Session 1: New frontiers in optimising health and performance in athletics

Optimising athlete health and performance - what can athletics learn from football?

Jan Ekstrand

Injury study is the first step in injury prevention. The UEFA Elite Club Injury Study (ECIS) is ongoing since 18 years and includes information from more than 100 elite level football clubs in Europe. The database, consisting of 24 000 injuries is the world's largest concerning male elite level football. A large database from a homogenous material provides robust information of the risk of specific injuries, their consequences in form of lay off days and the risk of recurrence etc.

Important findings from the football study that could possibly be applied to track and field as well:

- Injuries and team success are correlated. Teams with fewer injuries have better results.[1]
- Athletes need to avoid injuries in order to perform optimally. Injuries mean a gap in the development curve of the athlete.
- Injury rates for muscle injuries and severe injuries remained high during the 11 first years of the study and were unaffected by preventive measures. [2] Hamstring injuries even increased during the period. [3]
- This would suggest that preventive strategies targeting athlete-related risk factors are not, on their own, sufficient to significantly reduce injury rates at elite level
- A survey among elite club team medical staff suggested other factors as important for injury prevention at elite level: load on players, leadership styles of coaches, communication within the club and well-being of athletes. [4] All these 4 factors are associated with injury rates. [5-7]
- The training load on athletes is vital. Too much load leads to injuries, too little load does not provide improvement of performance. The balance between load and restitution is delicate. [5]
- The coach is more important than doctors for the injury situation in top class football clubs. [6]
- This might be the case also in individual sports like athletics since the coach often decides the load on the athlete
- The communication quality between the coach and the medical team is associated with injury burden. [7]
- The communication between the coach and the athlete might be even more important in individual sports
- The well-being of athletes is important for performance and health and is dependent of factors such as sleep quality, fatigue, relations etc.

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Can athletes with chronic tendon injuries perform on the world stage?
Jill Cook
A tendon injury can include both pathology in the tendon and pain with activity. These injury presentations have variable implications for an athlete, from no impact on training and performance to an inability to perform at all. The determinants of performance in the presence of a tendon injury are many; from training loads, underlying capacity and individual factors. Controlling these determinants can successfully maintain athletic performance at all levels of competition.

Monitoring for secondary prevention – keeping athletes healthy and on (the) track
Andrea Mosler
Injuries can significantly influence the training availability of track and field athletes, with consequent effect on their ability to achieve performance goals. Annual screening has recently been shown to have a limited ability to inform primary prevention measures at an individual athlete level. Therefore, the spotlight is now on the value of monitoring athletes to identify early signs of injury, followed by appropriate risk reduction intervention measures. The definition, role, and potential value of monitoring for secondary prevention in track and field athletes will be discussed in this presentation.

Optimising health and performance when travelling to train and compete
Martin Schwellnus
The modern-day elite athlete frequently travels internationally to compete at events lasting a few days to 1-2 weeks. International travel is associated with an increased risk of health challenges that can affect sports performance. These challenges range from travel fatigue, “jet lag” to acute illness or injury. Medical and support staff need to be aware of these health challenges and the factors that may affect this risk, including the destination, travel itself, the individual athlete predisposition and the type of sport. In this session, the risk factors associated with these health challenges will be explored, and practical measures to reduce the risk of these challenges and thereby optimise health and performance when travelling will be reviewed

From athlete screening to injury risk management
Roald Bahr
This presentation will address if and how a screening and health monitoring programme can be developed to ensure that timely and appropriate medical care is provided in the team setting, as well as form the backbone for systematic injury and illness prevention. Professor Bahr will outline the principles underpinning screening and health monitoring, pointing out limitations and opportunities. Finally, he will use the examples of the Aspetar Screening Programme and the Olympiatoppen Screening and Monitoring Programme to showcase potential benefits and pitfalls of such programmes.

Training load monitoring in athletics: what is possible and where are the gaps?
Marco Cardinale
The aim of this talk is to present current knowledge on typical training load assessment and what can be applied to monitor and quantify load in Athletics. Challenges of typical approaches used in other sports will be discussed and opportunities for further development will be presented.

Hurdling the challenges of return to play in athletics
Clare Ardern

Session 2a: Heat acclimation and cooling; challenges and practical applications

Integrating heat acclimatization into the performance plan
Sebastian Racinais
The 2019 IAAF World Championships in Athletics will be held in Doha (Qatar) from the 27th of September to the 6th of October. Based on weather trends from previous years, it is likely that the event will be held in hot and humid conditions. Depending on the balance between heat production (exercise intensity) and heat loss (mainly sweat evaporation), athletes' temperature may or not stabilise (compensable versus uncompensable heat stress), potentially placing them at risk of exertional heat illness. Fortunately, there is a toolbox available for athletes and coaches, medical practitioners as well as event organizers, to mitigate the risk of heat illness. The main countermeasure to protect athletes' health and performance is to heat acclimatise. Heat acclimatisation induces physiological adaptations that improve thermoregulation, attenuate physiological strain, reduce the risk of heat illness and improve aerobic performance in hot environments. A variety of acclimatisation methods have been proposed. The lecture will provide an even-handed, dispassionate summary of the known (science) and the relatively unknown (art) of the dos and don'ts to successfully mitigate the risk of exertional heat illness and protect athletic performance.

Cooling interventions to improve exercise performance and recovery
Mohammed Ihsan
Warm-ups are widely accepted pre-event routines, shown to enhance exercise performance through an increase in body temperatures, as well through non-temperature related mechanisms. However, the supposed benefits conferred by warm-ups can be contentious, given the hot and humid environmental conditions that will be inherent during the 2019 IAAF World Championships in Athletics held in Doha (Qatar). Indeed, the increase in body temperatures resulting from warming-up, coupled with the environmental heat load will likely exacerbate the increase in body temperatures, hence hastening the development of hyperthermia-related fatigue. As such, there has been a growing body research focused on investigating the effects of practical modalities of lowering initial body temperature prior to exercise (i.e., precooling), such that the capacity for body heat storage is enhanced. This presentation will summarize the existing precooling modalities and associated mechanisms to enhance athletic performance in the heat.

When it goes wrong; medical management for the athlete with heat related illness
Douglas Casa
The objective of the session presentation is to briefly review the current best practices regarding the pre-hospital care of exertional heat stroke. Issues related to temperature assessment, recognition, cooling modalities, immediate cooling, cool-first/transport second, and other related topics.

Session 3a: Performance optimisation in athletics

Training the young athlete: physiological considerations
Marco Cardinale
The aim of this talk is to present the current evidence of physiological development of young athletes and appropriate training approaches in the context of performance evolution from junior to senior.

Biomechanical considerations for developing jumping performance
Phil Graham Smith
In anticipation of the IAAF World Championships in Doha 2019, this session will provide an overview of the biomechanical considerations when working with world class jumpers. Dr Philip Graham-Smith worked 21 years with UK Athletics jumps squads prior to becoming Head of Biomechanics at Aspire Academy in 2013. He will present findings from 26 years of support and applied research which led to a period of unprecedented success of jumpers in the UK. He will outline how technical considerations relate to performance and injury risk and profile the physical attributes of world class athletes.

Transitioning from junior to senior ranks: psychological considerations
Jaime Diaz-Ocejo
In this presentation, Jaime Díaz-Ocejo will provide a simplified psychological picture of the adolescent athlete, including the concept of adolescence itself and the different developmental stages within adolescence. He will also address some of the key areas to consider in Sport Psychology when working with adolescent athletes, for example; different coping styles and the impact of perceptions of ability. The aim is to provide a basic understanding of what makes adolescence a unique population from a psychological point of view, and the implications of that for those working with them.

Use of cold water immersion to enhance exercise adaptation: friend, foe or futile?
Mohammed Ihsan
The World Championships in Athletics is a competition that include athletes from diverse states within the strength- or endurance-trained adaptation continuum. Despite the distinct demands and recovery profiles associated with training for each event, the use of cold water immersion seems to be a common post-training recovery modality amongst most athletes. Indeed, CWI is a widely used strategy to ameliorate hyperthermia-induced fatigue, as well as reduce exercise-induced muscle damage and soreness. However, training-induced adaptations that occur during recovery are complex, with evidence indicating that CWI may enhance muscle oxidative adaptations to endurance training while impeding hypertrophic/strength adaptations derived from resistance training. This presentation will discuss the underpinning mechanisms by which recovery-based CWI might influence the adaptations to endurance and strength training.

Periodisation of nutrition for track and field athletes
Trent Stellingwerff
The science and art of periodization is a cornerstone concept within the sport of Athletics (Track & Field). There are numerous training constructs, with varying levels of evidence, that feature sport/event specific purposeful sequencing of different training units (long duration (macro; months), medium (meso; weeks) duration and short-term (micro; days / within-day) training cycles and sessions.
Over the last decade, in support of training periodization there has been an emergence around the concept of nutritional periodization. Indeed, nutrition periodization can also implement strategic temporal nutrition interventions (macro, meso and micro) to help support and enhance training prescription / adaptation, as well as acute event specific performance. However, a general framework on how, why and when one would implement nutritional periodization has not yet been established.
Given the numerous Athletics events, all with different bioenergetics / biomechanical performance demands, the concept of nutrition periodization within Athletics can be as complex as training and competition periodization. This presentation will focus on a generalized nutrition periodization framework, with specific examples of maro, meso and micro-periodization, which nutrition professionals can apply in their practice.

Breaking 2 hours – integrative sports science approach to improve human performance
Andrew Jones
On 6th May, 2017, exactly 63 years after Sir Roger Bannister ran the first sub-4 min mile, three elite distance runners attempted the (almost) unthinkable: to run a 26.2 mile marathon in less than 2 hours. This event, performed at the Formula 1 race track in Monza, Italy, was the culmination of more than 2 years of scientific development work by Nike and its associates (including the presenter). The existing marathon world record for men stood at 2 hours, 2 minutes and 57 seconds and there had been much speculation amongst sports scientists and the athletic community over whether a sub-2 hour marathon may be humanly possible (and, if so, when and how it might occur). In the 'Breaking 2' event, Eliud Kipchoge of Kenya ran 2:00:25, just one second per mile shy of a sub-2 hour performance. In this presentation, I shall describe the physiological limitations to human endurance exercise performance and outline the strategy employed by the Nike team with regard to athlete selection and creation of the optimal conditions to make the sub-2 attempt viable. This will include information on the battery of laboratory and field-based physiological tests used to identify the athletes most likely to achieve the feat and insight into consideration given to the environmental, training, course, pacing, drafting, biomechanical and nutritional factors that can impact marathon performance.

Session 3b: Muscle injuries in athletics

Same-same but different – considerations for different muscle injuries
Tania Pizzari
Lower limb muscle injuries are common in athletes and injuries to the hamstring are the most prevalent of such injuries. Accordingly, considerable research effort has been dedicated to identifying risk factors for hamstring injury and re-injury, evaluating rehabilitation following injury and considerations for return to sport. Less is known about risk factors and prognosis following calf and quadriceps muscle injuries in athletes.
This presentation will discuss hamstring, calf and quadriceps muscle injuries in athletes with a particular focus on mechanisms of injury, risk factors for injury, rehabilitation and return to play considerations unique to each muscle group.

An updated approach to screening athletes for muscle injury risk factors
Nicol van Dyk
Muscle injuries continues to form a large part of what physiotherapists see in clinical practice on a daily basis. It is important for the clinician to be aware of the latest research on this injury type, understand what progress has been made in the field, and be up to date with the latest clinical trends that add value in our treatment of these injuries. Specifically, in how we manage these injuries in athletics. This presentation will provide an overview of the current state of screening for risk of injury.

Diagnosis and prognosis of acute groin injuries
Andreas Serner
This presentation will include a focus on the most common acute groin injury locations in athletes, providing detailed injury characteristics and discussion of essential considerations for the initial examination. A standardized treatment program will be presented, including discussion on how this can be adapted to individual athletes. Furthermore, new evidence on treatment expectations and prognostic elements of the initial examination will be presented.

British Athletics Muscle Injury Classification: how and why it influences rehabilitation in elite athletes
Ben MacDonald
The British Athletics muscle injury classification describes an MRI classification system with clearly defined, anatomically focussed classes based on the site of injury: (a) myofascial, (b) muscle-tendon junction or (c) intra-tendinous; and the extent of the injury, graded from 0 to 4. This diagnostic framework underpins and informs focussed rehabilitation plans that are specific to the injury classification. I will present an overview of the general principles and rationale for exercise-based hamstring injury rehabilitation in British Athletics, based on our interpretation of the available hamstring literature and clinical experience within elite track and field. I describe how our clinicians use the British Athletics Muscle Injury Classification to help manage elite track and field athlete with hamstring injury. As different tissues have different healing properties and respond differently to load, each class of injury warrants a different focus of exercise prescription. I will discuss how healing physiology and muscle-tendon biomechanics influence exercise prescription, progression of rehabilitation and return to full training decision making.

Muscle injury assessment - what do we measure, and why
Rod Whiteley
This presentation will highlight advances in our assessment of muscle injuries.

Rehabilitation of muscle injuries – will platelet rich plasma (PRP) help or should we just load it?
Hans Tol
Our previous meta-analysis on the efficacy for rehabilitation exercises showed that PRP injection(s) had no effect on acute hamstring injury (Pas H, BJSM 2015). This lecture will give an overview of the results of available studies investigating platelet rich plasma (PRP) showed will be presented.

Session 4a: Athlete's experiences of injuries – decision making and working with medical and performance teams.

Shared decision-making in athletics
Paul Dijkstra
Shared Decision Making (SDM) in athletics involve driven and talented individuals - they usually share a common performance goal. In this talk I will reflect on a personal experience managing an injured athlete before the 2008 Beijing Olympic Games and how the key individuals involved made the treatment and performance decisions. I will discuss the lessons learnt and introduce Elwyn's three-talk model of SDM. This will serve as an introduction to an hour-long panel discussion: the Aspire Academy medical and coaching teams will discuss how they are using SDM in treating injured athletes using two recent success stories as practical examples.

Panel discussion – decision-making challenges when integrating performance health and performance coaching in world class athletes (interactive)
Paul Dijkstra, Tom Crick, Lee Christopher, Marco Cardinale, Phil Graham Smith, Ben Salcinovic, Daniel Martinez-Silvan, Antonio Tramullas and Jaime Diaz-Ocejo
This panel discussion will highlight the value of using a multidisciplinary team approach to athlete healthcare.

Session 5a: Performance nutrition

"Where have we come from?" Nutrition science to practice in track and field
Daniel Kings
Sports Nutrition remains of key interest to help athletes push the boundaries of performance in track and field. This session provides a quick overview of the last IAAF consensus statement on nutrition for athletics published in 2007. It considers more recent advances in sports nutrition academic literature and how this is changed practice over the last 10 years.

Where are we going? Exploring the IAAF 2019 Sports Nutrition Consensus statement
Trent Stellingwerff
Athletics (Track & Field) is one of the most globally recognized sports, is a flagship of every Olympic Games, and with 214 member countries is one of the largest participation sports on the planet. Athletics events range from merely seconds (e.g. a shot-put throw) to approximately 4hrs (50km race-walk). Given this huge range of physiological, biomechanical and technical event specific requirements, there are numerous nutritional requirements to optimize performance in Athletics. Given the wide range of energy and nutrient requirements, somatotypes, as well as training and competition demands of all the various Athletics event groups, nearly every single nutrition intervention is an option in track and field.
For the first time over 20 years ago, the International Association of Athletics Federations (IAAF) has been one of the earliest International Federation's (IF's) to support and promote the healthy and performance enhancing elements of nutrition. In 2018/2019, the IAAF again is supporting and promoting its third nutrition consensus statement, through a series of scientific papers on the state-of-the-art in performance nutrition research, relevant to Athletics, through a collection of global authors to write 17 different papers. This presentation will highlight the various Athletics applicable novel nutrition interventions that have emerged over the last decade.

Scientific advances in performance nutrition to impact on human performance
Andrew Jones

Session 6: Common illnesses in athletics

Illnesses in travelling teams
Martin Schwellnus
The modern-day elite athlete, travelling internationally to compete at events, is potentially exposed to an increased risk of illness and injury. Medical and support staff need to be aware of these health challenges, factors that may affect this risk, and are required to recommend measures to reduce this risk. In this session, the scientific evidence for an increased risk of illness or injury while travelling will be reviewed, practical measures to reduce the risk of illness / injury when travelling will be explored, and evidence that such measures can reduce illness risk will be reviewed.

New considerations for managing iron deficiency in the elite athlete
Olaf Schumacher
Iron is a key element for many biological processes and its deficiency can heavily impact performance. The discoveries of the hormones hepcidine and erythroferrone have closed the gap of knowledge for its regulatory pathway. In view of supplementation in athletes, new studies have also challenged traditional views, especially regarding the value of iron supplementation in non-anemic athletes.
The goal of the presentation is to update the participants with the current knowledge on iron regulation in the body, especially relating to athletes and to develop evidence based recommendations for iron supplementation.

Session 7: Bone injuries in athletics

From female athlete triad to Relative Energy Deficiency in Sport (RED's)
Kathryn Ackerman

Imaging pearls for common bone stress injuries
Maryam Rashed Al-Naimi

Session 8: Tendon injuries in athletics

Is a tendon a tendon? What are the differences between tendon presentations and management?
Jill Cook
Overall principles of diagnosing and managing tendon injury form the basis of management of an athlete with tendinopathy. However, there are differences between tendons in their presentation, even within one tendon there can be differences in provocative loads and management issues. Identifying these differences is essential to ensure that the strategies for managing the tendon in the athletes is tailored to the tendon, the person, their sport and their expectations.

Clinical approach to shoulder tendinopathy
Mark Hutchinson
This presentation will review the key functions of the shoulder in athletic activity and discuss who is at risk of tendinopathy about the shoulder, how they present, and how to confirm the diagnosis. At the end of the presentation, the participant will understand the pathophysiology and pathoanatomy of shoulder tendinopathy and use that knowledge for both intervention and prevention of tendinopathies about the shoulder in track and field athletes.

Peroneal tendon injuries

Pieter D'Hooghe

Peroneal tendon injuries account for a significant number of posterolateral ankle complaints following acute ankle inversion trauma and are often a result of chronic lateral ankle instability or predisposing anatomical abnormalities
(DiGiovanni et al. 2000; Krause and Brodsky 1998).
In turn, peroneal tendon injuries can be associated with significant disability and thus warrant close attention to diagnosis and treatment (Krause and Brodsky 1998; Redfern and Myerson 2004).
Injuries to the peroneal tendons, however, are often misdiagnosed as a lateral ankle sprain, resulting in inadequate initial treatment.
Starting as an acute process, peroneal tendon injuries can often be treated with conservative management. Late diagnosis leads to a chronic damage that needs surgical treatment. Adequate knowledge of the peroneal anatomy and clinical presentation of the associated pathologies are essential for early diagnosis and treatment of peroneal tendon disorders.
The presented lecture aims at providing an overview on the anatomy, diagnosis and management of peroneal tendon injuries.

Looking beyond the tendon in tendinopathy – the emerging role of psychosocial factors?

Sean Mc Auliffe

Achilles Tendinopathy is a common injury in athletes. Achilles tendinopathy is highest among individuals who participate in middle- and long-distance running, orienteering, track and field, tennis, badminton, volleyball, and soccer (Kujala et al. 2005). The prevalence appears highest in running populations, with elite long-distance runners reported to have a lifetime risk as high as 52%, while it has also been reported that 1 in every 2 runners will experience AT before the age of 45 (Kujala et al. 2005). Furthermore, Achilles tendinopathy is often associated with persistent or recurring symptoms – with recurrence rates reported as high as 27% (Gajhede-Knudsen et al 2013). In addition, rehabilitation following tendinopathy is often slow to respond to loading interventions leading to prolonged absence from training and/or competition for the athlete. Consequently, this may lead to a significant psychological impact and burden on the athlete. The majority of tendinopathy research to date has focussed mainly on physical interventions in the management tendinopathy. Although this approach has yielded positive results, the role of psychosocial factors such as thoughts, feelings and beliefs around pain are discussed less often despite evidence of their importance in sports injury. Psychosocial factors can be described as 'pertaining to the influence of social factors on an individual's mind or behaviour, and to the interrelation of behaviour and social factors' (Wiese-Bjornstal et al 2010). Psychosocial factors including how an athlete thinks, feels, and acts in relation to their injury, with an ever emerging body of literature supporting the important role of psychosocial factors in injury rehabilitation outcomes (Forsdyke et al. 2016). . A systematic review by Forsdyke et al (2016) concluded that psychosocial factors were associated with a range of sports injury rehabilitation outcomes. The review recommended that practitioners needed to recognise that an injured athlete's thoughts, feelings and actions may influence the outcome of rehabilitation. Evidence also suggests that positive perception of return to sport is associated with a greater likelihood of returning to your pre-injury level in injuries such as ACL (Ardern et al. 2013; Mendonza et al 2007). It appears logical to expect that psychosocial factors also play an important role in the management of athletes with Achilles tendinopathy. The aim of this lecture is to discuss the role of psychosocial factors in Achilles tendinopathy, how these factors may impact an athlete's adherence to an exercise intervention, and the various approaches that health care practitioners may utilise to identify and address such factors.

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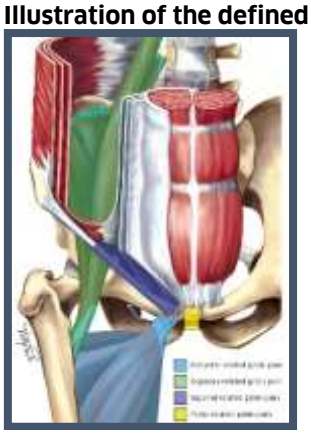
Session 9: Hip, groin and spine injuries in athletics

Spondylolysis in the young athlete
Kathryn Ackerman

Spinal pain in athletes
Kieran O'Sullivan
Spinal pain is common among athletes. Despite the low prevalence of serious, or specific, pathology among athletes with spinal pain, imaging is ordered at an enormous rate and is highly valued in decision making. This talk will discuss approaches to identifying the unique contributing factors to spinal pain in each athlete, and appraise how much emphasis is placed on warning athletes of the dangers of spinal loading, or the vulnerability of their spine.

Diagnosis and conservative management of groin pain in athletes
Adam Weir
Diagnosis and conservative management of groin pain in athletes
In this lecture I will discuss the diagnosis and management of groin pain in athletes. You are all familiar with the common mantra that "Groin pain in athletes is so complex". Why is this? The groin region contains many structures that could produce pain and there is a complex anatomy. Yet many other regions of the body also have multiple structures and complex anatomy. I think that one of the main reasons we regard the groin as complex, is that we have made it complex.
We invented so many names and terms to describe groin pain in athletes. So we have made things worse than they need to be. You may think to yourself "What's in a name?". Does it really matter what we call groin pain in athletes? I think it does.
Imagine if you are an athlete being told your groin is "disrupted" of you have "defect". There is a small but growing body of evidence that what we call medical conditions will influence patient treatment preferences.
As you hopefully know, in 2014 there was a large consensus meeting on the terminology and definitions of groin pain in athletes. This international and multidisciplinary meeting, In Doha, Qatar, led to the publication of an article in BJSM suggesting terminology with defined clinical entities (3).
In my talk I give an overview of this background, the Doha agreement and why I feel that adopting a common language is important. Then I will discuss conservative management of the common clinical entities – adductor-related and inguinal-related groin pain.

Illustration of the defined clinical entities of the Doha Agreement meeting



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Surgical options in hip and groin pain
Zarko Vuckovic
Groin pain in athletes has been haunting athletes and sports medicine professionals for decades, with significantly increasing interest in this topic since the beginning of the 21st Century. The main characteristic is pain in the groin region during sport activities that involve sprinting, twisting, turning and kicking. There are different overlapping entities involved, mainly adductor and iliopsoas muscles, inguinal region, pubic symphysis and intra-articular hip problems. Due to multifactorial nature of this problem, clinical presentation can be different, while general principles of conservative treatment remain the same, focusing on core and adductor muscles strengthening. In terms of surgical treatment for cases that do not involve hip pathology, the main focus is on inguinal canal and adductor longus muscle, in up to 20% of the cases with unsuccessful conservative treatment. Return to sport time after surgery is between 3-6 weeks, depending on the procedure.

Session 10: Wrap up – what's next?

Forests and trees – effective and efficient research and knowledge translation
Clare Ardern

From science to practice: the gold nuggets and where do we go next? Wrap up and summary
Karim Khan and Clare Ardern
In this session, Editors of two of the leading journals in our field (JOSPT and BJSM) will shine the spotlight on 6 items they consider the best of the best from this conference. What was the breaking news? What is now ready for prime time? What should we stop doing? What remains in debate?