PIPADOR REVISION

MRCOG Part 1 Revision Notes

Beckwith–Wiedemann and Silver–Russell

CELL BIOLOGY • LECTURE 120

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 120: Beckwith–Wiedemann and Silver–Russell Syndromes

Cell biology • Visual revision edition — follows Lecture 119 (imprinting)

COLOUR CODE USED THROUGHOUT THESE NOTES

PATERNAL	MATERNAL / RISK	BWS / EXPRESSED	SRS	OTHER

LEARNING OBJECTIVES — tick off as you go

- ☐ Explain IC1 and IC2 at 11p15.5 and the IGF2/CDKN1C growth balance.
- ☐ List BWS mechanisms and their tumour risks.
- ☐ Recognise BWS antenatally and plan delivery and surveillance.
- ☐ Diagnose SRS (Netchine–Harbison) and manage it.
- ☐ Know related imprinting disorders and counsel about ART.

1 The 11p15.5 Region

IN ONE LINE: *Dad's IGF2 is the growth accelerator, Mum's CDKN1C (p57) the brake. Tip the balance one way → Beckwith–Wiedemann (overgrowth); the other → Silver–Russell (growth restriction).*

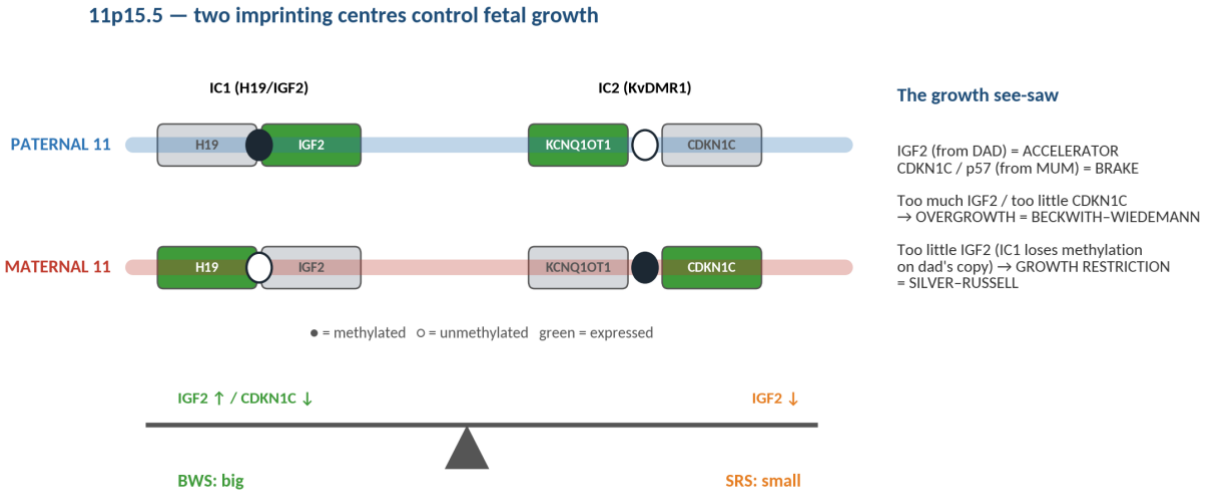


Figure 1. IC1, IC2 and the growth see-saw.

MNEMONIC / MEMORY HOOK

'BWS = Big, With Superfluous IGF2; SRS = Small, Short of IGF2'.

2 Beckwith–Wiedemann Syndrome

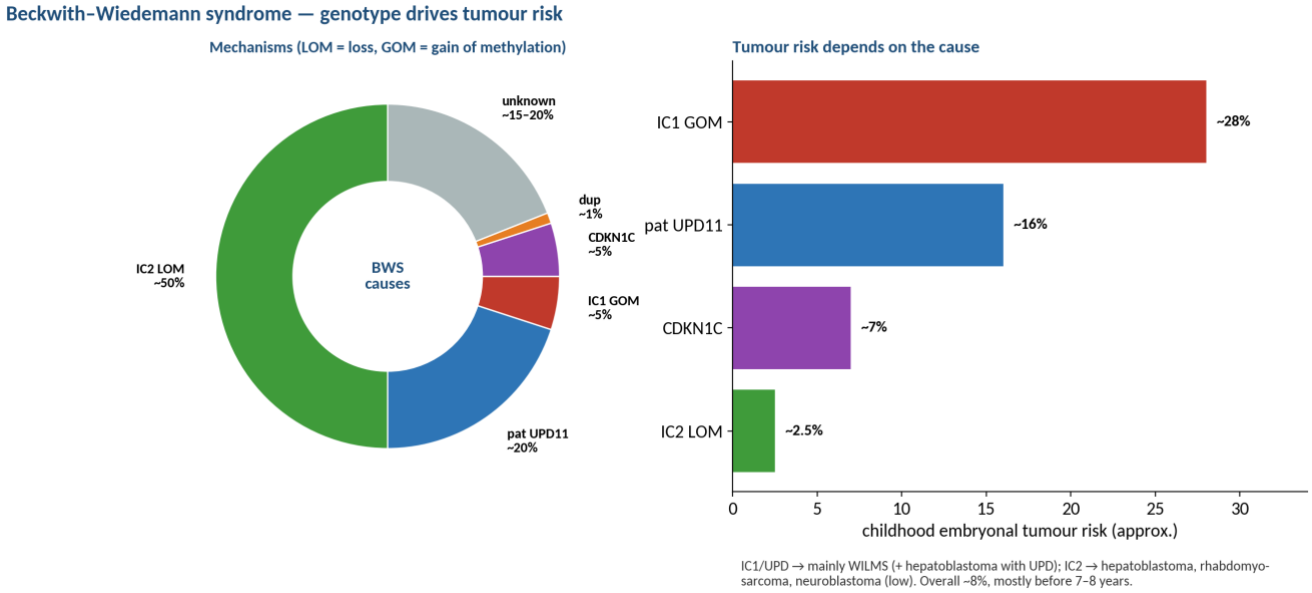


Figure 2. BWS mechanisms and tumour risk.

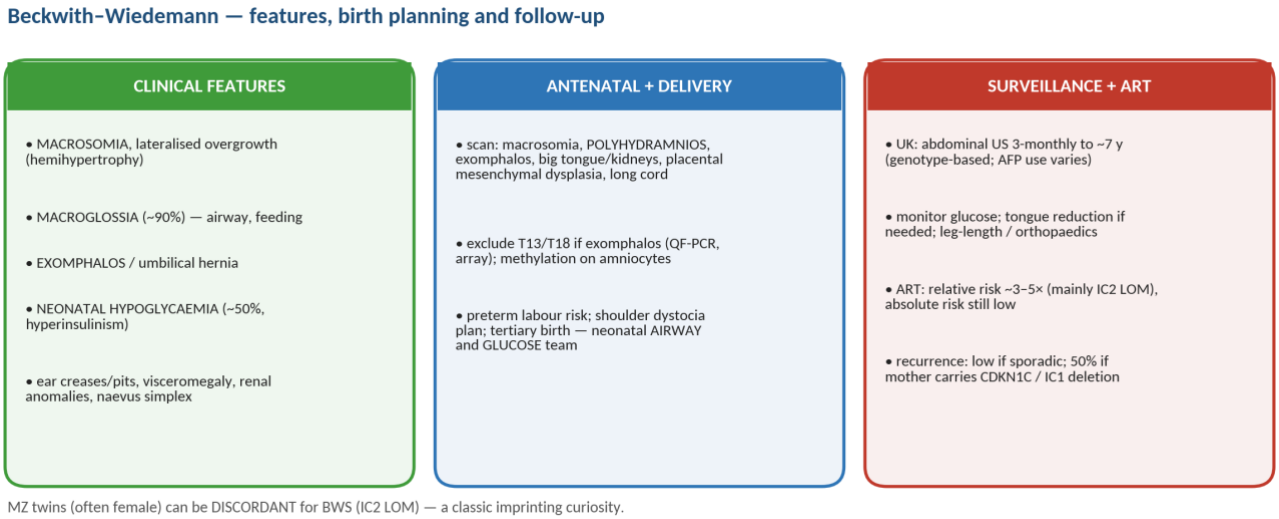


Figure 3. BWS features, birth and follow-up.

3 Silver–Russell Syndrome

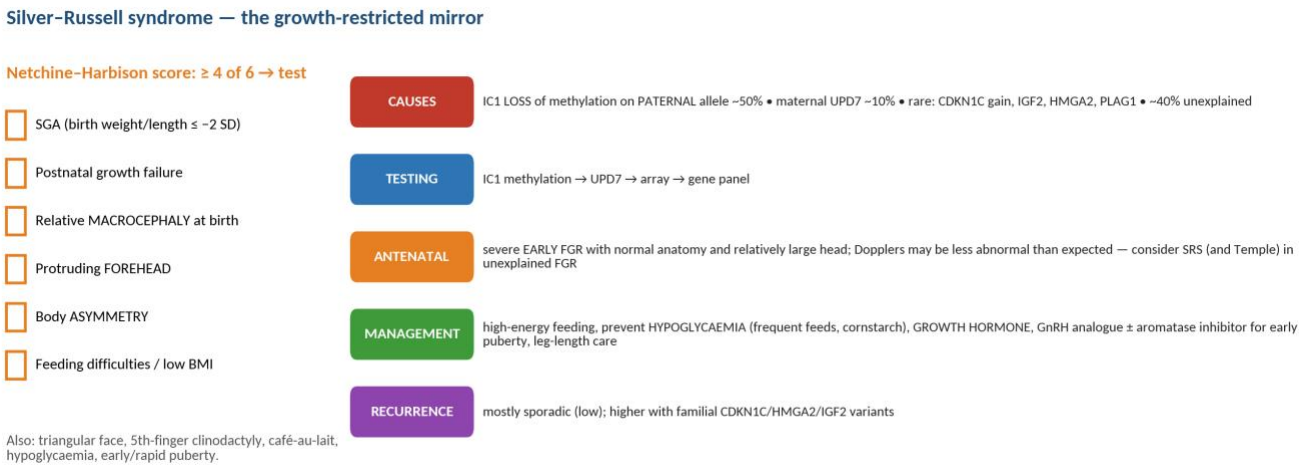


Figure 4. SRS diagnosis and management.

	Beckwith–Wiedemann	Silver–Russell
Growth	Overgrowth, macrosomia	Severe FGR, short stature
Commonest cause	IC2 loss of methylation (maternal) ~50%	IC1 loss of methylation (paternal) ~50%
UPD	Paternal UPD11 ~20%	Maternal UPD7 ~10%
Asymmetry	Lateralised OVERgrowth	Body asymmetry (smaller side)
Glucose	Neonatal hyperinsulinism / hypoglycaemia	Fasting hypoglycaemia (low reserves)
Tumours	Yes — Wilms, hepatoblastoma (surveillance)	No increased risk

4 Related Disorders and ART

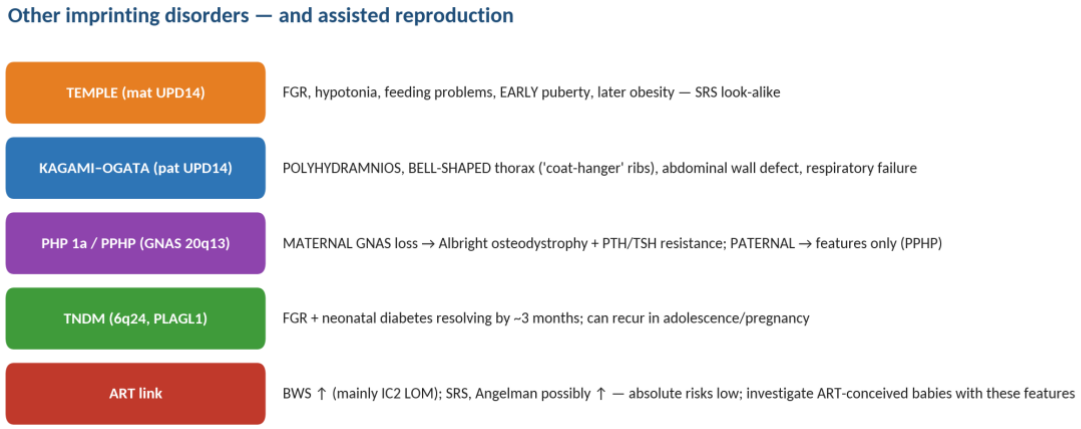


Figure 5. Other imprinting disorders and ART.

★ PEARL

Antenatal macrosomia + polyhydramnios + exomphalos (± big tongue, placental mesenchymal dysplasia) → think BWS; exclude trisomies; plan for neonatal airway and hypoglycaemia.

Tumour risk follows genotype: IC1 gain highest (~28%), IC2 loss lowest (~2.5%). ART raises BWS relative risk, but absolute risk stays low.

5 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

~50% BWS: IC2 loss	**~20%** BWS: paternal UPD11	**~90%** BWS macroglossia	**~50%** BWS neonatal hypoglycaemia
~8% BWS overall tumour risk	**~7 y** Ultrasound surveillance to	**~50% / ~10%** SRS: IC1 loss / mat UPD7	**≥ 4 / 6** Netchine–Harbison

HIGH-YIELD CHECKLIST

- ☐ IC1: H19 (maternal) / IGF2 (paternal); IC2: CDKN1C (maternal) / KCNQ1OT1 (paternal).
- ☐ BWS: IC2 LOM 50%, pat UPD11 20%, IC1 GOM 5%, CDKN1C 5%.
- ☐ Macrosomia, macroglossia, exomphalos, hypoglycaemia, hemihypertrophy, ear creases.
- ☐ Tumours: Wilms, hepatoblastoma; risk by genotype; US to ~7 y.
- ☐ Antenatal: polyhydramnios, macrosomia, exomphalos; exclude trisomies.
- ☐ Delivery: tertiary, airway, glucose, shoulder dystocia plan.
- ☐ SRS: IC1 LOM 50%, mat UPD7 10%; Netchine–Harbison ≥ 4/6.
- ☐ SRS: severe FGR, relative macrocephaly, asymmetry; GH, hypoglycaemia prevention.
- ☐ Temple, Kagami–Ogata, PHP1a, TNDM.
- ☐ ART: BWS RR 3–5×, absolute risk low; CDKN1C recurrence 50% (maternal).

Self-assessment — cover the right-hand column

Question	Answer
Growth-promoting imprinted gene expressed from the paternal allele?	IGF2
Growth inhibitor expressed from the maternal allele?	CDKN1C (p57)
Commonest BWS mechanism?	Loss of methylation at IC2 (KvDMR1)
BWS genotype with highest tumour risk?	IC1 gain of methylation
Commonest BWS tumours?	Wilms tumour, hepatoblastoma
Neonatal problem to anticipate in BWS?	Hypoglycaemia (and airway with macroglossia)
Commonest SRS mechanism?	IC1 loss of methylation (paternal)
UPD causing SRS?	Maternal UPD7
Clinical score for SRS?	Netchine–Harbison (≥ 4 of 6)
Imprinting disorder most linked to ART?	BWS (IC2 loss of methylation)

6 References

- Brioude F et al. Expert consensus document: clinical and molecular diagnosis, screening and management of Beckwith–Wiedemann syndrome. Nat Rev Endocrinol 2018.
- Wakeling EL et al. Diagnosis and management of Silver–Russell syndrome: first international consensus statement. Nat Rev Endocrinol 2017.
- Scott RH et al. Surveillance for Wilms tumour in at-risk children: pragmatic recommendations for best practice. Arch Dis Child 2006.