My Experience in the Changing Healthcare Environment

Mark A Snyder, M.D.
Director, Orthopaedic Center of Excellence, Good Samaritan Hospital
Cincinnati, Ohio USA

NAHKS 2017
The AAOS Orthopaedic Disclosure Program

Mark A Snyder, MD. Thank you for participating in the disclosure process and ensuring transparency in AAOS governance and CME activities. Your disclosure is up-to-date.

This is your latest disclosure summary
Submitted on: 10/3/2016

Breg: Research support
Smith & Nephew: IP royalties; Paid consultant; Paid presenter or speaker; Research support
Pacira: Paid consultant; Paid presenter or speaker; Research support
SECONd CURVE CONCEPT

IS THERE A CURVE ACCELERATOR?

- Risk-based contracting
- Fully-integrated health system

*See Keckly P. The Differences Between First and Second Curve Hospitals. Jan 5, 2015 Hospitals & Health Networks
We must achieve SECOND CURVE success!

Risk-based contracting  Fully-integrated health systems

..the question is will you be ready when this is fully transparent?

“Provider organizations understand that, without a change in their model of doing business, they can only hope to be the last iceberg to melt. Facing lower payment rates and potential loss of market share, they have no choice but to improve value and be able to “prove it.”

Michael Porter and Tom Lee
“The Strategy that will Fix Health Care”
“How physicians can change the future of health care.”

“Returning medicine to its proper focus: Enabling health and providing effective care.”

PRINCIPLES:
- *Goal is value for patients
- *Organization around conditions and cycles of care
- *Measuring of results, risk-adjusted outcomes, and costs

*PERI-OP INNOVATION,
*TJA, *REGISTRY
ZIOZ*: consistent with the “innovation cycle”

Key Questions

WHY?
WHAT?
HOW?
• To prepare our health system and providers for the “value” shift

• To innovate new process improvement methods for better patient outcomes, fewer readmissions and complications, and lower costs (3/25/10)

• To make Evidence-based Clinical Pathways (EBCP) more straightforward and effective for broad use in TJA practices and health systems
I believe that patient access to arthroplasty\(^1,2,3\) hinges on using straightforward EBCPs that can shift low volume provider and hospitals into higher volume and higher value delivery of TJA.

There has to be more...

The theoretical basis for low variability arthroplasty expertise

- ABOS criteria = highest standards
- Training
- Certification and recertification
- Lifelong learning
- Is there a need for more?

www.pinterest.com
120-Day variation

Little risk mitigation unless integrated pre-op interception

Great variation in op time

Great variation in MMPM and VTE prevention

Great variation in LOS

Great variation in post acute care costs

Great variation in 30 and 90-day readmissions
Summary: All Readmissions within 90 Days by Surgeon

Total % Readmission 30/90 1013-2015
GSH Hip Arthroplasty
LOS by Surgeon

primary (469/470) Excludes SNF
Average cost per episode ($) for 469 and 470 without fracture
Q2 2016, CJR data

*ZIOZ
Full Use

Target
Other Allowed
Post Acute Allowed
Readmit Allowed
Physician Allowed
Anchor Allowed

Surgeon 1: $25,892
Surgeon 2: $19,265
Surgeon 3: $26,720
Surgeon 4: $29,225
Surgeon 5: $26,471
Surgeon 6: $29,265
Surgeon 7: $35,077
Surgeon 8: $24,772
Surgeon 9: $23,732
Surgeon 10: $22,469
Surgical technique and implant alignment
   CAS, PSI, sensor-assisted, tourniquet less
   Only moderate evidence at best!

ICP process ignorance or rejection
Betadine rinse discounted
Heparin/Coumadin VTE RX only
Narcotic meds dominance
Obesity and hyperglycemia effect neglected

Each one small but **multiplicative**!

Zero in on Zero (ZIOZ) means that we want to innovatively reduce Hospital Acquired Complications (HAC) and readmissions to near “0” rates.

It is a straightforward evidence-based care plan approach that encompasses many more adverse event areas than published experiences:

- MMPM
- SSI and PJI
- ABTs
- ERAS and LOS
Ideal Adverse Event Targets for Multimodal Solutions in Integrated Clinical Pathways: The Power of Synergy in ZIOZ™

As you proceed through the course, you will further your understanding of the synergistic effect between specific elements and the optimal results that can be attained with full implementation.
Multimodal Problem Solving WORKS!¹

◆ Minimizing blood transfusions²
◆ Minimizing periprosthetic TJA infection³
◆ Minimizing TJA pain management issues⁴
◆ ERAS Pathway to reduce TJA LOS⁵

• EBM design
• Early multidisciplinary stakeholder involvement
• Submit idea and forthcoming research to health system competition
• Prove with a consecutive case entry into a level III registry (since 8/1/2011)

Patient Consent  
IRB Approved

REGISTRY BENEFITS!

1) Early warning
2) Influence MD behavior
3) Decrease AE cost, M&M, revTJA volume

*8//1/11 start
“A novel adverse event-reducing program for total knee and total hip arthroplasty surgery patients, when coupled with a level III registry, facilitates problem solving with evidence-based information.”

AUTHORS:

• Mark A Snyder MD, Medical Director, Orthopaedic Center of Excellence, Physician Executive Director, TriHealth Orthopaedic and Spine Institute

• Kathryn L. Eten BSN, RN, CCM, Program Administrator, Orthopaedic Center of Excellence, Good Samaritan Hospital

• Christina M. Scheuerman RN, BSN, Orthopaedic Clinical Research Coordinator, TriHealth Hatton Institute for Research
Methods

• From August 2011 to December 2013, 1007 consecutive primary TKA and THA patients were treated by a novel multimodal problem solving method (MPSM) and a level III registry completing fully compliant single surgeon.

• IRB approved
Combined GSH registry and hospital quality data 2011 to 2013

- RSRR: risk specific readmission rate
- RSCR: relative surgical complication rate
- ABT: allogenic blood transfusion
- VTE/PE: venous thromboembolism
- SSI/PJI: surgical site infection/peri prosthetic infection
- Narcotic a/d: nontherapeutic narcotic use at latest follow-up

Full use MPSM n=1007
Rest docs n = 1219

U.S./GSH/BN: CMS published means and local noncompliant hospitals
90-Day Readmissions

• Full utilization of IRB-Approved level III Registry validated, extensive multimodal problem solving methods for all adverse events, the rate of 90-day all-cause readmissions in >2000 primary THA and TKA patients over 6 years:

  < 1.5%

• Recent 3-Year BPCI 90-Day results with 20% cost per episode reduction:\n
  8%

• Implement and integrate into the health system in order to reduce program use variation
• Continual refinement and literature support
• Build CME learning modules for health system support staff and low volume surgeons
• Use the entire program to super perform in future payment reform schemes
Annotated ZIOZ Grid and EBM plain language summaries

<table>
<thead>
<tr>
<th>30 Day Readmission</th>
<th>&lt;2%</th>
<th>5.5% US TKA rate 66, 6.8% US THA rate 77</th>
<th>0% rate of VTE, dislocation, and infected TJR</th>
<th>RRAT score predicts readmission risk 129</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cardiac especially A fib 109, VTE, sepsis, dislocation, general med issues 65-68,332</td>
<td>0% rate of VTE, dislocation, and infected TJR</td>
<td>Resolve modifiable risk issues prior to admission 124, 126, 129, 197,232</td>
</tr>
<tr>
<td>SNP+home D/C 69,101</td>
<td></td>
<td>Suboptimal discharge program 75</td>
<td>Minimal cardiac event readmission 1 Use registry to improve prediction models that could reduce 30-day readmissions 129</td>
<td>PD risk identification 229</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care processes, like ZIOZ™, could greatly reduce 30-day rates 134,194</td>
<td>Clarify DC patient expectations prep 8 Use Best Practice Proposals 70,101,213</td>
<td>CSA detection and mitigation 113-121</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Obesity impact 126, 131</td>
<td>Risk adjust to better inform patient care decisions 117</td>
<td>Cardiac optimization 65,67,161</td>
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<tr>
<td></td>
<td></td>
<td>In elderly TJA patients, optimal DC planning and home FIU can help 125</td>
<td>Reduce the rate of complications in order to reduce readmissions 132, 194</td>
<td>Minimize SNF 68,101,116</td>
</tr>
<tr>
<td>Orthopaedic Unit Falls</td>
<td>3-7% and almost 50% with pLOS and return to surgery</td>
<td>Cochrane Review 2001 verifies risk reduction 13</td>
<td>Greater risk at night and BR 74</td>
<td>Prevention strategies align with risk data, though literature suboptimal 78</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Balance efforts pre-op might help 73 Related to blocks Patient confusion</td>
<td>Constant contact when at risk 72</td>
<td>“Constant contact” when at risk 72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peri-op balance training (Yoga?)</td>
<td>Family education PAI better than FNB 109</td>
<td>Family education PAI better than FNB 109</td>
</tr>
</tbody>
</table>
|                    |     | Decrease confusion by limiting narcotics 75 | Decrease confusion by limiting narcotics 75 | BMI or CCI. For ZIOZ this further substantiates our avoidance of strong chemoprophylactic VTE prevention meds in most TJ A patients.

224. Bjorgaard LS, et al. Incidence of and risk factors for postoperative urinary retention in fast-track hip and knee arthroplasty. Acta Orthop 2015;86(2):183. ISSP score and relevant surgical and demographic factors examined in 1,082 4-center fast-track TKA and THA experiences. 40% rate and increased (OR = 1.5) with neuropathic anesthesia. ISSP of 8 associated with higher risk of catheterization for POHR. Mean bladder volume treated with catheterization was 600 cc. ZIOZ pLOS ICp targets POHR risk reduction through shorter hospitalization even with spinal anesthesia, limiting narcotics, NMPM with PAI pain management, rapid mobilization and nurse-initiated bladder scans to prevent high volume retention.


226. Ahlén A, et al. Prophylactic effects of alfentanil, tramadol, and alfentanil, on postoperative urinary retention in male patients undergoing urologic surgery under spinal anesthesia. Int J Urol 2018;44(2):378. RCT comparing control cohort with 0.4 mg of tramadol 14 and 2 hours before surgery and 10 mg alfentanil ER 10 and 2 hours before surgery. Control rate of POHR was 25%. Tramadol was 5%. For ZIOZ pLOS and reducing POHR, male patients with higher ISSP could be treated with tramox 8 to reduce POHR.


228. Simpson MS, et al. Complications of Perioperative warfarin Therapy in Total Knee Arthroplasty. J Arthroplasty 2014;29:320. Level III EBM examined the complications seen in patients on long-term warfarin therapy. Prolonged wound drainage 28%, SSI 16.6%, PJI 3%, wash-out 4.7%, reTKA 4.7%. Highest rates seen in patients with heparin bridge starting as early as 6 hours pos-op. The ZIOZ method is optimal to prevent these occurrences in TKA patients with long-term anticoagulant requirements. Warfarin cessation 5-7 days pre-op with bridging Lowmex stopping at least 36 hours before OR, Tourniquet less TKA with MCDs to support single Lowmex 40 mg and 81 mg EC ASA 10 days post-op. Thereafter resumption of anticoagulants. NO DVT readmissions over 6 months. No returns for wash-outs in 6 years. No SSI or PJI in 6 years.


Using EBM in ZIOZ* MPSM ICP Builds

The notations in parentheses after each practice indicates the level of evidence available to support the practice. **Strong evidence (S)** includes randomized clinical trials, Cochrane reviews, meta-analysis and clinical practice guidelines when available. **Moderate evidence (M)** may include retrospective reviews or variable amounts of evidence. **Inconclusive (I)** indicates there is minimal to no evidence to support the practice.

<table>
<thead>
<tr>
<th>Pre-op BEFORE</th>
<th>Intra-op DURING</th>
<th>Post-op AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk identification and mitigation with aggressive patient activation. RAPT utilization (S)</td>
<td>Fully employ ZIOZ BPPs (S)</td>
<td>Be sure SNF care process and home follow-up optimized in elderly patients (S)</td>
</tr>
<tr>
<td>Plan to use ZIOZ protocols and celebrate with patient/family (S)</td>
<td>Identify complications in process and reverse (M)</td>
<td>Use MMPM meds and ZIOZ VTE protocols to prevent falls and VTE readmissions (S)</td>
</tr>
<tr>
<td>Patient and family review of expectations and DC plans (M)</td>
<td>Identify in-hospital medical (especially cardiopulmonary) and mental health unresolved issues prior to (M)</td>
<td>Since wound issues and prosthetic dislocation are surgical readmit factors, focus care and precautions accordingly (M)</td>
</tr>
<tr>
<td>In place rigorous SNF best practices protocols and communications (M)</td>
<td>Rapid mobilization and ERP protocol (M)</td>
<td>Complication (S)</td>
</tr>
</tbody>
</table>
Orthopedic Center of Excellence

Zero in on Zero focuses on reducing ten of the most costly and debilitating adverse events after lower extremity arthroplasty surgery. This multimodal problem solving method promotes a synergistic effect between specific elements resulting in optimal results when fully adopted. Zero in on Zero is designed to be ongoing and ever changing. Practice proposals may change with ongoing literature review and emerging research but the overall Zero format and method will remain the same. Zero maximizes best practices in lower extremity joint replacement and further creates value with optimal patient outcomes and lower direct costs.

Search

Search for documents that contain [ ] Search

Table of Contents

- Avoid Prolonged Length of Stay pLOS Post Op Nausea and Vomiting PONV Post Op Urinary Retention POUR
- Eliminating Venous Thromboembolism VTE Readmissions and deaths
- Preventing 30 day Readmissions
- Preventing Early Total Hip Arthroplasty THA Dislocation
- Preventing Patient Dissatisfaction
- Preventing Poor Discharge Handoff
Poor Discharge Handoff

As you learned in the Introduction lesson, the Zero method to reduce adverse events is staged into three phases of care. Below you can see each phase and the associated practices.

<table>
<thead>
<tr>
<th>Before</th>
<th>During</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission H&amp;P with geriatric cues for patient &gt; 65 years (M)</td>
<td>Interdisciplinary identification of barriers to discharge (M)</td>
<td>Essential data elements in transition DC record are standardized. Inter-provider communication essential (S)</td>
</tr>
<tr>
<td>PCP notified of admission plan and actual schedule (M)</td>
<td>Scheduled discharge meeting between DC planning RN, MD, patient and family – expectation agreement signed (M)</td>
<td>Home and outpatient PT-based rehabilitation program for primary unilateral TKA/THA (S)</td>
</tr>
<tr>
<td>Pharmacist/PCP or hospitalist collaboration on medication record (M)</td>
<td>Patient and family confirm that home DC with early outpatient PT not possible. Must match pre-op DC plans. (M)</td>
<td>Patient with higher ASA and/or Charleston comorbidity index CCI must be monitored for level of care selected at discharge (S)</td>
</tr>
<tr>
<td>Preoperative discharge screening/patient selection of OCE endorsed SNF if need suspected (M)</td>
<td>Reinforce pre-op assurance that home DC and outpatient rehabilitation equally effective as in-patient rehabilitation (M)</td>
<td>Post-acute care partnerships/networks (I)</td>
</tr>
</tbody>
</table>

S=STRONG  M=MODERATE  I=INCONCLUSIVE
The value of ZIOZ

ZIOZ has direct and indirect cost savings, as indicated by the facts below:

**Direct Cost Savings**
- Avoid extended length of stay
- Reduce cost of complications which occur more often in SNF
- Avoid up to a 45%, 90 day cost of care consumed by SNF and inpatient rehabilitation.

**Indirect Cost Savings**
- Avoid patient burden of higher recovery costs
- Facilitate optimal recovery, independent ADL and return to work status.

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Mrs. Piedmont is an independent and active 70 year old patient scheduled for hip arthroplasty in 4 weeks. She is widowed and her children live out of town except for one daughter. She has a friend who went to a skilled nursing facility after a total hip and she states she wants to go to the same facility as her friend.

Which statement demonstrates the LEAST effective practice to prepare Mrs. Piedmont for a successful discharge and recovery?

Which of the responses below is the best practice response?

A. Encourage her to ask a friend or family member to act as her "Joint Coach" to be an extra set of eyes and ears and primary contact during the joint replacement experience. This includes participation in preoperative and discharge educational sessions.

B. Since Mrs. Piedmont's children live out of town, encourage her to speak to family, friends and community/church members to secure help at home after discharge.

C. Explain to her that there is a higher risk for post operative complications and readmission for patients going to a skilled nursing facility after discharge.

D. Give her the flyer for the TriHealth CAQO network and tell her she can plan on going to a SNF after discharge. See the surgeon within 10 – 14 days after surgery.
Where to begin?

Focus on these considerations as you prepare to begin your review of best practice proposals:
- Review and compare recommended ZIOZ best practice proposals to current practice
- Prioritize implementation based on current physician and hospital data, available resources (e.g., program administrator, anemia clinic) and physician(s) interest.
- Seek administrative and/or team support to identify and remove barriers
- Adjust ZIOZ best practices yearly or as needed due to discovery

Click Here to view and download a list of acronyms that you may find helpful as you work through the coursework.

Click Here to link to the Orthopaedic Center of Excellence. Go to Documents and download the Zero in on Zero –Annotated Document.

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# ZIOZ* MPSM ICP

## Reducing Blood Transfusions

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition of anemia with CBC more than 4 weeks prior to surgery (S)</td>
<td>Regional anesthesia (M)</td>
<td>Avoidance of strong VTE chemoprophylaxis in low risk TKA patients (S)</td>
</tr>
<tr>
<td>Correction of HgB &lt;13 (males) and &lt; 12 (females) with erythropoietin and iron supplements (S)</td>
<td>Hypotensive anesthesia for those requiring GA</td>
<td>Lovenox 40 mg daily in TKA. INR targets near 1.5 for coumadinized patients (M)</td>
</tr>
<tr>
<td>Referral to hematology if HgB &lt; 10</td>
<td>Pre-op TXA given 15 mg/kg 15 minutes before incision (S)</td>
<td>Transfusion triggers 7/21 unless cardiac symptoms unstable (S)</td>
</tr>
<tr>
<td>Avoidance of autologous donation (M)</td>
<td>Decreased tourniquet time, bipolar cautery (W)</td>
<td>IV fluid correction of hypotension and mild postural changes (I)</td>
</tr>
</tbody>
</table>

**BLUE - Surgeon preference**

**RED - Integrated**

**Drain avoidance (M)**
Significant Accomplishments 2013/2014

Transfusion Events: Elective Hip/Knee Arthroplasty

CY2013 Transfusion rate

.49%
ZIOZ* MPSM ICP  
Preventing Surgical Site Infection

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight-adjusted pre-operative antibiotics (S)</td>
<td>Avoid excessive operative times (M)</td>
<td>Avoidance of strong VTE chemoprophylaxis in low risk TJA patients (M)</td>
</tr>
<tr>
<td>Correction of anemia to avoid transfusions (M)</td>
<td>Optimized OR environment: suits, staff and speech (M)</td>
<td>Silver-eluting postoperative dressings (M)</td>
</tr>
<tr>
<td>Optimizing health status (glycemic control, best BMI, smoking cessation, OSA treatment, malnutrition avoidance) and careful patient selection (S)</td>
<td>Antibiotic-loaded bone cement in higher risk patients (M)</td>
<td>Avoid blood transfusions, watch out for A Fib patients (S)</td>
</tr>
<tr>
<td>Remote site infection and MRSA/MSSA eradication (S)</td>
<td>0.35% 3 minute Betadine rinse and avoid skin staples (M)</td>
<td>Caregiver hand washing (S)</td>
</tr>
<tr>
<td>Chlorhexidine 2% skin cleansing (S)</td>
<td>Prevent wound drainage (S)</td>
<td>Aggressive management of wound drainage (S)</td>
</tr>
</tbody>
</table>

RED – Integrated  
BLUE – Surgeon preference
TKA / THA Infection Rates with and without ZIOZ* Compliance

<table>
<thead>
<tr>
<th>Year</th>
<th>TKA/THA</th>
<th>Zero TKA/THA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2012</td>
<td>1.28</td>
<td>0.68</td>
</tr>
<tr>
<td>CY 2013</td>
<td>1.05</td>
<td>0.2</td>
</tr>
<tr>
<td>CY 2014</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*ZIOZ: Zero Infection Operations Zone
### ZIOZ™ MPSM ICP

**Reducing Ortho Acute Care Unit Falls**

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition of “early faller” risk profile (M): delirium, h/o falls, unsafe gait.</td>
<td>Regional anesthesia, MMPM, and reduction in narcotic meds (M)</td>
<td>Long-term commitment to exercise for strength, balance, function (M)</td>
</tr>
<tr>
<td>Correction of strength deficits, imbalance, functional performance (M)</td>
<td>Preference of Periarticular Injection over Femoral Nerve Blocks in TKA patients (S)</td>
<td>Elimination of narcotic, alcohol, anti-psychotic dependence (M)</td>
</tr>
<tr>
<td>Referral to Balance Clinic. Reduction/elimination of anti-psychotic meds (M)</td>
<td>Attention to high risk periods: BR, unassisted, night shift (M)</td>
<td>Prolonged hospitalization for patients with functional deficits, residual nerve blocks (I)</td>
</tr>
<tr>
<td>Correction of vision deficits (I)</td>
<td>Mentor, measure and market fall elimination goal in a systematic and systemic way throughout institution (M)</td>
<td>Effective discharge handoff to rehab destinations if poor home support (I)</td>
</tr>
</tbody>
</table>

*One STRONG  Most MODERATE  Few INCONCLUSIVE*
ZIOZ™ Benefit Eliminating Falls with Injury

ZERO patient injury since June, 2012
## ZIOZ™ MPSM ICP

### Preventing 30-day readmissions

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
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</thead>
<tbody>
<tr>
<td>Risk identification and mitigation with aggressive patient activation. RRAT, RAPT and AAHKS RAT utilization (S)</td>
<td>Fully employ MPSM BPBs (S)</td>
<td>Be sure SNF care process and home follow-up optimized in elderly patients (S)</td>
</tr>
<tr>
<td>Plan to use MPSM protocols and celebrate with patient/family (S)</td>
<td>Identify complications in process and reverse them (M)</td>
<td>Use MMPM meds and VTE protocols to prevent falls and VTE readmissions (S)</td>
</tr>
<tr>
<td>Patient and family review of expectations and DC plans (M)</td>
<td>Identify in-hospital medical (especially cardiopulmonary) and mental health unresolved issues prior to DC (M)</td>
<td>Since wound issues and prosthetic dislocation are surgical readmit factors, focus care and precautions accordingly (M)</td>
</tr>
<tr>
<td>In place rigorous SNF best practices protocols and communications (M)</td>
<td>Rapid mobilization and ERP protocol (M)</td>
<td>Complication reduction equals readmission reduction (S)</td>
</tr>
</tbody>
</table>
Preventing poor pain management

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess patient for pain catastrophizing <em>(M)</em> and narcotic use <em>(M)</em></td>
<td>Regional anesthesia <em>(M)</em> IV Dexamethasone DOS and POD 1 <em>(S)</em></td>
<td>Avoidance of strong VTE chemoprophylaxis in low risk TKA patients <em>(S)</em></td>
</tr>
<tr>
<td>Pre-empt pain with regional analgesia <em>(S)</em></td>
<td>Wound cocktail deep tissue injection safer than FNB <em>(S)</em> Bupivacaine DepoFoam suspension PAI <em>(M)</em></td>
<td>Continue multimodal meds <em>(S)</em></td>
</tr>
<tr>
<td>Multimodal med initiation pre-op <em>(S)</em></td>
<td>Decreased tourniquet time for ischemia minimization and DVT reduction <em>(M)</em></td>
<td>Reduce or eliminate singular reliance on narcotics to avoid narcotic SE <em>(M)</em></td>
</tr>
<tr>
<td>Pharmacogenetic testing for medication optimization <em>(I)</em></td>
<td>Less invasive surgical approach <em>(M)</em></td>
<td>Link patient satisfaction with optimized pain control <em>(M)</em></td>
</tr>
</tbody>
</table>
# ZIOZ™ MPSM ICP
## Prevent Poor Discharge Handoff

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op cues for patient &gt; 65 years, high ASA class and functionally dependent (M). RAPT tool (M). Alert to patient destination intentions.</td>
<td>Interdisciplinary identification of barriers to discharge, realizing patient discharge destination expectation MOST influential (M)</td>
<td>Essential data elements in transition DC record are standardized. Inter-provider communication essential (S)</td>
</tr>
<tr>
<td>PCP notified of admission plan and actual TJA schedule (M)</td>
<td>Scheduled discharge meeting between DC planning RN, MD, patient and family – expectation agreement signed (M)</td>
<td>Home and outpatient PT-based rehabilitation program for primary unilateral TKA/THA (S)</td>
</tr>
<tr>
<td>Pharmacist/PCP or hospitalist collaboration on medication record (M)</td>
<td>Patient and family confirm that home DC with early outpatient PT not possible. Must match pre-op DC plans since so influenced by destination expectations. (M)</td>
<td>Patient with higher ASA and/or CCI must be post discharge monitored for any level of care since readmit risk higher (S)</td>
</tr>
<tr>
<td>Flagged preoperative discharge screening/patient selection of OCE endorsed SNF if need predicted (I)</td>
<td>Reinforce pre-op assurance that at home rehabilitation equally effective as in-patient rehabilitation (M)</td>
<td>Post-acute care partnerships/networks optimize readmission risk reduction (M)</td>
</tr>
</tbody>
</table>
# ZIOZ* MPSM ICP
Eliminating VTE re-admissions/deaths

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>DURING</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk stratify:</strong> prior DVT, genetic risks, obesity, high CCI, COPD, depression, A Fib and anemia (S) VTEstimator™ iOS (S)</td>
<td>Regional anesthesia (M)</td>
<td>ASA prophylaxis and SCDs in low risk patients is safer and more cost effective (S)</td>
</tr>
<tr>
<td><strong>Bridge anticoagulants (LMWH) in anti-coagulated patients pre-op (M)</strong></td>
<td>Tourniquet-less TKA technique (M)</td>
<td>Consider variable dosing LMWH, Coumadin, Xa inhibitor only in higher risk patients (M)</td>
</tr>
<tr>
<td><strong>Avoid ABT by pre-op diagnosis and correction of anemia (S)</strong></td>
<td>IV heparin during surgery for highest risk patients (I)</td>
<td>Rapid, FWB mobilization (M)</td>
</tr>
<tr>
<td></td>
<td>Avoid blood loss that could lead to ABT by using TXA (S)</td>
<td>Mobile SCDs add protective benefit (S)</td>
</tr>
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</table>
### ZIOZ* MPSM ICP

**Avoid pLOS, PONV, POUR, Delayed PT/OT**

<table>
<thead>
<tr>
<th>BEFORE</th>
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<tbody>
<tr>
<td>Patient factors: Elderly patients (&gt; 75 years), ASA III or IV, CV comorbidities, obesity, hypertension (S). POUR risk high if IPSS 8.</td>
<td>Regional anesthesia and effective MMPM with PAI as found in ZIOZ™ (S)</td>
<td>Avoid PCA, excessive reliance on narcotics (M) Favor MMPM methods (S)</td>
</tr>
<tr>
<td>IV dexamethasone before induction to reduce PONV (M)</td>
<td>Tourniquet-less TKA technique in order to accelerate quad recovery and ambulation (M)</td>
<td>Accelerated PT/OT with DOS start reduces LOS without adding readmission risk (M)</td>
</tr>
<tr>
<td>Avoid ABT by pre-op diagnosis and correction of anemia (S)</td>
<td>IV Dexamethasone DOS and POD#1 to reduce PONV and improve pain control (S). Pre-empt POUR with Flomax</td>
<td>Home discharge plan versus SNF reduces LOS (M)</td>
</tr>
<tr>
<td>Motivate patients/family to expect short LOS helped by DOS PT/OT and FWB with effective MMPM and little PONV or POUR (S)</td>
<td>Avoid blood loss that could lead to ABT by using TXA , since ABT can extend LOS (S)</td>
<td>Prevent delirium (I)</td>
</tr>
<tr>
<td>Anticipate that hypertension and narcotics increase POUR/PONV (M)</td>
<td>Nurse-driven bladder ultrasound check to reduce POUR risk (M)</td>
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</table>
**Prevent early THA dislocation**

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<tbody>
<tr>
<td>Risk stratify: Age, female, TA, neuromuscular and cognitive disorders, patient noncompliance, soft tissue laxity, previous hip surgery (S)</td>
<td>Regional anesthesia preference and narcotic reduced MMPM with PAI as found in ZIOZ™ (S)</td>
<td>MMPM with narcotic reduction. Cognitive status determination prior to discharge (S)</td>
</tr>
<tr>
<td>Pre-op plan THA with optimal head size and surgical approach (M)</td>
<td>Direct anterior or lateral approach (M) Posterior approach with capsule repair (S)</td>
<td>Diminish precautions in most patients except for high risk group (M)</td>
</tr>
<tr>
<td>Arrange for dual mobility cup in highest risk patients (M)</td>
<td>Send to PACU and floor with abduction pillow or knee immobilizer (M)</td>
<td>Rapid, FWB mobilization (S)</td>
</tr>
<tr>
<td>Share registry-based complication and readmission rates that so that patient and family can freely choose (S)</td>
<td>Target acetabular cup positions 45° or less for abduction and 15 to 20° anteversion but watch out for pelvic tilt (M)</td>
<td>Revise after recurrent dislocation especially if malposition or abductor deficiency or high risk patient (S)</td>
</tr>
</tbody>
</table>
## ZIOZ* MPSM ICP

### Preventing Patient Dissatisfaction

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<tr>
<td><strong>Risk identify:</strong> pre-op pain catastrophizing, other site pain, low SF-36 metal health score, socioeconomic and patient demographic factors, less severe degenerative changes (S)</td>
<td>Regional anesthesia and MMPM with strong pain pre-emption (S)</td>
<td>Enhanced recovery and return to independent ADLs (S)</td>
</tr>
<tr>
<td>Change surgeons pre-op if patient dissatisfied with ipsilateral arthroplasty (M)</td>
<td>Prevent THA leg length discrepancy, neurovascular injury and dislocation (S)</td>
<td>Avoid weak therapy experience after TKA (M)</td>
</tr>
<tr>
<td>Younger age, females, severe pre-op symptoms, expectation of no pain post-op after TKA are at risk (S)</td>
<td>Expedited discharge and avoidance of pLOS using best practices like ZIOZ™ (S)</td>
<td>Minimize residual symptoms and dysfunctions (S)</td>
</tr>
<tr>
<td><em>High pre-op patient activation (patient engagement in adaptive health behaviors) improves outcomes and satisfaction (S)</em></td>
<td>Meet post-op expectations and avoid complications - ZIOZ™ relevance (S)</td>
<td>Maximize symptom improvement, PRO scores (like PROMIS, KOOS &amp; HOOS) and Quality of Life (S)</td>
</tr>
<tr>
<td>Transparency over quality of outcomes, safety, cost (use ZIOZ™). Encourage patients with largely predictable and durable outcomes and QOL benefits. (S)</td>
<td>Compassionate patient and family-centered care (S)</td>
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</tr>
</tbody>
</table>

*ZIOZ™ relevance* (S)

**Note:** The table above outlines a comprehensive approach to preventing patient dissatisfaction. It highlights the importance of risk identification, treatment strategies, and post-operative care. The use of ZIOZ™ is emphasized as a tool to improve patient outcomes and satisfaction.
Do not be discouraged when...
“Each physician must decide, in a given patient situation, what are the best and safest practices. It’s clear in the public and academic literature that patients demand transparency, safety, and unimpeded access to needed treatments like joint replacement. Physician multidisciplinary leadership is critical for MPSM ICP creation and inclusion. When our physicians and surgeons closely adhere to the safety and quality recommendations that come out of the this straightforward multimodal integrated clinical pathway program, they will far more likely provide optimized patient-reported outcomes (PROs) and the safest, and most cost-effective care.”