

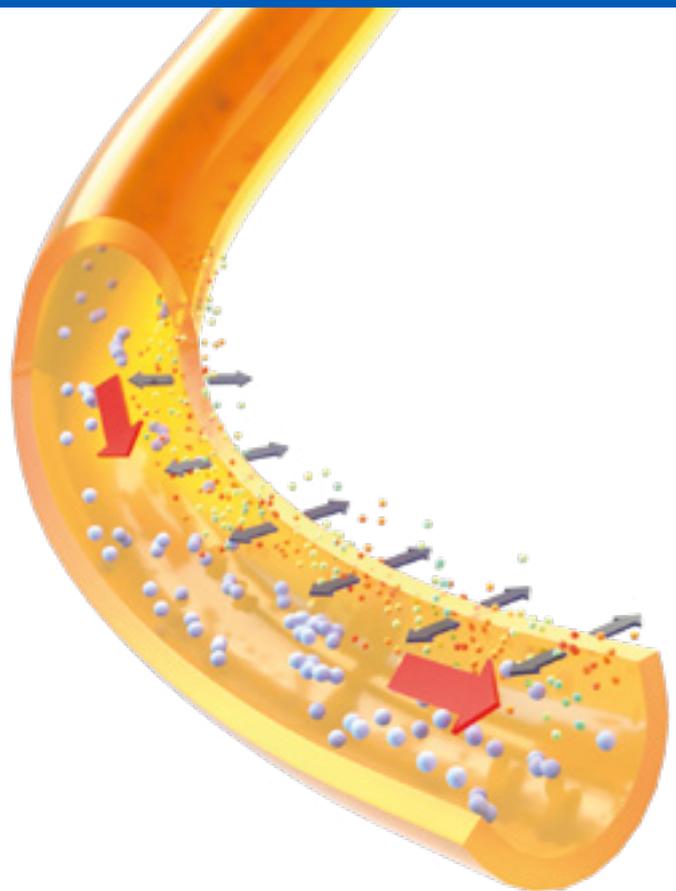
THE BASICS TRIAL¹

Key message

The multicentre UK & Ireland BASICS trial is a landmark study that provides unequivocal evidence that, compared with standard and silver-impregnated shunt catheters, antibiotic-impregnated shunt catheters reduce the risk, harm and cost of shunt infections affecting patients of all ages receiving their first ventriculoperitoneal shunt. Antibiotic shunts should be the first choice for these patients.

Study highlights

- Funded by the UK National Institute for Health Research (NIHR) Health Technology Assessment programme.
- The largest randomised clinical trial worldwide evaluating infection risk of ventriculoperitoneal shunts in patients with hydrocephalus.
- Conducted at 21 regional adult and paediatric neurosurgery centres in the UK and Ireland.
- Primary outcome measure: ‘time to shunt failure due to infection’.
- 1605 patients randomly assigned to shunt study groups: 536 standard silicone, 538 antibiotic impregnated (518 Bactiseal®), 531 silver impregnated.
- Age category totals: paediatric <16 yrs 599, adult 16–65 yrs 502, adult ≥65 yrs 504.
- Gender balance: male 51%, female 49%.
- Follow-up, 6 months to 2 years. Median 22 months.
- Revision rate for infection: 6% in standard shunt, 6% in silver shunt, 2% in antibiotic shunt. Savings of £135,753 per infection avoided.



Title

“Antibiotic or silver versus standard ventriculoperitoneal shunts (BASICS): a multicentre, single-blinded, randomised trial and economic evaluation.” Conor L Mallucci, Michael D Jenkinson et al. Published online September 12, 2019 by The Lancet.

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)31603-4/fulltext#seccestitle10](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)31603-4/fulltext#seccestitle10)

Background

The use of a ventriculoperitoneal shunt to mitigate hydrocephalus is one of the commonest neurosurgical procedures globally. Sadly, up to 15% of patients suffer shunt infection which may result in prolonged hospital treatment, multiple surgeries and potentially catastrophic effects on cognition and quality of life.

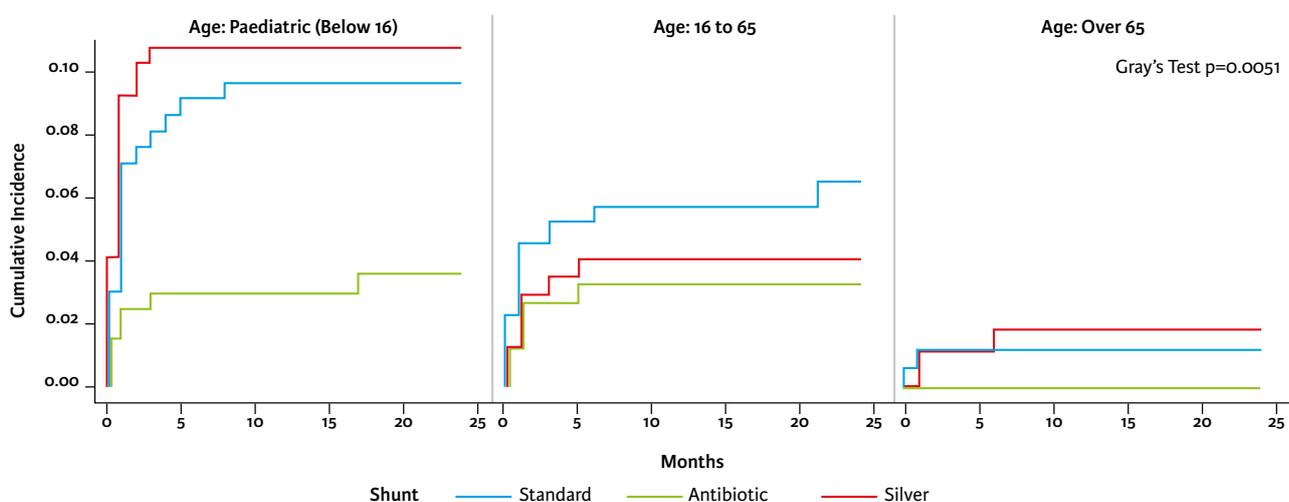
While some surgeons choose more costly silver or antibiotic-impregnated shunts over standard shunts in an effort to reduce infection risk, robust comparative evidence to guide them on infection rates associated with the three types of shunt has been sparse. The BASICS trial addresses this critical deficiency.

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SPECIALTY SURGICAL

Key findings

- **Antibiotic shunts were associated with a significantly lower incidence of infection (2%)** compared with both standard shunts (6%) and silver shunts (6%). This was true across all age categories. **There were zero infections in the older adults (≥65 yrs) treated with antibiotic shunts.**
Ref. Figure S4: Cumulative incidence of infection by shunt type stratified by age group, BASICS Supplementary appendix page 20, shown here
- **Compared with standard shunts, antibiotic shunts decreased the incidence of shunt failure due to infection** while silver shunts showed no significant difference versus standard types.
- **The efficacy and economic benefits of antibiotic shunts are especially prominent in young patients** who as a group experience a higher incidence of shunt infection.
- **A cost-effectiveness analysis showed that compared with standard shunts, antibiotic shunts save £135,753 per shunt infection avoided** even though they cost approximately twice as much as standard types. **The increased upfront cost of antibiotic shunts is offset by their health economic benefits.**

Cumulative incidence of infection by shunt group stratified by age group²



Participating centres

Addenbrooke's Hospital Cambridge
Alder Hey Children's Hospital Liverpool
Birmingham Children's Hospital
Bristol Royal Hospital for Children and Frenchay/Southmead Hospital
Children's University Hospital Dublin
Great Ormond Street Hospital London
James Cook University Hospital Middlesbrough
King's College Hospital London
Leeds General Infirmary
National Hospital London

Queen's Medical Centre Nottingham
Royal Hallamshire Hospital Sheffield
Royal Manchester Children's Hospital
Royal Sick Children's Hospital Edinburgh
Royal Victoria Infirmary Newcastle
Salford Royal Hospital
Sheffield Children's Hospital
Southampton General Hospital
The Walton Centre Liverpool
University Hospital of Wales Cardiff
Western General Hospital Edinburgh

BACTISEAL® Indications: For use in the treatment of hydrocephalus as a component of a shunt system when draining or shunting of cerebrospinal fluid (CSF) is indicated.

Contraindications: This device is not designed, sold, or intended for use except as indicated. Do not implant this device in patients with known hypersensitivity to rifampin or clindamycin hydrochloride. Do not implant this device in patients with active infections, such as ventriculitis, peritonitis, meningitis, or skin infections at or near the implantation site. Treat the infection before implanting this device. Use of this device is contraindicated in patients receiving anticoagulants or known to have a bleeding diathesis.

References

1. Antibiotic or silver versus standard ventriculoperitoneal shunts (BASICS): a multicenter, single-blinded, randomized trial and economic evaluation. Mallucci CL, Jenkinson MD, Conroy EJ, et al. Lancet 2019, Published online Sept 12.
2. Supplement to: Mallucci CL, Jenkinson MD, Conroy EJ, et al. Antibiotic or silver versus standard ventriculoperitoneal shunts (BASICS): a multicentre, single-blinded, randomised trial and economic evaluation. Lancet 2019; published online Sept 12. [http://dx.doi.org/10.1016/S0140-6736\(19\)31603-4](http://dx.doi.org/10.1016/S0140-6736(19)31603-4).

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For more information, please contact:

Sales & Marketing EMEA

Integra LifeSciences Services (France) SAS

Immeuble Séquoia 2 97 allée Alexandre Borodine ■

Parc technologique de la Porte des Alpes

69800 Saint Priest ■ France

Phone: +33 (0)4 37 47 59 00 ■ +33 (0)4 37 47 59 99 (fax)

integralife.eu

Customer Services

International: +33 (0) 437 47 59 50 ■ +33 (0) 437 47 59 25 (Fax) ■ csema@integralife.com

France: +33 (0) 437 47 59 10 ■ +33 (0) 437 47 59 29 (Fax) ■ custservfrance@integralife.com

United Kingdom: +44 (0) 1264 312 725 ■ +44 (0) 1264 312 821 (Fax) ■ custsvcs.uk@integralife.com

Ireland: +353 1800 901567 ■ +353 1822 5952 (Fax) ■ custsvcre@integralife.com

Germany: +49 (0) 2102 5535 6200 ■ +49 (0) 2102 5536 636 (Fax) ■ custsvcgermany@integralife.com

Austria: +43(0)720816067 ■ +43(0)19287201 ■ CustSvcAustria@integralife.com

Italy: +39 (0)2 577 89 21 ■ +39 (0)2 575 113 71 (Fax) ■ custsvcitaly@integralife.com

Belgium & Luxembourg: +32 (0)2 257 4130 ■ +32 (0)2 253 2466 (Fax) ■ custsvcbenlux@integralife.com

Switzerland: +41 (0)2 27 21 23 00 ■ +41 (0)2 27 21 23 99 (Fax) ■ custsvcsuisse@integralife.com

Netherlands: +31(0)852083167 ■ +31(0)207093627 ■ custsvcnetherlands@integralife.com


 Integra LifeSciences Production Corporation
 11 Cabot Boulevard
 Mansfield, MA 02048 ■ USA


 Integra LifeSciences Services (France) SAS
 Immeuble Séquoia 2
 97 allée Alexandre Borodine
 Parc technologique de la Porte des Alpes
 69800 Saint Priest ■ France


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