RAPID RECOVERY SYMPOSIUM REPORT


More than one hundred and seventy orthopaedic surgeons, anaesthetists, physiotherapists and nurses from 12 European countries gathered in London on 29–30th November to discuss the growing body of evidence underlying Biomet’s Rapid Recovery programme for hip and knee replacements, and overcoming the hurdles of translating this evidence into clinical practice. Rapid Recovery is a comprehensive programme that supports healthcare professionals to optimise and continuously improve their orthopaedic pathways. The programme aims to overcome the multiple hurdles that exist at every level of an organisation to facilitate delivery of the best clinical outcomes, patient and staff satisfaction, and efficiency – leading to a reputation for excellence in participating institutions.

Medical Writer Deborah Burrage attended the CME-accredited symposium and reports on the meeting’s themes and messages.

Introduction
why is there a need for programmes like Rapid Recovery?

The concept of “Rapid Recovery” in total knee arthroplasty (TKA) and total hip arthroplasty (THA) has developed from a rational, multidisciplinary assessment and optimisation of each component of the relevant clinical care pathways. Professor Henrik Kehlet, Professor of Perioperative Therapy at Copenhagen University, Denmark, and fast-track innovator, explained to the more than 170 Rapid Recovery Symposium delegates that the programme was developed by critically analysing all aspects of the care pathway. This was facilitated by asking: “Why is the patient in hospital today?”, which has led to multimodal programmes aiming to optimise patient care through reduced pain and risk. While pain relief is central, the interconnections between each step of the pathway mean that the programmes must also encompass factors including stress reduction, early mobilisation and nutrition. Professor Kehlet highlighted that, “if we want to have a pain and risk-free operation, it’s complicated; we need to control many factors to make the patient well immediately.”

The complex process changes required to achieve a full Rapid Recovery implementation, as well as a lack of knowledge and administrative support, are potential reasons why uptake has not been faster across Europe. However, Professor Kehlet went on to explain that if these programmes are successfully implemented, then treatment quality is increased at the same time as costs are decreased, which is a rare situation, “discharge criteria are unchanged, we just achieve them earlier.”

A study investigating the reasons behind longer hospital stays in fast-track THA determined that
pain, dizziness, weakness and organisational issues were at the heart of the problem. The causes of these issues, as well as the aetiology of morbidity following surgery, must be critically assessed and understood before patient care can be optimised. Professor Kehlet outlined that the latest thinking on these causes, and the organisational-level implementation of evidence-based solutions, would be addressed over the two days of the Rapid Recovery Symposium.

Process optimisation is the key to improving outcomes

Clinical pathways structure the way that a person with a specific condition, disease, or other demand for healthcare moves through an institution. These pathways must have a perspective of the entire hospital stay. Professor Joachim Kugler, Professor for Health Sciences/Public Health, TU Dresden, Germany, explained that although the evidence suggests that optimised pathways will help to improve medical outcomes, only 5–15% of patients in hospital in Europe are treated based on a formal clinical pathway.

A recent Cochrane review identified that only 27 out of 3,214 studies of clinical pathways were of sufficient quality for review, for reasons including insufficient clarity of pathway definition. Therefore, further well-designed randomised controlled trials (RCTs) are required. However, the results indicate that clinical pathways improve both quality of care and efficiency, “clinical pathways will reduce length of stay, will reduce costs, will reduce complications”. Professor Kugler noted that length of stay (LOS) is very variable across Europe, and countries with a longer LOS would benefit most from optimizing clinical pathways.

He concluded that, “there is a need for evidence-based care pathways and I’m pleased to see Rapid Recovery programmes in orthopaedic surgery are doing a good job on this topic.”

Rapid Recovery programmes have a large number of components, and each piece is required for the programme to be successful. Mr David Houlihan-Burne, Specialist Lower Limb Arthroplasty and Soft Tissue Knee Surgeon, The Hillingdon Mount Vernon NHS Hospitals Trust, UK, explained, “the whole thing is underpinned by process optimisation – don’t start looking at surgical procedures without these processes in place, or it won’t work.”

Since the steps in a clinical pathway are interconnected, a multidisciplinary team approach – breaking-down barriers between disciplines – is vital. The first stage of process optimisation is to map current practices, and the second is to ask how these can be improved, standardising everything possible within a department. A key aspect is that while the pathway is standardised, the steps can be individualised according to a patient’s needs. Process optimisation requires building a dedicated team of ‘champions’; implementing initial, short-term ‘quick win’ changes; and measuring and communicating the impact.

Process optimisation can be a daunting task, but one that can offer significant benefits to staff, patients and healthcare institutions alike. Mr David Houlihan-Burne noted that support is available to assist in getting this important process right, “there is a lot of help out there; there’s the Rapid Recovery Quality Roadmap, the Biomet team, and experts who have implemented the programme.”
The patient as an active partner in care pathways

The importance of considering the patient’s perspective when designing clinical pathways was highlighted by Professor Edmund Neugebauer, Professor and Chairman of Surgical Research, University Witten/Herdecke, Germany. He noted that at least half of patients would like to be more involved in decisions about their care, which is not realised by most physicians. Allowing patients a more active role has been shown to improve outcomes and to reduce the use of healthcare resources.

Patients need to be well-informed, with evidence-based patient information, to participate in this shared decision-making. This information must be standardised, but also provided in a way that is individualised to the patient’s needs. ‘Decision aids’ are specifically designed tools to help streamline the shared decision-making process, while nurses and other healthcare providers can act as ‘decision coaches’, reducing the time investment needed by physicians.

This view was echoed by Professor Ad Vingerhoets, Professor of Medical and Clinical Psychology, Tilburg University, The Netherlands, and Mr Jeroen Peters, Clinic Manager Physiotherapy Department & Sports Physiotherapist, Medicort Sports and Orthopaedic Care and Bergman Clinics, The Netherlands. Professor Vingerhoets gave an in-depth view of the patient perspective, noting that a holistic perspective of the patient’s background must be taken into account to understand how outcomes are reached. Biopsychosocial factors such as stressors – which can come from all aspects of life, including family and work – can have a real impact on patients’ health, including pain perception, “it’s not the objective situation that determines how people react, it’s the personal assessment”. Therefore, the patient’s understanding or ‘representation’ of their disease is of paramount importance. He added that, “if a patient is better informed, he is more willing to play an active role in the Rapid Recovery pathway.”

Professor Vingerhoets explained that giving information should be an active process, “don’t worry that the information is redundant, some patients need to be told three times or more.” Mr Peters added his practical experience, suggesting that short ‘tests’ could be given to patients to see if they have retained information. Professor Vingerhoets concluded by suggesting that information could be provided in different formats, and targeted before, during and after surgery, “be aware that when your patient is back home, he still needs your support. Out of sight is not out of mind.”

Perioperative traditions - why are we doing what we’re doing?

Dr Henrik Husted, Consultant, Head of the Arthroplasty, Department Hvidovre University Hospital, Denmark, moved the discussion to focus on the latest evidence regarding perioperative practices. He highlighted the importance of progressing away from traditions when the evidence base supports such changes. A good example of this is the case of plastic adhesive drapes, which have been shown to increase infection rates in a Cochrane review - irrespective of the addition of iodine. While some studies have yielded inconclusive results regarding the risks and benefits of tourniquets, others have shown a significant increase in blood loss and deep vein thromboses (DVTs). Hence,
tourniquets should be avoided. The evidence against using drains is highly conclusive, due to associated increased blood loss, transfusions and infections, “there is not a single study out there supporting using a drain.”

The role of contemporary wool-padded compression dressings was discussed by Ian Holloway, Consultant Orthopaedic Surgeon, Northwick Park Hospital, UK. In his group’s non-randomised study, contemporary dressings were not associated with any immediate benefits (e.g. on activity or pain), but were associated with better activity outcomes at discharge vs. traditional dressings.

**Anaesthesia and analgesia, evidence and practice**

A series of presentations looked at the current evidence for the use of different techniques and agents in anaesthesia and analgesia, and the practical implementation of these in the presenters’ departments.

Professor Johan Raeder, Professor in Anaesthesia, University Hospital of Oslo, Norway, introduced the topic by explaining that safety, outcomes, quality and cost-effectiveness are the key factors when choosing an anaesthetic technique, in that order of priority. Since no convincing evidence exists to show a mortality benefit for any technique or agent, the key concern is that the method is used properly and according to good clinical practice. The risk of thrombosis is less with regional anaesthesia, but general anaesthesia has the benefits of rapid and flexible administration with no risk of spinal cord or nerve damage. When discussing pain relief, Professor Raeder noted that NSAIDs have been shown to increase blood loss. If this is a concern, COX-II inhibitors are an option, as they do not carry an increased cardiovascular risk when used in the short-term. Similarly, the use of glucocorticoids is not controversial when only a few doses are given. Professor Raeder directed delegates to the procedure-specific postoperative pain management (prospect) project at www.postoppain.org for further guidance on the evidence for pain relief for THA and TKA.

Looking at the evidence for local infiltration analgesia (LIA) in more detail, Professor Kehlet noted that most studies to date are hindered by methodological flaws – for example, by failing to include the same agents in the LIA and non-LIA groups. Overall, he concluded that LIA has been supported in TKA, but not in THA – and that postoperative wound catheters are not effective in either operation. Professor Kehlet called for multimodal opioid-sparing analgesia, also noting that, “it is completely unacceptable to do a femoral nerve block, in my opinion, due to the risk of fall, and we want early mobilisation.”

Dr Ilana Krings-Ernst, Chief Physician, Co-Founder and Head of Department for Anesthesiology and Intensive Care, Orthoparc Hospital Cologne, Germany, implemented the Rapid Recovery programme in 2008. She reminded delegates of the importance of having the whole community – including hospital management on board, “you can’t change anything without management support.” Dr Krings-Ernst explained that her department uses spinal anaesthesia to avoid complications and no tubes or drains that ‘chain’ patients to their beds – which would hinder early mobilisation. Urinary catheters are also avoided for this reason. Analgesia is minimised using a multimodal, oral
opioid-sparing regimen that includes LIA. Opioids are avoided due to side effects (for example, post-operative nausea and vomiting) as well as ineffectiveness on movement-related pain, and are replaced by agents including dexamethasone. Through anaesthesia and analgesia that is both standardised and individualised (for example, oxycodone is used post-operatively only when the patient has a steady state numerical rating scale [NRS] of >3), side-effects are minimised to allow fast recovery. At Orthoparc, this has resulted in post-operative sleep disturbance, nausea and vomiting in only 14%, 5% and 1% of patients, respectively. Pain scores on Day 1 post-operatively were also described as “excellent”.

Dr Stephan Vehmeijer, Orthopaedic Surgeon, Reinier de Graaf Hospital, The Netherlands, relayed the experience from his institution, which is a European Centre of Reference for the Rapid Recovery programme. He reiterated the importance of reducing physical deterioration post-operatively through early mobilisation, and the key role of appropriate anaesthesia and analgesia. He reassured the audience that, “people need to learn to adapt to the new system. At first they are afraid to mobilise early, but they get used to it.” Dr Vehmeijer hypothesised that the lack of efficacy of LIA in THA could be due to difficulties in seeing which tissues have been damaged in surgery using the posterior approach. His group are trialling ‘reversed LIA’, where the agents are applied to the area of the incision beforehand, as well as looking at LIA with the anterior approach. A further study will look at dose-finding for gabapentin, aiming to inform avoidance of dizziness side-effects.

Perioperative traditions – why are we doing what we’re doing?

Dr Michael Krimphove, Consultant Anaesthetist, Charité, Berlin, Germany, gave an overview of risk factors and prophylaxis for DVT – a major cause for hospital morbidity and mortality worldwide. Prophylaxis of venous thromboembolism should be balanced against bleeding risk, but is an essential part of treatment during the perioperative period. Indeed, studies show that the risk of DVT is less in patients who are treated according to guidelines. Dr Krimphove explained that mechanical (such as early mobilisation in fast-track surgery) and pharmacological thrombophylaxis are both important. He noted that prophylaxis guidance has been updated in recent ACCP, NICE and AWMF guidelines, with, for example, aspirin now being graded as 1B in favour in ACCP 2012, where previously it was graded as 1B against.

Current guidelines for thrombophylaxis in TKA and THA are based on studies with hospital LOS of between 8 and 12 days, which could be influenced by immobilisation. Dr Christoffer Calov Jørgensen, MD/Research Fellow, Copenhagen University, Denmark, described his group’s study looking at thromboembolic events (TEEs) in fast-track surgery. Preliminary data from this prospective study of 5,178 unselected patients undergoing primary TKA or THA shows a total TEE rate of 0.8% in patients with a LOS ≤ 5 days (who therefore received thromboprophylaxis for ≤5 days). In contrast, patients with a longer LOS had a TEE rate of 4.8%. Dr Jørgensen concluded that fast-track surgery could reduce the need for prolonged thromboprophylaxis, but studies are required to help identify high-risk patients.
**Perioperative blood management strategies**

Dr Øivind Jans, Anaesthesiologist in Training and Research Fellow, Rigshospitalet, Copenhagen University, Denmark, discussed the risk factors that must be considered when deciding whether a patient should receive a blood transfusion. He highlighted that studies about the risks of transfusion in TKA and THA have often been methodologically flawed and there is now a big debate about these risks. He noted that a rational trigger for giving a transfusion is yet to be found. Dr Jans described the three-pillar multidisciplinary strategy for blood management; 1. optimise haematopoiesis, 2. minimise blood loss and bleeding and 3. harness and optimise physiological tolerance of anaemia. Dr Jans revealed that a 30% rate of preoperative anaemia has been observed by his group in the first study of this issue in fast-track surgery. Anaemia was associated with an increased rate of transfusion and readmission in these patients. Therefore, preoperative anaemia should be addressed before surgery takes place.

**Mobilisation on day of surgery and rehabilitation strategies**

The final but crucial pieces in the Rapid Recovery puzzle – early mobilisation and rehabilitation – were discussed by Mr Houlihan-Burne and Dr Thomas Bandholm, Senior Researcher and Head of The Clinical Rehabilitation Research Group, Hvidovre Hospital, Copenhagen University, Denmark.

Mr Houlihan-Burne began by re-emphasizing that it is vital to instigate the entire Rapid Recovery programme to improve outcomes, “you can’t just take away little pieces of what we’re telling you, you need all of it together.” He described the early mobilisation procedure at Hillingdon Hospital, which is made possible by careful attention to appropriate anaesthesia and analgesia, as well as pre-operative preparation. A key element of this preparation is informing the patient what to expect – avoiding any expectation of ‘pyjama paralysis’. Echoing sentiments from Professor Vingerhoets, he noted study findings that a pessimistic explanatory style is predictive of poor outcomes.

At Hillingdon Hospital, patients (including those undergoing bilateral joint replacement and elderly patients) are mobilised 0–2 hours post-operatively, which generates confidence. They undergo early weight-bearing, sitting at the bedside within 6 hours post-operatively, and are encouraged to walk within 24 hours. He noted that as well as potential benefits for thromboembolism prevention, “studies show that if you introduce early mobilisation as part of Rapid Recovery, length of stay is reduced significantly.” This has resulted in 90% of patients agreeing that they would recommend the unit, no increase in risks, and, “the whole programme motivates the team because they see the results.”

Dr Bandholm explained that longer-term rehabilitation and ‘pre-habilitation’ physiotherapy, which aim to minimise post-surgical and thus long-term loss of function, have not been shown to be effective in most studies in THA and TKA. This could be due to the exercises used or when they are implemented, as well as poor study design. He summarised that the latest evidence suggests that rehabilitation should be intensive and started early. To address the evidence gap, Dr Bandholm’s group are performing a RCT looking at strength training specifically, with results expected in 2013.
Harnessing data to optimise outcomes

Dr Mike Reed, Hip and Knee Arthroplasty Surgeon, Northumbria Healthcare NHS Trust, UK, began to implement Rapid Recovery in 2008. Initially sceptical of the programme, Dr Reed’s view was changed by a visit to Glasgow, where fast-track was already in place, “I recommend taking a team of people to go and see the transformation that comes from Rapid Recovery.” Dr Reed’s continuous audit – facilitated by data coded as patients leave the hospital by an award-winning team – has compared two groups of 3,000 patients, treated either before or since the implementation of Rapid Recovery. Length of stay was reduced early on, with patients going home on day 2–3 vs. 5–6 before Rapid Recovery. Half as many people had a LOS of more than 15 days with Rapid Recovery, and costs were reduced substantially. Patients also scored their satisfaction with their LOS as 9.9 out of 10. His analysis has determined that although the Rapid Recovery cohort had more comorbidities on admission, complications were not increased and mortality actually decreased significantly. The transfusion rate also decreased dramatically, from 23% to 7.6%.

Dr Reed highlighted that continuous feedback to staff is vital to gain engagement with the programme. This can be achieved via check lists and posters to assess and show how well changes have been implemented, as well as showing patient outcomes. He noted that the data required for the feedback and analyses that he has implemented at Northumbria are probably already being collected in all institutions – it is just a case of determining where it can be found.

Special patient groups and fast-track surgery

The question of whether Rapid Recovery is appropriate in high-risk patients is being addressed by a study from Dr Jørgensen’s group at Copenhagen University. This study, currently in press in the British Journal of Anaesthesia, analysed data from 3,112 patients undergoing fast-track primary THA or TKA. The median LOS was 2–3 days overall, and 3 days in patients over 80 years old, indicating that Rapid Recovery has similar results in these patients. Looking at 90 day readmission rates, Dr Jørgensen noted that 40% were due to surgical complications, and 60% were due to medical reasons, including pain. This pattern remained in ‘high-risk’ patient groups, i.e. those older than 85 years, those with chronic pulmonary disease or those needing to use a mobilisation aid. While the risk of readmission was increased in these groups, it was not increased by a shorter LOS. Length of stay was also similar between alcohol or tobacco users vs. non-users.

Dr Husted presented studies investigating whether fast-track outcomes are achievable in revision TKA or bilateral simultaneous TKA (BSTKA). In revision TKA, 29 patients experienced a median LOS of 2 days. Three readmissions occurred and patient satisfaction was high. Dr Husted called for larger confirmatory studies, and investigations of other indications including revision THA and one-stage septic revisions. Since BSTKA had not previously been investigated in a fast-track setting, Dr Husted’s group compared outcomes from selected BSTKA patients with those from unilateral TKA patients. They found that outcomes were comparable, but Dr Husted emphasized that these findings were from a highly selected BSTKA group. He noted that RCTs are required comparing simultaneous with non-simultaneous TKA within selected groups, and concluded that, “it is possible to get good results with BSTHA or TKA in a fast-track setting with selected patients.”
Experiences from across Europe

Preoperative anaemia

Reduced length of stay in a challenging patient group, Warsaw, Poland
The Institute of Rheumatology sees many cases of severe hip and knee deformities due to arthritis and other rheumatic diseases. In the context of this challenging patient group, combined with a background of many non-evidence-based traditional practices and a high paper-work burden on physicians, Dr Przepiorski, Consultant Orthopaedic Surgeon, explained that, “it took us one year to change what seemed to be unchangeable, one step at a time.” Now that Rapid Recovery has been implemented, including modern practices such as LIA, early mobilisation and no use of drains, LOS has been reduced from 12 to 6 days. Dr Przepiorski noted that even severely affected patients are included in Rapid Recovery. If there is an individual issue, then the programme is adapted to the patient. He added that, “it’s all about patient satisfaction, and not just length of stay.”

Reduced length of stay and improved teamwork, Brig, Switzerland
Spitalzentrum Oberwallis already had processes and pathways in place when Rapid Recovery was implemented in 2011 with expert help from Biomet, explained Dr Andreas Ottersbach, Head of the Orthopaedic Department. The institution set up a working group, which visited Rapid Recovery innovators in Copenhagen. Changes to processes included starting a patient joint school, creation of patient brochures, and adjustments to anaesthesia and pain management. To date, primary THA LOS has been reduced from 8.5 to 7.3 days. Patient satisfaction has been very high, with scores consistently 9 or 10 out of 10. An unexpected benefit has been an improved sense of team, “we are a better team and the interdisciplinary respect is much higher.”

Reduced length of stay and more stimulating work, Ängelholm, Sweden
Ängelholm County Hospital, assisted by a Biomet consultant, was the first hospital in Sweden to adopt Rapid Recovery in 2011. Ms Gerd Jönsson, Orthopaedic Nurse, and Ms Sofia Bergh Lundgren, Physiotherapist, assessed how staff responded to the changing working methods and 75% of outpatient clinic, surgical and ward staff completed a survey on the topic. While 54% stated that the burden of work had increased, 89% felt that work had become more stimulating. The multidisciplinary team now works according to a common structure and common pathways. Ms Jönsson noted, “it takes more work to do this, but in the end, everyone is happier.”

As part of the Rapid Recovery programme, patients now receive pre-operative information, as well as LIA and mobilisation in the recovery unit. Length of stay has reduced from 4.2 to 2.6 days, while patient satisfaction scores are consistently 8 or 9 out of 10.

Closing words from the Chairman

Professor Kehlet closed by highlighting that each annual Rapid Recovery meeting benefits orthopaedics by allowing the sharing of knowledge, meaning that physicians learn more about improving recovery.
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