrillation are still yet to be completely defined. Stiell and colleagues[1] state that rapid cardioversion in the emergency department "[resolves] acute symptoms" and "obviates the need for anticoagulation in low-risk patients". However, some patients at low risk might have atrial fibrillation with mild associated symptoms that do not affect daily activity, and they might choose not to undergo cardioversion. Guidelines[2–4] advise that patients at low risk (with low $CHA_2DS_2$-VASc scores) do not require long-term anticoagulation, and the forgoing of thromboprophylaxis does not depend on successful cardioversion in the emergency department. Nevertheless, emergency department cardioversion for atrial fibrillation within 48 h could prevent the need for short-term anticoagulation or invasive testing in those patients at low risk who might instead decide later—outside the 48 h window—that they would prefer to be in sinus rhythm. Patients who decide to postpone cardioversion and subsequently miss the 48 h window will require anticoagulation for 3 weeks or transoesophageal echocardiography to exclude thrombus before undergoing cardioversion.[2–4]

The obviation of pre-procedural anticoagulation or transoesophageal echocardiography before postponed cardioversion is an important clarification of a proposed benefit of immediate emergency department cardioversion of acute atrial fibrillation.

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