

ROSA[®]

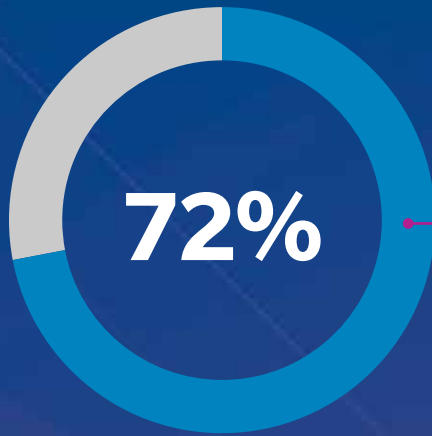
Knee System



ROSA KNEE

Patients are becoming increasingly aware of their healthcare options, especially when it comes to robotic-assisted surgery and the inherent value it brings. Meanwhile, healthcare providers are expected to continually increase patient volume, deliver patient quality and increase efficiency. To help address these critical concerns, Zimmer Biomet offers solutions to modernize your practice through efficient, easy-to-integrate technology.

ROSA Knee was designed by surgeons for surgeons as an accurate and efficient surgical assistant that also produces data. We keep you in the driver's seat by letting you maintain your current technique, approach and philosophy so you can focus on achieving the optimal outcome for your patients.



IN A 2016 GLOBAL SURVEY ASSESSING PUBLIC PERCEPTIONS ABOUT ROBOTIC-ASSISTED SURGERY, 72% OF RESPONDENTS INDICATED ROBOTIC-ASSISTED SURGERY WAS

SAFER, FASTER AND LESS PAINFUL OR OFFERED BETTER RESULTS THAN MINIMALLY INVASIVE CONVENTIONAL SURGERY.¹



SURGEON-CENTERED



ACCURATE²



EFFICIENT



DATA DRIVEN

SURGEON-CENTERED

IMPLANTS DESIGNED TO IMPROVE OUTCOMES

Technologies are only as good as the implants they are used with. ROSA Knee provides you the flexibility to utilize our leading knee brand: Persona® The Personalized Knee®. The Persona Knee system is Zimmer Biomet's most comprehensive primary knee system, incorporating personalized implants, precise instrumentation and proven technology.³⁻⁷

Since its introduction in 2012, surgeons around the world have implanted over 1,000,000 Persona Total Knees⁸

PERSONALIZED IMPLANTS

- Anatomic implants in standard and narrow sizes developed to more closely match the shape and size of various patient ethnicities, genders and statures.

PRECISE INSTRUMENTATION

- Ergonomic instruments designed for precision with greater ease of use.

PROVEN TECHNOLOGY

- Trabecular Metal™ Technology and Vivacit-E® HXPLE Material provide clinically proven solutions to help improve efficiency and implant longevity³⁻⁷
- Built on the heritage of the NexGen® Knee System, the most widely used and clinically proven total knee system in the world.⁹

PERSONALIZED WORKFLOW

- ROSA Knee offers a simple and intuitive user interface operated solely by you and your staff adapting to your current approach, philosophy and workflow.

Perform a variety of approaches with ROSA Knee

Measured
Resection

Gap
Balancing

Hybrid
Approach

COLLABORATION DRIVEN BY YOU

Factoring in soft tissue balance is not a new concept in knee replacement, but finding the right soft tissue balance with static, traditional instruments is highly subjective.

With ROSA Knee, surgeons are able to objectively measure soft tissue feedback and virtually conduct a knee replacement before performing any resections.

- In the Planning screen, surgeons receive live feedback of soft tissues, femoral rotation and ligament tension.
- Dynamic patient data throughout the range of motion.
- Live cut values ensure resections remain on plane.



ACCURATE

DELIVERING HIGHLY ACCURATE RESECTIONS AND LIMB ALIGNMENT^{2,10}

Inaccurate implantation rates of up to 30 percent have been reported using the conventional technique in TKA, independent of the surgeon's experience.¹¹ ROSA Knee offers surgeons precision and accuracy through the cut flow and validation feature, which is designed to ensure proper alignment in real time. A recent study shows ROSA Knee more accurate and more reproducible resections than conventional instrumentation.¹⁰

- Provides high levels of precision in regard to targeted angles and resection thickness.²
- Less outliers and 100% of cases within 3° of the targeted neutral alignment.¹⁰
- Validates all resection mean differences between the target resection and the measured resection were below 0.7 and had standard deviations below 1.1 mm.²
- Fewer outliers for ROSA Knee cases for all bone resection angles.¹⁰

SOFT TISSUE MANAGEMENT

With ROSA Knee real-time soft-tissue balancing, surgeons can determine resections based on each patient's soft tissue as well as bony anatomy. This also allows the surgeon to personalize rotation of the femoral component based on ligament tension. Other robotic systems on the market collect soft tissue information by taking snapshots of the knee in two positions (flexion and extension), so the surgeon cannot collect data about how the knee is responding as it is being manipulated in the procedure.



ROSA Knee is designed to offer surgeons precision and accuracy through the cut flow and validation feature, which is designed to ensure proper alignment in real time.

ROSA

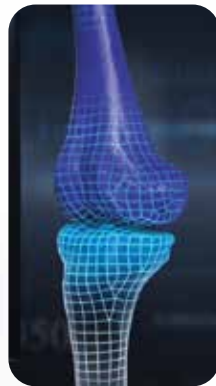
EFFICIENT

FLEXIBLE IMAGING OPTIONS

Based on surgeon preference, ROSA Knee offers both image-based and image-free options for greater flexibility. This reduces the time between image acquisition and preoperative planning, addresses reimbursement concerns, limits patient's exposure to radiation and minimizes scheduling requirements.



2D X-rays are submitted to your assigned Personalized Solutions Planning Expert



X-rays are transformed into a digital, 3D replication of the patient's anatomy

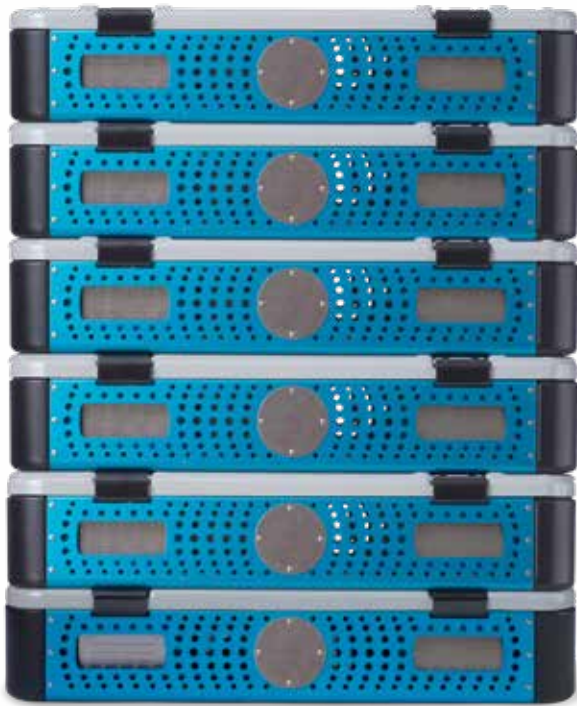
A plan is created and displayed on the user interface based on the patient's unique anatomy



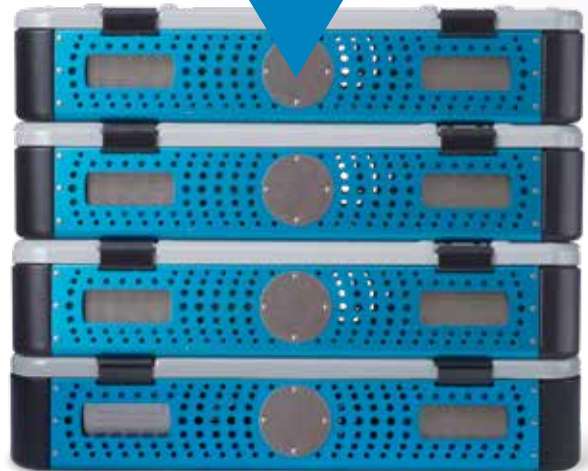
REDUCED INSTRUMENTATION

The Efficient Care program and X-Atlas technology lowers the cost to serve through experienced case planning and unique modular instrument trays that provide you with all the instrumentation you need – while eliminating the instruments you don't.

POTENTIAL SAVINGS¹² FOR EACH CASE



Six Trays



Four Trays

DATA-DRIVEN

The data collected through ROSA Knee, is utilized to generate ROSA Knee Reports on the **OrthoIntel Orthopedic Intelligence Platform**. The OrthoIntel Orthopedic Intelligence Platform is a care management system that connects the **pre-, intra and post-operative data** gathered through the mymobility® application* as well as ROSA Knee to help uncover clinical insights throughout the episode of care. These insights are intended to help surgeons and care teams optimize care.

HELP SURGEONS VISUALIZE THE CONNECTIONS BETWEEN INTRAOPERATIVE CARE AND POST-OPERATIVE RECOVERY.

The following data metrics are currently captured on OrthoIntel Orthopedic Intelligence Platform ROSA Knee Reports:

Pre and post-operative metrics:

- Steps
- PROMs (KOOS Jr.)
- Stand Time
- Demographics (age and gender)

Intraoperative outcome comparisons for final knee state soft tissue balancing and change knee state pre-surgical measurements:

- Hip-Knee-Angle (HKA)
- Medial/Lateral Laxity at full extension
- Medial/Lateral Laxity at 90 degrees flexion
- Max Varus/Valgus at full extension
- Max Varus/Valgus at 90 degrees flexion



*mymobility is a patient management dashboard that delivers passively collected data that can be used to track patient progression throughout the episode of care. Additionally, it can provide information to identify patients who aren't engaged or as active as you would like. Patients must have a compatible smart phone to use mymobility.

DAY -45
Surgery Scheduled

SEE THE CONNECTION

PERI-OPERATIVE



SURGERY



POST-OPERATIVE



PRE-OPERATIVE

DAY -30

DAY 30

DAY 14



References

1. Boys, J. A., Alicuben, E. T., DeMeester, M. J., Worrell, S. G., Oh, D. S., Hagen, J. A., & DeMeester, S. R. (2016). Public perceptions on robotic surgery, hospitals with robots, and surgeons that use them. *Surgical endoscopy*, 30(4), 1310–1316. 2016. <https://doi.org/10.1007/s00464-015-4368-6>
2. Parratte, S., et al. Instability After Total Knee Arthroplasty. *Journal of Bone Joint Surgery (America)*. 90(1): 184, 2008. Cadaveric testing is not necessarily indicative of clinical performance.
3. Zhang, Y., et al. Interfacial Frictional Behavior: Cancellous Bone, Cortical Bone, and a Novel Porous Tantalum Biomaterial. *Journal of Musculoskeletal Research*. 3(4);, 245-251, 1999.
4. Boby, J.D., et al. Characteristics of Bone In-growth and Interface Mechanics of a New Porous Tantalum Biomaterial. *Journal of Bone and Joint Surgery (British)*. 81-B(5): 907, 1999.
5. Shirazi-Adl, A., et al. Experimental Determination of Friction Characteristics at the Trabecular Bone / Porous-coated Metal Interface in Cementless Implants. *The Journal of Biomedical Research*. 27: 167- 175, 1993.
6. Levine, B. et al. Experimental and Clinical Performance of Porous Metal Tantalum in Orthopedic Surgery. *Biomaterials*. 27: 4671-81, 2006.
7. Zimmer ZRR_WA_2537_12.
8. Internal Persona Knee Cumulative Sales Report – Sales Globally as of May 2019.
9. Statement based on: 5 million implantations^{9h} 300+ Publications^{9a} 100% Survivorship at 17 Years^{9a} Lowest revision rate^{9b-e} Benchmark for PROMs^{9f} 10A* ODEP rating for CR and PS knees both with and without patella^{9g} Every 90 seconds a patient receives a NexGen knee^{9h} 1 in 5 knees implanted globally is a NexGen Knee⁹ⁱ
 - 9a. Kim, Y.H., et al. Cementless and cemented total knee arthroplasty in patients younger than fifty five years. Which is better? *International Orthopaedics (SICOT)* (2014) 38:297–303.
 - 9b. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide.AOA 2016: Table KT9 Cumulative Percent Revision of Primary Total Knee Replacement with Cement Fixation.
 - 9c. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide.AOA 2016: Table KT10 Cumulative Percent Revision of Primary Total Knee Replacement with Cementless Fixation.
 - 9d. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide. AOA 2016: Table KT11 Cumulative Percent Revision of Primary Total Knee Replacement with Hybrid Fixation.
 - 9e. Select variants from the 2016 Swedish National Registry available at <http://myknee.se/en/> (pgs 42-43).
 - 9f. Baker, P.N., et al. The effect of surgical factors on early patient-reported outcome measures (PROMs) following total knee replacement. *J Bone Joint Surg Br*. 94:1058, 2012.
 - 9g. Latest ODEP ratings can be found at <http://www.odep.org.uk>.
 - 9h. 2015 Sales data available at Zimmer Biomet.
 - 9i. EMBASE search: «NexGen» AND «Knee».
10. Seidenstein A, Birmingham M, Foran J, Ogden S. Better accuracy and reproducibility of a new robotically-assisted system for total knee arthroplasty compared to conventional instrumentation: a cadaveric study. *Knee Surg Sports Traumatol Arthrosc*. 2020 May 24. doi: 1007/s00167-020-06038-w. Epub ahead of print. PMID: 32448945. Cadaveric testing is not necessarily indicative of clinical performance.
11. Daniilidis, K., & Tibesku, C. O. (2014). A comparison of conventional and patient-specific instruments in total knee arthroplasty. *International Orthopaedics*, 38(3), 503–508. 2014 <https://doi.org/10.1007/s00264-013-2028-9>.
12. Persona® Instrument Tray Reduction. November 2018.

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