Antibiotics are extremely dangerous and harmful substances but when used properly they help in saving lives and reduce periods of suffering. Hence the usage of antibiotics is an art practiced by many but perfected by extremely few. Prescribing antibiotics is a very difficult task and warrants extra consideration. In pediatric patients one has to consider the fact that the mechanism of child growth is different and antibiotics may have varying effects on the growth and development of mental and sensory faculties. Therefore age is a major factor to be considered in the choice of antimicrobial agents. Gastric acidity also varies with age. The pH of gastric secretions is higher in young children and does not reach adult levels until approximately the age of three. The absorption of a number of antimicrobials via oral route depends on their acid stability and on the pH of gastric secretions. Penicillin G absorption is markedly reduced by gastric acid but in young children the absorption of this drug is markedly enhanced. Various orally administered penicillins produce high serum levels in young children hence it makes no sense to give children the more expensive acid resistant forms of penicillin such as phenoxybenzyl penicillin (penicillin V) since these drugs will not be absorbed any better than the less expensive penicillin G. Renal functions, likewise vary with age. It is relatively diminished in premature and newborn children reaching “adult levels” between 2 and 12 months of age. Serum half-lives of drugs that are primarily excreted by the kidneys may be considerably increased in neonates; hence doses of antimicrobial agents such as penicillin G and its various semisynthetic derivatives as well as the aminoglycosides must be altered in neonates. Hepatic functions in the neonates are underdeveloped, this can result in difficulties if drugs that are normally excreted or inactivated by liver are given. Chloramphenicol is inactivated by conjugation to the glucuronide from the liver. However, in the neonate hepatic levels of glucuronyl transferase are relatively insufficient, thus when neonates are given large doses of chloramphenicol, high serum level of unconjugated chloramphenicol results which toxic and can result in shock, cardiovascular collapse and death, the so called gray syndrome. For this reason chloramphenicol should be avoided in neonates but if necessary the dosage should be properly tailored and monitored. Sulfonamides compete with bilirubin for binding sites on serum albumin; given to neonates they produce increased serum levels of unbound bilirubin that predispose the child to kernicterus. Tetracyclines have a number of adverse effects on bones and developing teeth ranging from purplish to brownish discolouration to actual enamel hypoplasia. Tetracyclines readily cross the placenta. Thus, when given during the later half of the pregnancy or from birth to the age of 6 months, they may affect the deciduous teeth of the infant. From the age of 6 months to 8 years, damage to the permanent teeth may occur. Irreversible cartilage erosions and skeletal abnormalities have been observed in young dogs and rabbits receiving quinolones. When selecting an antibiotic one must be aware of the suitability of the antimicrobial agent, its safety margins and estimating the exact dosage. It is a normal practice to use weight as the basis for determining the dosage of antibiotics. It is the easy way out but even this is not generally practiced. Ideal way to determine the dosage is based on the surface area which should be determined accurately whenever possible. Remember a well planned strategy for prescribing antimicrobial agents would mean a happy prosperous and long life while, ill planned strategy would mean permanent disability, unhappiness, misery or death.
Antibiotics are not necessary for every illness. Giving them to your child when they aren’t warranted can be potentially harmful, with some research suggesting it may be especially problematic during the first year or two of life. Many potential risks of antibiotics are thought to be linked to disturbing the balance of bacteria in the microbiome (i.e. the healthy bacteria, fungi and viruses in our bodies, most of which live in our gut). For children younger than 5, side effects from antibiotics such as amoxicillin (Amoxil, Moxatag, and generic) and azithromycin (Zithromax, Z-Pak, and generic) are the leading cause of ER visits due to adverse drug effects. What’s more, overuse of these drugs is contributing to the rise of dangerous superbugs—strains of bacteria that are resistant to multiple antibiotics. Consider antibiotics if: Your child has a sore throat and a strep test confirms that it’s caused by a bacteria. However, antibiotics did slightly reduce the number of children with perforations of the eardrum and AOM episodes in the initially unaffected ear compared with placebo. Results from an individual patient data meta-analysis including data from six high-quality trials (1643 children), which were also included as individual trials in our review, showed that antibiotics seem to be most beneficial in children younger than two years of age with infection in both ears and in children with both AOM and a discharging ear. Among children, antibiotics were the most common reason for the visit. Children under the age of 5 years have one of the highest rates of emergency room visits involving medication side effects. That’s not surprising when you consider that some of those more serious side effects can include Once the treatment is started, most children feel better within 48 to 72 hours. However, it’s important to remember that feeling better is not a full recovery. Advantages of Antibiotics for Babies. Since the discovery of penicillin, the first antibiotic, and its widespread use since the 1940s, antibiotics have been used to treat diseases such as tuberculosis, pneumonia and meningitis, which were otherwise fatal. Antibiotics have saved millions of lives over the last 79 years.