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SLEEP TRAINING

Developed by Farraminah Francis and Dr. Erin Woods for PedsCases.com.

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Introduction:

Hi everyone, my name is Farraminah Francis, I am a fourth-year medical student at the University of Saskatchewan. This episode is written in collaboration with Dr Erin Woods, a General Pediatrician and associate professor at the University of Saskatchewan.

Today we will discuss ways to optimize sleep in young healthy pediatric patients. We'll focus on ways to support parents as they navigate this important aspect of their child's health.

Let's start with a clinical case:

Jo is a 9-month-old healthy female infant who presents for her well-child visit. Her mother mentions feeling exhausted; she has returned to work, and the interrupted sleep is quite challenging. She rates her mood as good but states that Jo fusses to fall asleep and wakes up frequently, about every 2 hours at night. She then reports that Jo has been rocked or breastfed to get her off to sleep since birth, and that she requires a caregiver to rock her back to sleep when she wakes at night. She asks if you have any recommendations on improving her sleep habits or if this is just as good as it gets.

The Canadian Sleep Society recommends that clinicians routinely assess pediatric sleep at well-child visits and support bedtime routines that are safe and work for all family members^{1,2}. The need to sleep is universal, BUT caregiver philosophies, sleeping environments, and family values are not! The information we will provide in this discussion applies to children who are developing typically and have no significant chronic medical issue and are not facing extreme family or community adversity. Also, we recognize that the research and opinions shared may not align with some belief systems within our culturally diverse population. Like many parenting topics, behavioral sleep interventions are surrounded by some debate. As we give an overview of the benefits, our intention is not to convince a family to use an intervention that is not suited to their reality, no matter how much evidence surrounds it.

At the end of this podcast, you will have the tools you need to have an informative, open, and non-judgmental conversation with caregivers around sleep and delight in these encounters as you promote positive caregiver-child relationships¹. We'll review some of the benefits for the whole family unit and let the success stories of our families get us excited about better sleep!

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Objectives of this episode:

By the end of this podcast, the listener will be able to:

1. Review and Discuss the ABCDE framework and 5 core principles we can apply when supporting caregivers¹
2. Develop an approach to assess sleep patterns
3. Identify the contributing factors to sleep disruption
4. Discuss some of the evidence supporting the use of common behavioral strategies to improve sleep onset and sleep maintenance
5. Outline the recommended amount of sleep at different ages
6. Review sleep hygiene principles
7. Demonstrate counseling skills to caregivers wishing to employ a behavioral method to help with sleeping skills

(1. Review of the ABCDE framework and 5 core principles we apply when supporting parents)

Before diving into sleep, let's review the ABCDE framework the Canadian pediatric society proposed¹. This framework is helpful to use when we are discussing parenting topics, and it is meant to help us form strong relationships with families^{1,2}.

In the ABCDE framework:

- **A** for **A**sk questions. When possible, we ask questions about behaviors, routines and family functioning as well as recent stressors. We do this using motivational interviewing while being non-judgemental and empathic¹.
- **B** involves **B**uilding on each family's relational strengths, and nurturing resilience. We can use the information we've gathered to focus on aspects of daily life, such as caregiver self-regulation and responsiveness. In our encounters, we can model direct communication across the lifespan and be open with caregivers¹.
- **C** stands for **C**ounseling with a family-centered approach. We have the opportunities to support parents and collaboratively develop family centered strategies around challenging behaviors around sleep¹.

And here comes D,

- **D** for **D**eveloping plans for changing behaviours related to sleep or discipline. We develop action plans by assessing sleep deprivation and sleep disorders at every visit, as well as for potential causes and we follow-up, making sure to refer when sleep challenges persist despite traditional interventions¹.
- **E** helps us remember to **E**ducate about positive parenting strategies. In this framework we encourage parents to reflect on their response to challenging behaviors and sleep difficulties. We can educate on sleep patterns and prioritize strategies that promote self-soothing over strategies that prevent night waking, as night waking is a healthy part of sleep for pediatric patients¹.

Ok, time for a quick review: when discussing parenting topics, in the ABCDE framework, what do the letters stand for? Pause the podcast and give it a go!

A for Ask questions, B as in Building on relational strengths, C starts the word Counsel and is in family centered approach, D as in Developing plans and E for Educating, as we educate about positive parenting strategies.

We reviewed the ABCDE framework which can be helpful when discussing parenting topics with caregivers. As we enter discussions about challenging parenting topics such as sleep, let's go over 5 core principles which should guide our practice¹:

1. We are helping caregivers build **loving and responsive relationships**, and we promote interaction, predictability, and emotional responsiveness¹.
2. Behaviors, both negative and positive, **have an underlying reason**. Secure, loving, and attentive relationships and environments help caregivers manage challenging behaviours¹.
3. We always **encourage protective factors** within families. We look for opportunities to reinforce what caregivers are doing well¹.
4. Each family, each child, and each caregiver is **unique**. We work to recognize and respect differences. Family approaches to sleep and behaviour vary culturally, the key to family centred care is appreciating and incorporating differences. We need to navigate differences with sensitivity¹.
5. Finally, we must **stay informed** and keep up with parenting literature, websites, and valuable books on parenting topics. Connect families to resources that are of high quality and that can inform and empower them.

(2. Explore ways in which we can assess sleep and contributing factors)

Next, here are some practical ways to evaluate for sleep issues:

To intervene appropriately, clinicians must assess and diagnose sleep problems accurately. We will only know if we ask! During our routine well-child visits, we need to get in the habit of asking about sleep^{1,3} :

We can begin by using a normalizing statement such as: "Some families have a hard time with the sleep of little ones, and some don't. How is sleep going for you and your little one?". If it is an issue, we can get more information by using the BEARS screening acronym, which prompts us to ask about five sleep areas^{4,5} :

- B – reminds us to ask about **B**edtime issues,
- E – for the word **E**xcessive, we ask about excessive daytime sleepiness and irritability,
- A – as we ask about **A**wakenings during the night,
- R – as in **R**egularity and duration of sleep,
- And finally S
- S – we ask caregivers about **S**leep-disordered breathing (or Snoring).

Our BEARS acronym will help us determine whether a child has difficulty settling at bedtime or is experiencing problematic night-waking (or both)^{4,5}. It will be helpful to explore what strategies have been tried in the past. A thorough history which includes past medical and developmental

history, medications, family history and surgeries, as well as allergies and immunizations will help guide our physical exam and our strategies.

A thorough physical exam is important for identifying any acute or chronic medical conditions that could be contributing to sleep disruption. Once you have a robust differential for sleep disruption then you will appreciate the importance of a physical exam from head to toe. I will not be covering the diagnosis of sleep disorders in depth but encourage you to listen the following:

Pedscases Podcast, titled: Sleep Disorders in Children published December 12th 2015

Briefly, your exam should include general observation during the visit, where we make note of signs of fatigue and irritability, respiratory distress and any dysmorphism. Growth measurements can help to identify either failure to thrive (which can be a sign of an acquired or congenital condition) or obesity (which can increase the risk of obstructive sleep apnea). However, you can't stop there as the child's cognitive, skeletal, neuromuscular, cardiac, respiratory and oropharyngeal exams are just as important to review⁵.

Understanding the needs, temperament of the child and family, culture, social environment and priorities of the family can help you understand the contributing factors to sleep disruption and will help inform your management suggestions²:

For example, if the child is breastfed, are there some nighttime feeds they wish to keep²? It helps to know how much time in days, weeks, and months they want to dedicate to developing sleep skills. Is there an upcoming return to work on the horizon? Remember that each family is unique, but some interventions show benefits sooner than others².

The social environment can influence which sleep method is best. If sharing rooms or living in an apartment, crying may impact others differently, and some strategies may not fit. In addition, culture, values, work demands, and schedules will affect a family's decision to influence this learning process. With strong therapeutic relationships, we are better suited to offer tailored interventions as families navigate this topic².

That was a lot! Now may be a good time to pause the podcast and dig into your memory: do you remember an acronym that can help screen for difficulties with sleep? The BEARS acronym which looks at bedtime issues, excessive sleepiness, awakenings, regularity and snoring.

(3. Is there evidence supporting behavioural methods to improve sleep onset and sleep maintenance?)

Let's look at the benefits of "sleep training"?

- Good restful sleep is a key element of the overall health and well-being of our pediatric patients and their caregivers. According to the Journal of clinical sleep medicine, good quality sleep is associated with better emotional regulation, attention, learning and behavior in pediatric patients.

Caregivers also report improved physical and mental health, and an overall better quality of life^{2, 3, 4}.

- There is a wide range of normal. Sleep is a skill and difficulties falling asleep and staying asleep are common. 20-30 percent of children aged between 6 months and 18 months wake up more than once at night and need a caregiver to intervene and help them to fall back asleep^{6,7,8}. Improved routines and changing the sleeping environment (possibly through behavioral sleep interventions) will help decrease the time it takes to fall asleep and the number of night awakenings.
- How do we know that sleep training and sleep hygiene works? We can't give infants and children questionnaires and ask them to rate their nights. However, fussiness and mood scores can be measured, and we know that increased sleep is associated with better adaptability and lower age-appropriated distractibility which can also be studied. Sleep training interventions have a Number Needed to Treat (NNT) ranging between 4 and 10, this is comparable to ondansetron for nausea⁹!
- The interventions with the most evidence are the ones that focus on increasing the caregiver's understanding of self-soothing and the effect they can have on their child's sleep behaviors^{2,9}. After 6 months, it is much more difficult to improve sleep behavior than when they are younger so families should be encouraged to start early.
- In a recent survey of 796 caregivers, 75% saw a positive outcome 2 weeks after implementing a behavioral sleep strategy (on average) and night awakenings decreased from on average 3 or 4 to 1 or less¹⁰

In summary, behavioral sleep interventions can help shorten the time it takes to fall asleep and decrease the number of night awakenings. We have evidence of associations between better nights and improved daytime mood, less fussiness, more focus and better health for both the child and the caregivers^{11, 12, 13}. Improved sleep for the whole family is also associated with an improved sense of wellbeing¹⁴.

What are the challenges of “sleep training”?

- Every infant or child is unique and has a different temperament, and consequently develops the ability to self-soothe at a different pace. We never want to pathologize patterns that work in a household and aren't causing distress.
- That being said, as we approach the conversation around sleep interventions, let's familiarize ourselves with the challenges that families encounter when they put into place some of the behavioral sleep interventions we are suggesting.
- The following are some of those challenges¹⁵:

Difficulty listening to their child cry is typically the most anticipated challenge for caregivers. Crying is meant to solicit our attention and action, and crying can be interpreted in different ways. If interpreted as a sign of distress, a caregiver may experience shame or guilt when using extinction to influence sleep¹⁵. Other caregivers may interpret crying as a sign of frustration, which comes with acquiring any new skill; remember that each caregiver will experience this process differently¹⁵. Let's also take into consideration the reality that caregivers who are exhausted or are experiencing clinical anxiety, depression or extreme stress may have more difficulty coping with their child's cries.

Caregivers also worry about the long-term repercussions on attachment. Studies have shown that at 5 years, comparing families who had used a sleep intervention to those who had not, demonstrated no differences in caregiver-child relationships, social-emotional development, mood, self-efficacy, and caregiver's sensitivity^{6, 16}. In

addition, there were no significant differences in any outcome based on caregiver sleep training style⁹.

Other challenges may be practical considerations: for example, housing arrangements, co-sleeping and siblings with different schedules, all may get in the way of using certain methods.

(4. Review the recommended amount of sleep for different age groups)

How much sleep is needed?²⁰

There is wide variability in sleep...If a child gets up easily and spontaneously in the morning, they probably are getting enough sleep¹⁷.

The following numbers can serve as a guide:

A term neonate will sleep 16-18 hours in 24 hours. These sleep cycles will be mostly disconnected, and they will start to consolidate or "stick together" sleep cycles around the age of 3 months.

Most infants aged 2-6 months need between 14-16 hours of sleep in 24 hours. Between 6 and 12 months, we recommend 13-15 hours of sleep in 24 hours with 2 naps. Toddlers need a little less with 12-14 hours, and for preschoolers it is 11- 13 hours.

Are night awakenings common? Oh absolutely! It is normal and healthy for babies to wake up, move around, and 'signal for some comfort' during the night. Do they need to feed each time they wake up? Most infants, over 6 months of age, who are healthy and growing well can "technically" go through an 8-hour night without needing to feed as they will consume enough calories during the day to maintain their growth.

(5. Review five commonly used methods to help with sleeping skills)

What are the commonly used methods for sleep training?

Let's look at 5 behavioural sleep interventions that can help to minimize crying and calling out overnight while still working towards improving sleep independence.

No matter the method, as caregivers plan their course of action, encourage them to plan for support as sleep training can be hard. Consistency will be important, especially if caregivers are using an extinction-based method. Inconsistency can ironically endorse the behavior caregivers are trying to change as the child receives "intermittent reinforcement" for crying¹⁵.

Extinction based methods tend to improve nights in shorter amounts of time, typically caregivers are looking at 7-14 days. If a method doesn't fit or if things aren't going well, we recommend stopping x 2-4 weeks and trying again thereafter.

The first method we'll review is called "extinction with caregiver's presence".

It is also known as "camping out" if you lie down in the room or "chair method" if you sit in the room:

This 'sleep training' method involves a progressive withdrawal of the caregiver's attention, but the caregiver's is present in the room.

After a bedtime routine, the caregiver would place the baby into their crib sleepy but still awake. The caregiver then lies down or sits in the room within sight of the child. If there is crying or screaming, the caregiver can respond by picking up or rocking the child, making a gentle "shhh" sound, or rubbing their back.

When the baby/child settles, they are returned to their bed, sleepy but awake.

This repeats until they are asleep, then the caregiver leaves the room.

After a few nights, the caregiver will begin to gradually decrease the amount of interaction they provide to the infant/child when crying. They will increase the physical distance between them and the baby (eventually one night they will be lying or sitting near the door to the room).

Once the baby is falling asleep alone, for a few consecutive nights, without interacting with the caregiver, then the caregiver would place the infant/child in bed after the bedtime routine and leave the room for a few seconds and come back before they start to cry.

This is an opportunity to learn that they can be awake, alone, and not distressed. Overtime, the caregiver will leave the room for longer durations of time and return eventually finding the child already asleep.

For the middle of the night awakenings, the caregiver repeats a similar course of action. The caregiver comforts them and stays close¹⁸. Once the infant/child is consistently falling asleep on their own at bedtime, they will more quickly extinguish the need for support from their caregiver to fall back to sleep overnight as well.

The next 'sleep training' method is called Adaptive extinction (aka graduated extinction or the Ferber method)

This approach involves the caregivers putting the baby/child in bed drowsy, but awake, and then leaving. If there is crying or screaming, the caregiver returns at a progressively longer interval and soothes the child. The duration of the intervals is tailored to the child's and caregivers' temperament¹⁵. For example, the caregiver may wait 3-5-10 minutes after the child starts crying and then enter the room and gradually, they would increase the duration of the intervals. The duration of the intervals are adapted to the temperament of the child and caregiver. Once entering the room, the caregiver then helps them to settle the child, and then the child is placed back in the crib/bed, drowsy but awake.

In this method, caregivers try not to soothe fully to sleep. This method may suit caregivers who are comfortable with some crying and are willing to increase the intervals of time before entering the room^{2, 15}.

Many caregivers note marked improvements within the first few nights, typically we are looking at the 7-14 days range.

Next is the Unmodified extinction method (aka cry it out)

“Cry it out” implies that there is some length of time during which the infant/child is safely left alone to settle to sleep on their own, which may involve some amount of restlessness, fussing and/or crying.

Parents using this method would put the baby to bed, drowsy but still awake, after the bedtime routine. The infant is then left alone until they fall asleep and in time will learn to soothe themselves to sleep. One advantage of this method is that it will typically work quickly if caregivers are consistent. One caveat is that this method can backfire if the caregivers are inconsistent... Inconsistency can favour the crying behaviour as the child receives "intermittent reinforcement" for their behavior¹⁵.

***Remember that in all 'sleep training' methods which involve some form of extinction, the caregiver's attention is considered the reinforcer of the crying¹⁵.*

Scheduled awakening ^{8, 18}

This method is strictly for overnight awakenings (not bedtime training) and involves caregivers monitoring for this child's typical pattern of overnight awakenings. They then aim to wake them up 15-30 minutes before their typical spontaneous time of awakening and then console them to sleep. Parents increase the time between the awakenings to fade out awakenings¹⁸.

Faded bedtime with response cost ^{8, 18}

The last method is better suited for older children. It involves delaying bedtime so the child learns to connect being in bed with falling asleep rapidly. If the child does not fall asleep, the child comes out of bed for a prescribed time, and activities during that time are quiet (specifically not involving any screens). This method focuses on connecting cues for sleep onset with positive caregiver-child interactions and falling asleep fast. Down the line, bedtimes can be gradually moved earlier once the child is falling asleep more quickly.

(6. Discuss healthy sleep habits)

No matter the sleeping arrangement, working on sleep hygiene by establishing healthy sleep habits and routines, that work with a pediatric patient's circadian rhythm, will result in better nights of sleep for the family¹⁹.

The following are some suggestions we can discuss with families to improve their child's sleep hygiene:

1. Napping

In the daytime, particularly when caring for infants and toddlers, do not underestimate the power of "the nap ." When they accumulate lots of sleep pressure and do not nap, they can become overtired in the evening, and it is much harder for them to sleep when overtired² .

Why? because overtired babies produce more stress hormones, making them more difficult to soothe. They cry more intensely and become more overtired².

As they get older, between the ages of 3 and 5 years, consider phasing out a nap, especially if they resist napping or if they are having issues going to bed earlier than 8 pm, as napping in the daytime when not required results in the child not being tired enough for sleep in the evening².

2. Physical Activity

Another daytime recommendation would be to promote time outside every day, whenever possible, and routine age-appropriate physical activity². The benefits of physical activity extend to all the family members involved.

3. Nutrition

A light snack before bed can be a good idea but avoid heavy meals within 1 hour or 2 of bedtime as this may interfere with sleep². Avoid caffeinated foods, gently reminding families that ice tea, pop, tea, coffee and chocolate all may contain caffeine.

4. Bedtime Routine

As the night approaches, encourage caregivers to be "sleep cue detectives". While providing care to an infant, as soon as they become less engaged, have a far-off stare, and rub their little eyes...then it is an excellent time to start a predictable and soothing bedtime routine. The bedtime routine often includes nutrition (such as breastfeeding/bottle or a light snack), hygiene (hence the bath), communication (the book), and physical contact (such as rocking)⁸ [Mindell]. You can remember it as "bath-book-bed". **The key is to keep the sequence of events the same while training². Predictability will help children feel secure and in control.** When possible, the hour before bed should be shared quiet time.

5. Bedroom Environment

Encourage caregivers to keep their child's bedroom dark and quiet; some use a white-noise generator with great success. A low-level night light may improve sleep when children find completely dark rooms frightening. Stress the importance of avoiding screens in the bedroom or as part of the bedtime routine. The recommendation is that all screens are shut off more than 1 hour before bedtime, screens be strictly limited for all children < 2 years of age during the daytime and older children be limited to 2 hours of screen time per day whenever possible.

6. Be consistent

Keep the bedtime routine the same night after night. As children age, bedtime and wake-up times should be about the same time on school and non-school nights.

Summary:

In summary, disrupted infant and child sleep can be very stressful and draining for the child and the caregivers. Enquiring about the quality of sleep in the home, at each of your pediatric medical visits, can go a long way to improving the health of your patients and their families. Use the **ABCDE** framework and 5 core principles, that we reviewed, to guide you when working with caregivers on any parenting topic and the **BEARS** acronym to guide you when assessing sleep specifically.

We reviewed 5 sleep behavioral sleep interventions of which 3 were extinction based. Scheduled awakenings as well as faded bedtime are two methods that are not extinction based. You can help guide a family towards a method that suits their needs and values. We looked at the evidence supporting sleep training and its association with better daytime mood and overall health for both patients and their caregivers.

Sleep hygiene is essential to successful sleep training and helps to establish healthy lifelong sleep habits. These included bedtime routines, nutrition, soothing bedroom environments, screen avoidance and physical activity which are all important in establishing trust and confidence around falling asleep and maintaining sleep throughout the night.

Thank you for taking the time to explore this topic with us. This was a long episode so perhaps a nap is now needed! We hope that this exploration will empower you to broach this topic with caregivers at your next well-child visit and give you confidence in how to support them as they navigate the wonderful world of sleep.

References:

1. Williams RC, Biscaro A, Clinton J. Relationships matter: How clinicians can support positive parenting in the early years. *Paediatr Child Health*. 2019 Aug;24(5):340-57.
2. <https://parenting.mountsinai.org/providers/wp-content/uploads/2022/10/Sleep-Training1.pdf>
3. Gruber R, Carrey N, Weiss SK, Frappier JY, Rourke L, Brouillette RT, et al. Position statement on pediatric sleep for psychiatrists. *J Can Acad Child Adolesc Psychiatry*. 2014 Sep;23(3):174-95.
4. Owens JA, Dalzell V. Use of the 'BEARS' sleep screening tool in a pediatric residents' continuity clinic: a pilot study. *Sleep Med*. 2005 Jan;6(1):63-9.
5. Ignatio, T. Assessment of sleep disorders in children. UptoDate.
6. Hiscock H, Bayer JK, Hampton A, Ukoumunne OC, Wake M. Long-term mother and child mental health effects of a population-based infant sleep intervention: cluster-randomized, controlled trial. *Pediatrics*. 2008 Sep;122(3):e621-7.
7. Johnson N, McMahon C. Preschoolers' sleep behaviour: associations with parental hardiness, sleep-related cognitions and bedtime interactions. *J Child Psychol Psychiatry*. 2008 Jul;49(7):765-73. doi: 10.1111/j.1469-7610.2007.01871.x. PMID: 18598244.
8. Mindell JA, Williamson AA. Benefits of a bedtime routine in young children: sleep, development, and beyond. *Sleep Med Rev*. 2018;40:93–108. <https://doi.org/10.1016/j.smr.2017.10.007>

9. Korownyk C, Lindblad AJ. Infant sleep training: rest easy. *Can Fam Physician*. 2018 Jan;64(1):41.
10. Honaker SM, Schwichtenberg AJ, Kreps TA, Mindell JA. Real-World Implementation of Infant Behavioral Sleep Interventions: Results of a Parental Survey. *J Pediatr*. 2018 Aug;199:106-111.e2.
11. Velten-Schurian K, Hautzinger M, Poets CF, Schlarb AA. Association between sleep patterns and daytime functioning in children with insomnia: the contribution of parent-reported frequency of night waking and wake time after sleep onset. *Sleep Med*. 2010 Mar;11(3):281-8.
12. Paul IM, Bartok CJ, Downs DS, Stifter CA, Ventura AK, Birch LL. Opportunities for the primary prevention of obesity during infancy. *Adv Pediatr*. 2009;56(1):107-33.
13. Sadeh A, De Marcas G, Guri Y, Berger A, Tikotzky L, Bar-Haim Y. Infant Sleep Predicts Attention Regulation and Behavior Problems at 3-4 Years of Age. *Dev Neuropsychol*. 2015;40(3):122-37.
14. Byars KC, Yeomans-Maldonado G, Noll JG. Parental functioning and pediatric sleep disturbance: an examination of factors associated with parenting stress in children clinically referred for evaluation of insomnia. *Sleep Med*. 2011 Oct;12(9):898-905.
15. Etherton H, Blunden S, Hauck Y. Discussion of Extinction-Based Behavioral Sleep Interventions for Young Children and Reasons Why Parents May Find Them Difficult. *J Clin Sleep Med*. 2016 Nov 15;12(11):1535-43.
16. Price AM, Wake M, Ukoumunne OC, Hiscock H. Five-year follow-up of harms and benefits of behavioral infant sleep intervention: randomized trial. *Pediatrics*. 2012 Oct;130(4):643-51.
17. Ophoff D, Slaats MA, Boudewyns A, Glazemakers I, Van Hoorenbeeck K, Verhulst SL. Sleep disorders during childhood: a practical review. *Eur J Pediatr*. 2018 May;177(5):641-8.
18. Petit, D. Sleeping behavior
<https://az675379.vo.msecnd.net/media/1210412/sleeping-behaviour.pdf>
19. Irish LA, Kline CE, Gunn HE, Buysse DJ, Hall MH. The role of sleep hygiene in promoting public health: A review of empirical evidence. *Sleep Med Rev*. 2015 Aug;22:23-36.

20. Canadian Sleep Society.

https://css-scs.ca/wp-content/uploads/2020/09/150-005_Eng.pdf