

## Supplement File 1. Raw data on management of elevated SDF (Q33–60)

### Section 4: Treatment of elevated SDF

**Q33. How do you treat elevated SDF once diagnosed in infertile men? [Select all that apply]**

Recommend lifestyle changes (smoking cessation, weight loss, etc.)	318	79.10%
Prescribe empiric antioxidants	309	76.87%
Recommend reduced ejaculatory abstinence	154	38.31%
Refer directly for ART with advanced sperm selection techniques	83	20.65%
Repeat testing and confirm elevated SDF	68	16.92%
Refer directly for ICSI with testicular sperm	66	16.42%
Prescribe empiric hormonal therapy	31	7.71%
Prescribe empiric antibiotics (without culture)	28	6.97%
Refer directly for ART with ejaculated sperm	26	6.47%
Not applicable	37	9.20%
Total	1120	

**Q34. What duration of abstinence do you recommend for infertile men with elevated SDF before attempting conception (whether natural or by ART)?**

Less than 24 hours	51	12.70%
24-48 hours	135	33.60%
3-5 days	125	31.10%
6 days or more	7	1.70%
I do not recommend reduced abstinence	40	10.00%
Not applicable	44	10.90%
Total	402	100.00%

**Q35. At which point would you refer a man with UMI and high SDF for ART, given there is no female factor infertility and the woman is under 35 years old?**

Immediately after diagnosis	33	8.20%
3 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	97	24.20%
6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	153	38.20%
More than 6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	58	14.50%
I do not refer men with UMI and elevated SDF for ART	19	4.70%
Not applicable	41	10.20%
Total	401	100.00%

**Q36. At which point would you refer a man with IMI and high SDF for ART, given there is no female factor infertility and the woman is under 35 years old?**

Immediately after diagnosis	50	12.50%
3 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	100	25.00%
6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	142	35.50%
More than 6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	52	13.00%
I do not refer men with IMI and elevated SDF for ART	16	4.00%
Not applicable	40	10.00%
Total	400	100.00%

**Q37. Which of the following would you recommend for a couple experiencing natural RPL, with a normal female partner and a male partner with high SDF, as an initial approach? [Select all that apply]**

Lifestyle modification and avoiding environmental risks	317	78.86%
Empiric antioxidants	308	76.62%
Reduced Abstinence	167	41.54%
ICSI with testicular sperm	86	21.39%
ART	78	19.40%
Empiric hormonal therapy	44	10.95%
Empiric antibiotic therapy	35	8.71%
Not applicable	37	9.20%
Total	1072	

**Q38. At which point would you refer a couple with natural RPL and high SDF in the man for ART, given there is no female factor infertility and the woman is under 35 years old?**

Immediately after diagnosis	54	13.50%
3 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	95	23.80%
6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	136	34.10%
More than 6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	47	11.80%
I do not refer men with RPL and elevated SDF for ART	23	5.80%
Not applicable	44	11.00%
Total	399	100.00%

**Q39. Which of the following would you recommend for a man with clinical varicocele, normal semen parameters, and high SDF, as an initial approach? [Select all that apply]**

Antioxidants	254	63.34%
Avoiding lifestyle and environmental risks	235	58.60%
Varicocele repair (only if female partner is <38 years with good ovarian reserve)	157	39.15%
Varicocele repair (regardless of female factors)	133	33.17%
Reduced Abstinence	128	31.92%
Directly proceed to ART (if female partner is >38 years)	78	19.45%
Not applicable	36	8.98%
Empiric hormonal therapy	35	8.73%
Directly proceed to ART (regardless of female factors)	27	6.73%
Total	1083	

**Q40. At which point do you perform varicocele repair for a man with clinical varicocele, normal semen parameters, and elevated SDF?**

Immediately after diagnosis	125	31.40%
3 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	61	15.30%
6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	76	19.10%
More than 6 months after failure of empiric medical therapy (e.g.: antioxidants) and conservative measures	26	6.50%
After failure of ART and no female factor	36	9.00%
I do not perform varicocele repair for men with clinical varicocele, normal semen parameters, and elevated SDF	37	9.30%
Not applicable	37	9.30%
Total	398	100.00%

**Q41. At which point would you refer a man with clinical varicocele, normal semen parameters, and high SDF for ART, given there is no female factor infertility and the woman is under 35 years old?**

After failure of varicocele repair	198	49.50%
After failure of conservative measures (without varicocele repair)	73	18.30%
Immediately after diagnosis	62	15.50%
I do not refer men with clinical varicocele, normal semen parameters, and elevated SDF for ART	31	7.70%
Not applicable	36	9.00%
Total	400	100.00%

**Q42. During the evaluation of an infertile man, he is found to have elevated SDF as well as subclinical varicocele, would you offer varicocele repair for this patient?**

No, I do not repair subclinical varicocele	185	46.20%
Yes, only if there are no other underlying causes and risks for elevated SDF	132	33.00%
Yes, in all such cases	31	7.70%
Yes, only if ART is planned	20	5.00%
Not applicable	32	8.00%
Total	400	100.00%

**Q43. Do you prescribe antioxidants for infertile men with elevated SDF?**

Yes, always	199	49.70%
Yes, depending on the associated underlying causes and risk factors	154	38.50%
No, I do not prescribe antioxidants for infertile men with elevated SDF	15	3.70%
Not applicable	32	8.00%
Total	400	100.00%

**Q44. For which of the following conditions associated with elevated SDF do you prescribe antioxidants as a primary line of therapy? [Select all that apply]**

Smoking	315	78.55%
Exposures (occupational, environmental)	283	70.57%
Obesity	256	63.84%
Aging	248	61.85%
UMI	223	55.61%
IMI	214	53.37%
RPL, no other causes found	205	51.12%
Clinical varicocele	199	49.63%
Subclinical varicocele	181	45.14%
ART failure	180	44.89%
Male genital tract infections	159	39.65%
Leukocytospermia	145	36.16%
Spinal cord injury	73	18.20%
None	12	2.99%
Not applicable	36	8.98%
Total	2729	

**Q45. Which of the following antioxidants (either as single agents or as a combination) do you prescribe for infertile with elevated SDF? [Select all that apply]**

Co-enzyme Q10	287	71.39%
Zinc	286	71.14%
L-carnitine	285	70.90%
Selenium	248	61.69%
Vitamin E	233	57.96%
Vitamin C	204	50.75%
L-arginine	189	47.01%
Acetyl carnitine	182	45.27%
Folic Acid (B9)	170	42.29%
Glutathione	155	38.56%
N-acetyl cysteine	141	35.07%
Lycopene	137	34.08%
Vitamin D	107	26.62%
Vitamin A	95	23.63%
Other B vitamins	84	20.90%
Herbal products	58	14.43%
Docosahexanoic acid (DHA)	47	11.69%
Melatonin	25	6.22%
Other	24	5.97%
Not applicable	47	11.69%
Total	3004	

**Q46. What duration of treatment with antioxidants do you recommend for infertile men with elevated SDF?**

Less than 3 months	4	1.00%
3 months	153	38.10%
4-6 months	158	39.30%
7-12 months	19	4.70%
Until clinical pregnancy is achieved	30	7.50%
Not applicable	38	9.50%
Total	402	100.00%

**Q47. How do you follow up on treatment success after antioxidant supplementation in infertile men with elevated SDF?**

Demonstration of reduced SDF on repeat testing	232	57.70%
Clinical pregnancy	75	18.70%
Live birth	30	7.50%
I do not follow-up	20	5.00%
Not applicable	45	11.20%
Total	402	100.00%

**Q48. Do you prescribe hormones for infertile men with elevated SDF?**

No, I do not prescribe hormones for infertile men with elevated SDF	197	49.40%
Yes, depending on the associated underlying causes and risk factors	138	34.60%
Yes, always	9	2.30%
Not applicable	55	13.80%
Total	399	100.00%

**Q49. Which hormones do you prescribe for infertile men with elevated SDF? [Select all that apply]**

Follicle stimulating hormone (FSH)	87	21.80%
Selective estrogen receptor modulators (SERM), such as clomiphene citrate, tamoxifen	81	20.30%
Human chorionic gonadotropin (hCG)	63	15.80%
Aromatase inhibitors, such as letrozole, anastrozole, testolactone	49	12.30%
Gonadotropin releasing hormone (GnRH)	19	4.80%
Other	6	1.50%
Not applicable	253	63.40%
Total	558	

**Q50. What duration of treatment with hormones do you recommend for infertile men with elevated SDF?**

Less than 3 months	7	1.70%
3 months	63	15.70%
4-6 months	80	20.00%
7-12 months	6	1.50%
Until clinical pregnancy is achieved	6	1.50%
Not applicable	239	59.60%
Total	401	100.00%

**Q51. In a couple with a normal female partner experiencing failure to achieve a clinical pregnancy after IUI, associated with elevated SDF in the male partner, what would your management strategy be?**

Repeat the procedure after applying conservative measures (shorter abstinence, antioxidants)	133	33.50%
Refer for ICSI using techniques to select sperm with lower SDF	68	17.10%
Refer for ICSI with ejaculated sperm	62	15.60%
Repeat IUI using techniques to select sperm with lower SDF	44	11.10%
Refer for ICSI using testicular sperm	34	8.60%
Repeat the procedure with no additional intervention	11	2.80%
Not applicable	45	11.30%
Total	397	100.00

**Q52. In a couple with a normal female partner experiencing miscarriage after IUI, associated with elevated SDF in the male partner, what would your management strategy be?**

Repeat the procedure after applying conservative measures (shorter abstinence, antioxidants)	115	28.90%
Refer for ICSI using techniques to select sperm with lower SDF	86	21.60%
Repeat IUI using techniques to select sperm with lower SDF	56	14.10%
Refer for ICSI with ejaculated sperm	46	11.60%
Refer for ICSI using testicular sperm	38	9.50%
Repeat the procedure with no additional intervention	12	3.00%
Not applicable	45	11.30%
Total	398	100.00%

**Q53. In a couple with a normal female partner experiencing fertilization failure after IVF, associated with elevated SDF in the male partner, what would your management strategy be?**

Refer for ICSI using techniques to select sperm with lower SDF	107	26.70%
Repeat the procedure after applying conservative measures (shorter abstinence, antioxidants)	73	18.20%
Refer for ICSI using testicular sperm	63	15.70%
Refer for ICSI with ejaculated sperm	61	15.20%
Repeat IVF using techniques to select sperm with lower SDF	46	11.50%
Repeat the procedure with no additional intervention	5	1.20%
Not applicable	46	11.50%
Total	401	100.00%

**Q54. In a couple with a normal female partner experiencing failure to achieve a clinical pregnancy after IVF, associated with elevated SDF in the male partner, what would your management strategy be?**

Refer for ICSI using techniques to select sperm with lower SDF	108	26.90%
Repeat the procedure after applying conservative measures (shorter abstinence, antioxidants)	74	18.50%
Refer for ICSI using testicular sperm	73	18.20%
Refer for ICSI with ejaculated sperm	52	13.00%
Repeat IVF using techniques to select sperm with lower SDF	45	11.20%
Repeat the procedure with no additional intervention	5	1.20%
Not applicable	44	11.00%
Total	401	100.00%

**Q55. In a couple with a normal female partner experiencing miscarriage after IVF or ICSI, associated with elevated SDF in the male partner and no other abnormality, what would your management strategy be?**

Repeat IVF or ICSI using techniques to select sperm with lower SDF	128	32.00%
Refer for ICSI using testicular sperm	118	29.50%
Repeat the procedure after applying conservative measures (shorter abstinence, antioxidants)	92	23.00%
Repeat the procedure with no additional intervention	11	2.70%
Transfer to another center	5	1.30%
Not applicable	46	11.50%
Total	400	100.00%

**Q56. Do you recommend sperm selection techniques for infertile men with elevated SDF?**

Yes, only for repeat ART after initial failure with male partner having high SDF	172	43.10%
Yes, always if the couple is planned for ART with male partner having high SDF	129	32.30%
No, I do not recommend sperm selection techniques	98	24.60%
Total	399	100.00%



**Q57. Which sperm selection techniques do you use or recommend for men with elevated SDF?  
[Select all that apply]**

Intracytoplasmic morphologically selected sperm injection (IMSI)	110	27.43%
Physiological intracytoplasmic sperm injection (P-ICSI)	96	23.94%
Density gradient centrifugation (DGC)	89	22.19%
Magnetic-activated cell sorting (MACS)	51	12.72%
Microfluidics	51	12.72%
Other	20	4.99%
Not applicable	138	34.41%
Total	555	

**Q58. Do you recommend the use of testicular sperm for men with elevated SDF undergoing ICSI?**

Yes, only in some cases	234	58.20%
No, I do not recommend testicular sperm for infertile men with elevated SDF	76	18.90%
Yes, routinely	37	9.20%
Not applicable	55	13.70%
Total	402	100.00%

**Q59. If you answered yes, when would you recommend testicular sperm for ICSI for men with elevated SDF?**

After two or more ICSI failures with sperm selection	149	38.50%
After failure of one ICSI cycle	89	23.00%
At first planned ICSI	27	7.00%
I do not recommend testicular sperm extraction for men with elevated SDF	14	3.60%
Not applicable	108	27.90%
Total	387	100.00%

**Q60. If you answered no, why do you not recommend testicular sperm for men with elevated SDF? [Select all that apply]**

Inadequate evidence to support such a decision	68	19.94%
Invasive procedure	57	16.72%
Possible surgical complications	34	9.97%
Risk of formation of antisperm antibodies	31	9.09%
Expensive	22	6.45%
Not applicable	233	68.33%
Total	445	