

PedsCases Podcast Scripts

This is a text version of a podcast from Pedscases.com on the "Approach to Admission Orders." These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at www.pedcases.com/podcasts.

Approach to Admission Orders

Developed by Chris Novak, Dr. Mel Lewis and Dr. Peter Gill for PedsCases.com. October 4, 2015

Intro

Hi everyone, my name is Chris Novak. I am a medical student at the University of Alberta. Today's podcast is designed to give medical students an organized approach to writing admission orders in a hospital setting. This podcast was developed with Dr. Melanie Lewis, a general pediatrician and Associate Professor at the University of Alberta in Edmonton, Alberta, Canada and Dr. Peter Gill, a pediatric resident at the University of Toronto. The objectives of this podcast are the following:

- 1) Review an approach to writing admission orders using the mnemonic ADDAVID
- 2) Discuss some common mistakes that learners make when writing orders
- 3) Review some special considerations when writing admission orders in Pediatrics.

Along the way you also might also pick up a few tips about gastroenteritis from our clinical case. So let's start with a case that will be very familiar to most students on their pediatric rotation.

Clinical Case

It is 3:00am and you are a third year medical student on call in your Pediatrics rotation. You are asked to go see Liam, a 3-year-old male presenting to emergency after a 4-day history of vomiting and diarrhea. He presented acutely with watery non-bloody diarrhea 10-15 times/day, and non-bilious vomiting 4-5 times/day. Liam's appetite is poor and he has had difficulty keeping down any food or drink. He has not passed urine in at least 12 hours. His mother says there is a stomach flu going around at his daycare, and that many children have been sent home with similar symptoms. Liam is previously healthy, and while he has had several episodes of vomiting and diarrhea in the past, they have never required emergency room visits. On admission he was mildly tachycardic and hypotensive, but was afebrile. By the time you arrived, the emergency physician had already given him a stat bolus of normal saline 20 ml/kg, and Liam is now normotensive. He weighs 15 kg and his capillary refill time is >3 seconds. His lips are dry and his eyes appear sunken. The rest of his exam is unremarkable without any focal findings. You



review the case with your resident, and they agree that Liam is likely presenting with viral gastroenteritis with severe dehydration. You decide that the best course of action would be to admit Liam for rehydration and monitoring. Suddenly, the resident gets a page and has to run to reassess another patient on the ward. As the resident is leaving, he asks "Can you get started on the orders? I will review them with you when I get back."

How do you know what orders to write? How do you organize your thoughts? What if you forget something? Don't panic, and listen to this podcast. We will come back to the case of Liam as an example as we go through the podcast.

Admission orders are a set of directions to be followed by the care team once a patient is admitted to hospital. They describe where the patient should be admitted to, what special considerations need to be made for their care, and outline the next steps in investigation and management. While some centers have pre-printed order sets or electronic medical systems, they often need to be written out by hand, from memory. While the staff on call is ultimately responsible, it is frequently the task of the medical students and residents to write out the admission orders. As a new learner, this can be an overwhelming task, and with so many factors to consider it is easy to miss important details if you don't have a systematic approach. As a medical student, you will not be able to sign off on orders, but it is a valuable exercise to take a stab at writing them out and learning from your mistakes. Remember, in a few short years, this will be your responsibility! This is also a popular OSCE station!

A common approach to writing admission orders is using the mnemonic ADDAVID which stands for:

- **A** Admit to
- **D** Diagnosis
- **D** Diet
- **A** Activity
- V Vitals
- I IV, Ins and Outs, Investigations
- **D** Drugs

Using this organized approach you can systematically go through each item, ensuring that nothing is missed. While this podcast is focused on pediatrics, this approach can be used to write admission orders in almost any specialty. In other specialties additional factors may need to be considered. For example, in Psychiatry, you will need to consider if a patient requires a secure unit, or in Surgery, post-operative patients require orders for management of dressings and drains.

First, a few general tips for writing orders! Write down the date and time first. This is easy to forget, but is very important for all hospital documentation. Be sure to list the child's weight and allergies somewhere on the orders form. Write your orders legibly on the proper hospital form. For clarity, you should number your orders and write each

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order on a new line. Remember, someone else has to read these orders to input them and carry them out. Illegible writing, and careless mistakes can impact patient care and patient safety. Avoid using abbreviations which may not be clear to all readers. In Alberta, our health system has compiled a list of common abbreviations which can be misinterpreted, with recommendations for patient safety. You can find a link to this list in the supplementary materials at PedsCases.com.

Let's now review ADDAVID line by line, and discuss what should be considered in each section.

Admit To

The first section of your admission orders is the easiest. "A" stands for "Admit To." This first order needs to say which unit of the hospital you would like to admit the patient to, and which doctor will be responsible for their care. If the child has a general pediatrician with admitting privileges, you may want to admit them under their primary care provider. But more commonly, a child is admitted under the staff on call, or the attending on service for the unit you are admitting to.

For our case, Liam will be admitted under the staff on call, so we write that order as "Admit to General Pediatrics under Dr. Lewis."

Diagnosis

The first "D" stands for "Diagnosis." You will need to provide a diagnosis to admit the patient under. In some cases, the diagnosis may not be entirely clear when you need to admit the patient. In this case you can list the presenting complaint as the diagnosis.

For example, our case is relatively clear, so we would write the order as "Diagnosis: Gastroenteritis." If there was significant uncertainty about the diagnosis we could write the order as "Diagnosis: Vomiting Not Yet Determined (NYD)."

Diet

The next D in ADDAVID stands for "Diet." This is where you specify what the patient can eat while in hospital. Most patients being admitted to Pediatric Medicine units will have no dietary concerns, and you can write the order as "Diet as Tolerated" or "DAT." Patients who may need surgery within the next 24 hours should not be feeding orally, and you can write the order as "NPO" which stands for "Nothing Per Os", or in plain language, "Nothing by mouth." If you are unsure if the patient is safe to feed orally, such as if they are quite tachypneic, it is safer to write NPO until further review with your more senior colleagues. If patients are unable to feed safely orally you may have to write orders for nasogastric or G-tube feeding if they have a tube in place.

Some patients may also require total parenteral nutrition or TPN, and this may require consultation with a dietician. Specific medical conditions may also have specific dietary



requirements including failure to thrive, diabetes and many metabolic disorders. Advancing diets for post-operative patients is beyond the scope of this podcast.

For our case of gastroenteritis, Liam would just need the order of "DAT." Traditionally it was thought that withholding certain foods was beneficial for gastroenteritis, however more recent research and guidelines have shown a significant benefit in outcomes with early refeeding.

Activity

The next "A" in the acronym stands for "Activity." This order will inform the team how free the patient is to move around the unit. For example, a patient with a major fracture may not be to safe to weight-bear initially, and may be placed on bedrest or bedrest with bathroom privileges. However the majority of patients in pediatric medicine units will not have limitations on their physical mobility and can be placed on "Activity as Tolerated" or "AAT."

In this section, I also like to think about isolation precautions, as this will limit the patient's ability to move around the unit. Isolation precautions are put in place to protect healthcare providers, but more importantly other patients from infectious diseases. Isolation precautions require that the patient does not leave their room until they have recovered from the infection, and require healthcare providers and visitors to use different levels of personal protective equipment. There are three types of isolation precautions which can be used in in different combinations for different infections: Contact, Droplet and Airborne.

The first type is contact precautions. This level requires staff entering the room to wear gowns and gloves so that they do not come in contact with surfaces. This is typically required for infectious agents that have oral-fecal or fomite transmission routes including most causes of gastroenteritis, *C. difficile*, MRSA, and VRE. Next is droplet precautions. This level requires staff entering the room to wear face masks and eye protection. A few infections such as Neisseria meningitis or pertussis require only droplet precautions. However more commonly, combined contact and droplet precautions are required for infectious agents that have droplet transmission and can linger on surfaces such as viral upper respiratory tract infections like RSV or Influenza. The third type is Airborne Precautions. This level requires the patient to be placed in a negative pressure room, and for staff to wear N95 respirator masks. Airborne infections are among the least common in most pediatric units but include tuberculosis or measles. Some infections such as varicella require both airborne and contact precautions.

For Liam in our case, due to his gastroenteritis, the most appropriate orders would be "AAT" and "Contact Precautions."

<u>Vitals</u>



Next in the mnemonic comes "V" for "Vitals." Hospitalized patients have their vital signs monitored at routine intervals to assess for change in clinical status. An acutely unstable patient will require very frequent monitoring as they could rapidly deteriorate. A more stable patient will require less frequent monitoring. Most patients admitted to a pediatric medicine unit will initially require vitals every 8 hours, which is the duration of a typical nursing shift. In shorthand you can write that order as "Vitals g8hr" or "Vitals gshift." A sicker patient, or one that required active resuscitation prior to admission to hospital, may warrant "Vitals q4hr" until they have stabilized. It is also worth considering that if patients need very frequent assessment, they may be better suited in intensive care for continuous monitoring. Remember, you are writing the admission orders based on the patient you currently assessed, and these can be modified when the clinical situation changes. Many physicians will write "Vital Signs Routine" as an order, however this is not very specific and can mean different things in different centers and units. It is best to specifically say how frequently you would like vitals to be monitored. You also use this section to write orders for oxygen therapy. Children with cardiac or respiratory disease may need supplemental oxygen therapy to prevent them from becoming hypoxemic. You can write this order as "Titrate Oxygen to keep SPO2 > 92%" so that patients are kept on oxygen for as little time as is required.

It is also important to provide vital signs parameters for the care team to call the physician. For example, if the patient develops a fever or hypotension, it will be important to notify the physician on call to reassess. You can write this out by hand, or some hospitals will have a system in place such as the Bedside Pediatric Early Warning System or BPEWS with set parameters to notify the MD for abnormal vitals.

For our case, now that Liam has stabilized with resuscitation, he will require closer vital sign monitoring overnight, at least initially. I would write his orders as "Vital signs q4hr, notify MD as per BPEWS."

<u>IV</u>

Next up in the mnemonic we have the letter "I" three times. "IV" "Ins and Outs" and "Investigations."

You will need to decide if the child needs IV access during their hospitalization. For a detailed approach to IV fluids see our PedsCases podcast on "Dehydration in Children" but we will review a few tips here. An IV may be required for administration of fluid, medications or blood. Getting an IV can be painful and irritating for a child, so it is important to think critically if it is required for patient care. In general, mild to moderate dehydration can be corrected with oral rehydration solution but severe dehydration (ie. >9% of a child's body weight in a child older than 2) will require IV rehydration. If the child needs an IV for medication, and is drinking well, then it is not recommended to provide ongoing IV maintenance hydration due to the risk of hyponatremia. In this situation you can choose to either saline lock the IV (SLIV) or run the IV at a very slow rate to keep the vein open or TKVO. Either option has pros and cons, but in general,



running an IV TKVO usually results in less IV's which fall out, so may mean that the IV needs to be replaced less often, which can be less traumatic.

For our case, Liam already received a 20 ml/kg bolus of normal saline, is normotensive and is producing some urine. We would estimate his fluid deficit to be 9% of his body weight which should be replenished over the next 24 hours. But, we also need to calculate his maintenance fluids using the 4-2-1 rule using 5% dextrose and normal saline, known as D5-NS. In general, if children are peeing, you can add potassium to the maintenance fluids, usually 20 Meq of KCI/L. If there are still significant losses, we could write orders for replacing losses from vomiting and diarrhea. A general rule of thumb for replacing losses is to use a solution that matches the electrolyte profile of the loss, which in this case is D5-1/2NS.

We would also add orders for oral rehydration once Liam is tolerating oral fluids by writing "offer small amounts of pedialyte, 15 - 30 ml, q15-30 minutes while awake." Offering small volumes of oral fluids frequently has been shown to be optimal for promoting oral rehydration.

Ins and Outs

The next section is for "Ins and Outs" and weights. Hospitalized children may need accurate measurement of their total fluid intake, and output of urine and stools to determine a daily fluid balance. You will have to order how frequently this should be recorded, and it is most typically written as "Ins/Outs qshift" which refers to measuring it at each nursing shift, either every 8 or 12 hours. Monitoring a child's weight can also be an important marker of patient well-being and fluid status, particularly in newborns, and you may want to order daily weight measurements.

For this case we would write Ins/Outs qshift, notify MD if urine output less than 1 cc/kg/hr."

Investigations

The next "I" stands for "Investigations." Often a patient will have had an initial panel of investigations done when they present to the emergency department. Having reviewed the patient more thoroughly you can now assess what additional investigations, if any, will help you in diagnosis and management. For a patient with respiratory symptoms, you can order a nasopharyngeal swab for viruses. For a patient with diarrhea you may need to send the stool for culture and sensitivity, *C. difficile* testing and viruses depending on the clinical presentation. If the stool is bloody these investigations become much more important as they are more likely to be bacterial infections that you can treat. These tests may not alter management for the patient, but are important for isolation precautions once admitted. Assess the need for daily labs such as a CBC, Electrolytes, and Urea/Creatinine. In a patient receiving maintenance IV fluids, regular monitoring of electrolytes is important, but in other patients, regular investigations may



be unnecessary. You should also consider the need for imaging or additional specialty consults the child might need during the hospitalization.

For our case, we would need to collect a stool sample from Liam and send it for analysis for infection control reasons. We would also want to order daily electrolytes for as long as we are providing IV maintenance fluids. If the urea was elevated at the time of admission, suggesting pre-renal failure secondary to dehydration, follow up of this value will reassure you that the kidneys have recovered. At this time, any additional investigations would be unlikely to change management.

<u>Drugs</u>

The final letter in ADDAVID is "D" for "Drugs." You will need to write orders for the patients home medications, drugs to treat their presenting complaint, and PRN or asneeded, medications for their stay in hospital. In Alberta, the orders for home medications are completed using the "Best Possible Medication History" form, or BPMH, which compiles all home medications that the patient uses from at least two sources, including online pharmacy registries, patient and family recall, and any medication lists the patient may have from their pharmacy.

For PRN medications you should think of a few important categories for every hospitalized patient. These can be remembered using the memory hanger Pain, Poop and Puke. You will want to have an analgesic ordered for almost every hospitalized patient. Common choices that are safe in children are acetaminophen, ibuprofen, or morphine for severe pain. Many patients admitted to hospital will develop constipation so it can be helpful to prescribe a stool softener at admission such as PEG 3350 powder. Nausea is a common complaint in hospitalized patient, so an anti-emetic such as Ondansetron (Zofran) or Dimenhydrinate (Gravol) is useful to have as a PRN. Review these medications carefully before prescribing PRNs for any contraindications. For example, NSAIDs like Ibuprofen are not appropriate in a child with severe dehydration or in renal failure, or a stool softener would not be helpful in a child with diarrhea! For our case, we would prescribe Acetaminophen at 15 mg/kg q6 hours PRN, and Ondansetron 2mg po x 1 dose now, if the patient did not ready receive a dose in the emergency room.

Key Points

That completes our mnemonic for pediatric admission orders, ADDAVID. Lets review it one more time:

- **A** Admit to
- **D** Diagnosis
- **D** Diet
- **A** Activity
- V Vitals
- I IV, Ins and Outs, Investigations

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• **D** – Drugs

By using this systematic approach every time you write admission orders, you will not miss important factors and will impress your supervisors with your organization! In the supplementary materials at PedsCases.com you can find a PDF example of the admission orders that we wrote for our patient throughout the podcast.

Before we leave, lets finish with a few key take home points:

- 1) Admission orders are critically important to patient care in hospitalized patients, and a systematic approach like ADDAVID will ensure that nothing important is missed.
- 2) Write your orders clearly, legibly and avoid dangerous abbreviations and symbols.
- 3) Get lots of practice writing admission orders as a medical student! This is a skill that requires practice, and this is a great chance to learn from your mistakes.

That concludes our presentation. Thanks for listening to PedsCases podcasts!

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